Updated 1/19/12

STATE PROJECT

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, (if required), 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™ web-based service, b) an electronic Bid Guaranty (if required) 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 (<u>excluding non-selected alternates</u>).
4. 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 or
   c) an electronic bid bond submitted with an electronic bid.

5. If a paper Bid is to be sent, "FedEx First Overnight" delivery is suggested as the package is delivered directly to the DOT Headquarters Building located at 16 Child Street in Augusta. Other means, such as U.S. Postal Service's Express Mail has proven not to be reliable.

IN ADDITION, FOR FEDERAL AID PROJECTS:

6. Complete the DBE Proposed Utilization form, and submit with your bid. If you are submitting your bid electronically, you must FAX the form to (207) 624-3431. This is a curable defect.

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 19, 2012
Supersedes September 09, 2011

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 an optional 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 Patrick Corum at patrick.corum@maine.gov , Rebecca Snowden at rebecca.snowden@maine.gov or Diane Barnes at diane.barnes@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
WIN:
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
WIN:
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
WIN:
Town:
Name of Contractor:

October 16, 2001

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: _____

SAMPLE

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: **WIN:** _____ **Town(s):** _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

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

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

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

Response:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Response By:_____ Date: _____

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/venbid/index.shtml

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 International Marine Terminal Improvements in the city of **PORTLAND**" will be received from contractors at the Reception Desk, Maine DOT Building, Capitol Street, Augusta, Maine, until 11:00 o'clock A.M. (prevailing time) on August 13, 2014 and at that time and place publicly opened and read. The lowest responsive bidder must have completed, or successfully complete, a highway, marine, 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: Project No. 022809.20

Location: In Cumberland County, project is located on West Commercial Street/ US 1A.

Scope of Work: International Marine Terminal rail corridor and lay down yard expansion plus other incidental work.

A mandatory pre-bid meeting will be held in the Portland International Marine Terminal conference room on Thursday, July 24, 2014 at 1:00 p.m. Only the General Contractors (GC) who are present at the pre-bid meeting will be allowed to bid. Subcontractors do not need to be present to provide bids to the GC.

For general information regarding Bidding and Contracting procedures, contact George Macdougall at (207) 624-3410. Our webpage at http://www.maine.gov/mdot/contractors/ contains a copy of the schedule of items, Plan Holders List, written portions of bid amendments, drawings, and bid results. For Project-specific information fax all questions to **Project Manager Joel Kittredge** at (207)624-3431. Questions received after 12:00 noon of Monday 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. TTY users call Maine Relay 711.

Plans, specifications and bid forms may be seen at the Maine DOT Building in Augusta, Maine and at the Department of Transportation's Regional Office in Scarborough. 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 $116.00 ($123.00 by mail). Half size plans $58.00 ($67.75 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 $265,000.00 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 State 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]. They also may be purchased by telephone at (207) 624-3536 between the hours of 8:00 a.m. to 4:30 p.m. Standard Detail updates can be found at http://www.maine.gov/mdot/contractors/publications/ .

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

Augusta, Maine
July 16, 2014

STATE OF MAINE
Joyce Noel Taylor
6997
LICENSED
PROFESSIONAL ENGINEER

JOYCE NOEL TAYLOR P.E.
CHIEF ENGINEER

Portland
International Marine Terminal
WIN 022809.20
April 14, 2011
Supersedes August 3, 2004

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/contractors/ . 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).]

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0010	201.11 CLEARING	3.000 AC				
0020	201.23 REMOVING SINGLE TREE TOP ONLY	1.000 EA				
0030	201.24 REMOVING STUMP	1.000 EA				
0040	202.15 REMOVING MANHOLE OR CATCH BASIN	1.000 EA				
0050	202.202 REMOVING PAVEMENT SURFACE	3,900.000 SY				
0060	202.203 PAVEMENT BUTT JOINTS	180.000 SY				
0070	203.20 COMMON EXCAVATION	14,900.000 CY				
0080	203.2312 HEALTH AND SAFETY PLAN	LUMP SUM	LUMP SUM			
0090	203.2333 DISPOSAL OF SPECIAL EXCAVATION	150.000 T				
0100	206.0612 STRUCTURAL EARTH EXCAVATION, SLAB SLAB	7,750.000 CY				
0110	304.09 AGGREGATE BASE COURSE - CRUSHED TYPE B	2,150.000 CY				
0120	304.104 AGGREGATE SUBBASE COURSE (PLAN QUANTITY) TYPE D	24,150.000 CY				

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0130	304.14 THERMAL SAND	54.000 CY				
0140	403.208 HOT MIX ASPHALT 12.5 MM HMA SURFACE	710.000 T				
0150	403.209 HOT MIX ASPHALT 9.5 MM (SIDEWALKS, DRIVES, INCIDENTALS)	190.000 T				
0160	403.2104 HOT MIX ASPHALT 9.5 MM - THIN LIFT SURFACE TREATMENT	210.000 T				
0170	403.211 HOT MIX ASPHALT (SHIMMING)	50.000 T				
0180	403.213 HOT MIX ASPHALT 12.5 MM BASE	640.000 T				
0190	409.15 BITUMINOUS TACK COAT - APPLIED	4,170.000 G				
0200	411.12 CRUSHED STONE SURFACE	3,950.000 T				
0210	419.30 SAW CUTTING BITUMINOUS PAVEMENT	3,000.000 LF				
0220	502.496 STRUCTURAL CONCRETE, LOADING SLAB	2,200.000 CY				
0230	502.497 STRUCTURAL CONCRETE, LOADING SLAB BARRIER	440.000 CY				

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0240	502.601 STRUCTURAL CONCRETE, TRANSFORMER	LUMP SUM	LUMP SUM		_____	_____
0250	502.606 STRUCTURAL CONCRETE, SECURITY BUILDING SLAB	LUMP SUM	LUMP SUM		_____	_____
0260	502.76 CONCRETE SLAB SCUPPERS	41.000 EA	_____	_____	_____	_____
0270	503.14 EPOXY-COATED REINFORCING STEEL, FABRICATED AND DELIVERED	667,000.000 LB	_____	_____	_____	_____
0280	503.15 EPOXY-COATED REINFORCING STEEL, PLACING	667,000.000 LB	_____	_____	_____	_____
0290	504.623 REMOVE AND DISPOSE EXISTING FENDER PANEL	6.000 EA	_____	_____	_____	_____
0300	504.631 REMOVE AND REINSTALL UHMW WEARING SURFACE 1 FOOT PIECE	18.000 EA	_____	_____	_____	_____
0310	504.632 REMOVE AND REINSTALL UHMW WEARING SURFACE 11 FOOT PIECE	16.000 EA	_____	_____	_____	_____
0320	504.633 REMOVE AND DISPOSE BENT STEEL FENDER HP 10 X 42	20.000 LF	_____	_____	_____	_____
0330	504.641 REPLACE SHEAR CHAIN UPPER	32.000 EA	_____	_____	_____	_____
0340	504.641 REPLACE SHEAR CHAIN LOWER	32.000 EA	_____	_____	_____	_____

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0350	504.642 SUPPORT CHAIN	6.000 EA				
0360	504.643 UHMW WEARING SURFACE 1 FOOT PIECE	100.000 EA				
0370	504.644 UHMW WEARING SURFACE 11 FOOT PIECE	50.000 EA				
0380	504.65 STEEL FENDER PANEL, CLOSED BOX, WITH UHMW WEARING SURFACE	6.000 EA				
0390	515.20 PROTECTIVE COATING FOR CONCRETE SURFACES SPECIAL	8,200.000 SY				
0400	525.74 INTERPRETIVE SIGN BASE	3.000 EA				
0410	526.35 PERMANENT CONCRETE JERSEY BARRIER	550.000 LF				
0420	603.155 12 INCH REINFORCED CONCRETE PIPE CLASS III	26.000 LF				
0430	603.165 15 INCH REINFORCED CONCRETE PIPE CLASS III	456.000 LF				
0440	603.175 18 INCH REINFORCED CONCRETE PIPE CLASS III	16.000 LF				
0450	603.1952 24 INCH REINFORCED CONCRETE PIPE CLASS V	120.000 LF				

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0460	603.4105 CONCRETE PIPE COLLAR	4.000 EA				
0470	603.98 STORM OVERFLOW SLIPLINE	LUMP SUM	LUMP SUM			
0480	603.99 STORM OVERFLOW LINING	LUMP SUM	LUMP SUM			
0490	604.11 CATCH BASIN TYPE C1 48"	8.000 EA				
0500	604.152 48 INCH MANHOLE	1.000 EA				
0510	604.158 UTILITY VAULT 4FT X 8 FT	1.000 EA				
0520	604.161 ALTERING CATCH BASIN	1.000 EA				
0530	604.166 REBUILDING MANHOLE	2.000 EA				
0540	604.17 ALTERING MANHOLES TO CATCH BASINS	3.000 EA				
0550	604.18 ADJUSTING MANHOLE OR CATCH BASIN TO GRADE	8.000 EA				
0560	604.249 CATCH BASIN TYPE F6-C	3.000 EA				
0570	604.252 CATCH BASIN TYPE A5-C 48"	1.000 EA				
0580	605.09 6 INCH UNDERDRAIN TYPE B	1,100.000 LF				

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0590	605.11 12 INCH UNDERDRAIN TYPE C	2,450.000 LF				
0600	605.13 18 INCH UNDERDRAIN TYPE C	1,150.000 LF				
0610	607.1701 TEMPORARY CHAIN LINK FENCE - 6' MOVEABLE MOVEABLE	1,000.000 LF				
0620	607.181 CHAIN LINK FENCE - 8 FOOT HIGH SECURITY	2,500.000 LF				
0630	607.231 CHAIN LINK FENCE GATE, 4 FOOT CRASH GATE	1.000 EA				
0640	607.232 CHAIN LINK FENCE GATE, 3 FOOT	1.000 EA				
0650	607.243 REMOVE CHAIN LINK FENCE	1,150.000 LF				
0660	607.244 REPAIR CHAIN LINK FENCE	110.000 LF				
0670	607.25 REMOVE AND RESET CHAIN LINK FENCE	200.000 LF				
0680	607.251 REMOVE AND RESET CHAIN LINK FENCE AND GATE	100.000 LF				
0690	607.34 BRACING ASSEMBLY CHAIN LINK FENCE	44.000 EA				
0700	607.490 CHAIN LINK GATE - 16 FT. SWING	1.000 EA				

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0710	607.4902 CHAIN LINK GATE, 24 FOOT DOUBLE LEAF SWING GATE	1.000 EA				
0720	607.4903 CHAIN LINK GATE, 32 FOOT DOUBLE LEAF SWING GATE	1.000 EA				
0730	607.4911 MOTORIZED SLIDE GATE - 24 FT.	6.000 EA				
0740	607.4922 REMOVE 4 FOOT SWING GATE	1.000 EA				
0750	607.4923 REMOVE 24 FOOT SWING GATE	2.000 EA				
0760	607.4924 REMOVE 16 FOOT SLIDING GATE	1.000 EA				
0770	607.4925 REMOVE & RESET MOTORIZED SLIDING GATE, 20 FOOT CHAIN LINK	1.000 EA				
0780	607.92 HEAVY STEEL HIGH SECURITY PALISADE FENCE, 6 FOOT	750.000 LF				
0790	607.94 HEAVY STEEL HIGH SECURITY PALISADE FENCE, 8 FOOT	870.000 LF				
0800	608.08 REINFORCED CONCRETE SIDEWALK	16.000 SY				
0810	608.15 BRICK SIDEWALK WITH BITUMINOUS BASE	531.000 SY				

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0820	608.16 BRICK DRIVEWAY WITH BITUMINOUS BASE	251.000 SY	_____	_____	_____	_____
0830	608.26 CURB RAMP DETECTABLE WARNING FIELD	216.000 SF	_____	_____	_____	_____
0840	608.28 GRANITE PAVERS WITH SAND BASE & CEMENT	5.000 SY	_____	_____	_____	_____
0850	608.282 GRANITE PAVERS WITH CONCRETE BASE	42.000 SY	_____	_____	_____	_____
0860	608.292 PERVIOUS PRECAST CONCRETE PAVER	320.000 SY	_____	_____	_____	_____
0870	609.11 VERTICAL CURB TYPE 1	1,950.000 LF	_____	_____	_____	_____
0880	609.12 VERTICAL CURB TYPE 1 - CIRCULAR	305.000 LF	_____	_____	_____	_____
0890	609.234 TERMINAL CURB TYPE 1 - 4 FOOT	4.000 EA	_____	_____	_____	_____
0900	609.237 TERMINAL CURB TYPE 1 - 7 FOOT	8.000 EA	_____	_____	_____	_____
0910	609.2371 TERMINAL CURB TYPE 1- 7 FT - CIRCULAR	10.000 EA	_____	_____	_____	_____
0920	609.26 CURB TRANSITION SECTION B TYPE 1	4.000 EA	_____	_____	_____	_____

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
0930	609.31 CURB TYPE 3	39.000 LF				
0940	609.34 CURB TYPE 5	175.000 LF				
0950	609.35 CURB TYPE 5 - CIRCULAR	24.000 LF				
0960	613.319 EROSION CONTROL BLANKET	400.000 SY				
0970	615.07 LOAM	280.000 CY				
0980	618.1301 SEEDING METHOD NUMBER 1 - PLAN QUANTITY	8.000 UN				
0990	619.1201 MULCH - PLAN QUANTITY	8.000 UN				
1000	619.1301 BARK MULCH	18.000 CY				
1010	620.6011 SEPARATION GEOTEXTILE, SPECIAL	42,100.000 SY				
1020	620.73 STRIP DRAIN	2,050.000 LF				
1030	621.043 EVERGREEN TREES (6 FOOT - 8 FOOT) GROUP A	9.000 EA				
1040	621.046 EVERGREEN TR (8' - 10') GP A	5.000 EA				

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars . Cents	Bid Amount Dollars . Cents
1050	621.261 LARGE DECIDUOUS TREES (10 FOOT - 12 FOOT) GROUP A	3.000 EA	_____.____	_____.____
1060	621.285 LARGE DECIDUOUS TREE (3 INCH - 3.50 INCH CALIPER) GROUP A	19.000 EA	_____.____	_____.____
1070	621.401 DWARF EVERGREENS (2 FOOT - 2.50 FOOT) GROUP A	3.000 EA	_____.____	_____.____
1080	621.525 BAYBERRY (2 FOOT - 3 FOOT)	5.000 EA	_____.____	_____.____
1090	621.546 DECIDUOUS SHRUBS (2 FOOT - 3 FOOT) GROUP A	6.000 EA	_____.____	_____.____
1100	621.552 DECIDUOUS SHRUBS (3 FOOT - 4 FOOT) GROUP A	36.000 EA	_____.____	_____.____
1110	621.71 HERBACEOUS PERENNIALS GROUP A	16.000 EA	_____.____	_____.____
1120	621.80 ESTABLISHMENT PERIOD TWO YEAR	LUMP SUM	LUMP SUM	_____.____
1130	626.11 PRECAST CONCRETE JUNCTION BOX EXTERIOR	2.000 EA	_____.____	_____.____
1140	626.213 METALLIC CONDUIT	LUMP SUM	LUMP SUM	_____.____
1150	626.214 SUPPORTING DEVICES	LUMP SUM	LUMP SUM	_____.____

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars Cents	Bid Amount Dollars Cents
1160	626.226 NON-METALLIC CONDUIT	LUMP SUM	LUMP SUM	_____.____
1170	626.233 SECONDARY WIRING	LUMP SUM	LUMP SUM	_____.____
1180	626.32 24 INCH FOUNDATION CARD READER AND PEDESTAL POLE, 5 FT	15.000 EA	_____.____	_____.____
1190	626.32 24 INCH FOUNDATION LIGHT STD, 11 FT	12.000 EA	_____.____	_____.____
1200	626.323 PEDESTAL REEFER OUTLET FOUNDATION	3.000 EA	_____.____	_____.____
1210	626.324 PEDESTAL REEFER OUTLET ASSEMBLY	3.000 EA	_____.____	_____.____
1220	626.332 30 INCH DIAMATER GREATER THAN 8 FEET LONG & 36 INCH DIAMETER, 42 INCH DIAMETER FOUNDATION	11.000 CY	_____.____	_____.____
1230	626.333 48 INCH DIAMETER, 54 INCH DIAMETER, & 60 INCH DIAMETER FOUNDATIONS	15.000 CY	_____.____	_____.____
1240	626.386 SERVICE METERING	LUMP SUM	LUMP SUM	_____.____
1250	626.42 GROUNDING	LUMP SUM	LUMP SUM	_____.____
1260	626.50 NETWORK BOXES	LUMP SUM	LUMP SUM	_____.____

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars . Cents	Bid Amount Dollars . Cents
1270	626.74 PANELBOARD	LUMP SUM	LUMP SUM	_____.____
1280	626.742 FIRE ALARM PULL STATIONS	LUMP SUM	LUMP SUM	_____.____
1290	627.30 GROOVING FOR PAVEMENT MARKING	12,200.000 SF	_____.____	_____.____
1300	627.4072 PREFORMED PAVEMENT MARKING TAPE LINE, GROOVED INSTALLATION	2,400.000 SF	_____.____	_____.____
1310	627.4073 PREFORMED PAVEMENT MARKING TAPE LINE, HOT INLAY INSTALLATION	1,350.000 SF	_____.____	_____.____
1320	627.4074 PREFORMED PAVEMENT MARKING TAPE SYMBOLS, HOT INLAY INSTALLATION	490.000 SF	_____.____	_____.____
1330	627.75 WHITE OR YELLOW PAVEMENT & CURB MARKING	130.000 SF	_____.____	_____.____
1340	627.943 COLORED GLASS PAVEMENT MARKING SYSTEM SYMBOLS	6,310.000 SF	_____.____	_____.____
1350	629.05 HAND LABOR, STRAIGHT TIME	60.000 HR	_____.____	_____.____
1360	631.12 ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	20.000 HR	_____.____	_____.____
1370	631.13 BULLDOZER (INCLUDING OPERATOR)	20.000 HR	_____.____	_____.____

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
1380	631.172 TRUCK - LARGE (INCLUDING OPERATOR)	20.000 HR				
1390	631.18 CHAIN SAW RENTAL (INCLUDING OPERATOR)	20.000 HR				
1400	631.20 STUMP CHIPPER (INCLUDING OPERATOR)	20.000 HR				
1410	631.22 FRONT END LOADER (INCLUDING OPERATOR)	20.000 HR				
1420	631.32 CULVERT CLEANER (INCLUDING OPERATOR)	20.000 HR				
1430	631.36 FOREPERSON	20.000 HR				
1440	634.2041 LUMINAIRES	60.000 EA				
1450	634.210 CONVENTIONAL LIGHT STANDARD TYPE 2	1.000 EA				
1460	634.210 CONVENTIONAL LIGHT STANDARD TYPE 3	11.000 EA				
1470	634.210 CONVENTIONAL LIGHT STANDARD TYPE 1	15.000 EA				
1480	639.18 FIELD OFFICE TYPE A	1.000 EA				

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
1490	641.13 FLAT BENCH	2.000 EA				
1500	643.80 TRAFFIC SIGNALS AT COMMERCIAL & BEACH ST	LUMP SUM	LUMP SUM			
1510	643.83 VIDEO DETECTION SYSTEM THERMAL	LUMP SUM	LUMP SUM			
1520	643.88 TRAFFIC SIGNAL BLANKOUT SIGN	2.000 EA				
1530	643.92 PEDESTAL POLE 8 FT	1.000 EA				
1540	643.92 PEDESTAL POLE 12 FT	1.000 EA				
1550	643.92 PEDESTAL POLE 10 FT	1.000 EA				
1560	643.94 DUAL PURPOSE POLE W/ 35FT MAST ARM	2.000 EA				
1570	643.94 DUAL PURPOSE POLE W/ 55FT HINGED MAST ARM	1.000 EA				
1580	645.103 DEMOUNT GUIDE SIGN	2.000 EA				
1590	645.106 DEMOUNT REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGN	14.000 EA				
1600	645.108 DEMOUNT POLE	11.000 EA				

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars . Cents	Bid Amount Dollars . Cents
1610	645.116 REINSTALL REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGN	4.000 EA	_____.____	_____.____
1620	645.118 REINSTALL POLE	3.000 EA	_____.____	_____.____
1630	645.291 ROADSIDE GUIDE SIGNS TYPE II	54.000 SF	_____.____	_____.____
1640	645.292 REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGNS TYPE II	230.000 SF	_____.____	_____.____
1650	645.308 RETROREFLECTIVE HORIZONTAL DELINEATOR	1.000 EA	_____.____	_____.____
1660	648.103 INSTALL 115 LB JOINTED RAIL AT GRADE	4,440.000 TF	_____.____	_____.____
1670	648.313 SUBBALLAST	2,600.000 T	_____.____	_____.____
1680	648.53 REMOVE EXISTING TRACK - AT GRADE	4,480.000 TF	_____.____	_____.____
1690	648.54 REMOVE EXISTING TRACK - BRIDGES	4.000 TF	_____.____	_____.____
1700	648.57 TIMBER GRADE CROSSING	LUMP SUM	LUMP SUM	_____.____
1710	648.61 BUMPING POST	1.000 EA	_____.____	_____.____

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
1720	651.01 NEW 115 RE NUMBER 10 TURNOUT	3.000 EA				
1730	652.33 DRUM	50.000 EA				
1740	652.34 CONE	50.000 EA				
1750	652.35 CONSTRUCTION SIGNS	400.000 SF				
1760	652.36 MAINTENANCE OF TRAFFIC CONTROL DEVICES	400.000 CD				
1770	652.38 FLAGGER	3,780.000 HR				
1780	652.41 PORTABLE CHANGEABLE MESSAGE SIGN	3.000 EA				
1790	655.501 CATHODIC PROTECTION BY SACRIFICIAL ANODE	6.000 EA				
1800	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP SUM	LUMP SUM			
1810	659.10 MOBILIZATION	LUMP SUM	LUMP SUM			
1820	801.011 BYPASS PUMPING SYSTEM SANITARY SEWER	LUMP SUM	LUMP SUM			
1830	801.162 6 INCH DIAMETER PVC SCUPPER CONNECTION	250.000 LF				

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	Unit Price Cents	Bid Amount Dollars	Bid Amount Cents
1840	802.211 RELINE EXISTING SEWER	1,110.000 LF				
1850	803.01 TEST PITS	5.000 EA				
1860	815.28 CONTRACTOR ALLOWANCE UNITIL	LUMP SUM	LUMP	SUM	$5,000	00
1870	815.28 CONTRACTOR ALLOWANCE FAIRPOINT	LUMP SUM	LUMP	SUM	$5,000	00
1880	815.28 CONTRACTOR ALLOWANCE PORTLAND WATER DIST	LUMP SUM	LUMP	SUM	$10,000	00
1890	815.28 CONTRACTOR ALLOWANCE CITY PERMITS, FEES, INSPECTIONS	LUMP SUM	LUMP	SUM	$180,000	00
1900	815.28 CONTRACTOR ALLOWANCE CMP	LUMP SUM	LUMP	SUM	$80,000	00
1910	815.32 MODULAR BUILDING SECURITY	LUMP SUM	LUMP	SUM		
1920	822.315 TAPPING SLEEVE W/ VALVE AND SERVICE BOX	3.000 EA				
1930	822.320 6" PVC WATERMAIN	840.000 LF				
1940	822.3212 4" PVC WATERMAIN	780.000 LF				
1950	822.3406 8 INCH REDUCER	1.000 EA				

Proposal ID: 022809.20 Project(s): 022809.20

SECTION: 1 SECTION 1

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
1960	823.335 4 INCH GATE VALVE W/ SERVICE BOX	1.000 EA	_____	_____	_____	_____
1970	823.338 6 INCH GATE VALVE W/ SERVICE BOX	1.000 EA	_____	_____	_____	_____
1980	823.343 POST INDICATOR VALVE	1.000 EA	_____	_____	_____	_____
1990	824.30 FIRE HYDRANT	3.000 EA	_____	_____	_____	_____
2000	824.40 STANDPIPE	3.000 EA	_____	_____	_____	_____
2010	825.35 4 INCH COMPOUND METER	1.000 EA	_____	_____	_____	_____
2020	825.433 GAS LINE RELOCATION	180.000 LF	_____	_____	_____	_____
2030	830.22 DIRECTIONAL DRILLING, 4 INCH CONDUIT	510.000 LF	_____	_____	_____	_____
2040	841.4712 STEEL BOLLARD, 6 INCH	11.000 EA	_____	_____	_____	_____
2050	841.4713 STEEL BOLLARD, 12 INCH	23.000 EA	_____	_____	_____	_____
2060	841.4714 STEEL BOLLARD, 12 INCH, INSTALL ONLY	16.000 EA	_____	_____	_____	_____
2070	890.07 BIKE RACKS	2.000 EA	_____	_____	_____	_____

Proposal ID: 022809.20 Project(s): 022809.20

Section: 1 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, WIN **022809.20** for the **International Marine Terminal Improvements** in the city of **Portland**, County of **Cumberland** 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 **August 31, 2015.** 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: **WIN 022809.20 International Marine Terminal Expansion plus other incidental work**, 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 Bernhardt, 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, WIN **022809.20** for the **International Marine Terminal Improvements** in the city of **Portland**, County of **Cumberland** 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 **August 31, 2015.** 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: **WIN 022809.20 International Marine Terminal Expansion plus other incidental work**, 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 Bernhardt, 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:

SAMPLE

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.

SAMPLE

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.

SAMPLE

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)

SAMPLE

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.....	.....…….....

SAMPLE

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.

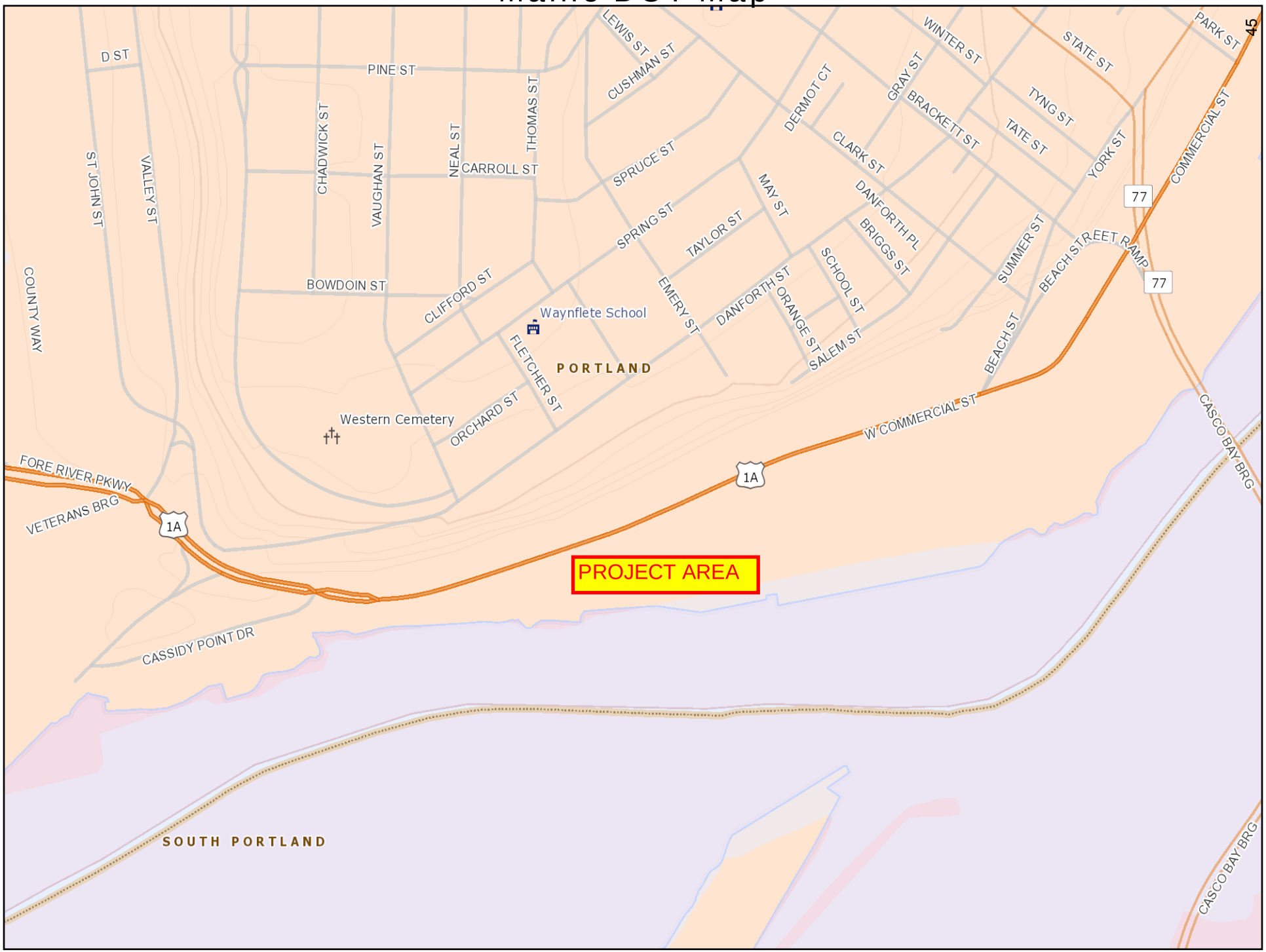
A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material or both, used or reasonably required for use in the performance of the contract.

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	…….....

SAMPLE

Maine DOT Map



Map Generated on Tuesday, June 17, 2014 08:05:06 AM

Map Scale 1:7186

The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch. Road names used on this map may not match official road names.

General Roads

- *Interstate*
- *US Routes*
- *State Routes*
- *Public Roads*

MaineDOT Regions

State Urban

Water Bodies

Boundary Lines

- *coastline*
- *county*
- *state*
- *town*

Wetlands

Conserved Lands

THIS DOCUMENT MUST BE CLEARLY POSTED AT THE PERTAINING STATE FUNDED PREVAILING WAGE CONSTRUCTION SITE

State of Maine
Department of Labor
Bureau of Labor Standards
Wage and Hour 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 --------International Marine Terminal Expansion-Commercial Street Signalization and Improvements

Location of Project –Portland, Cumberland County

2014 Fair Minimum Wage Rates
• Highway & Earthwork Cumberland County

Occupation Title	Minimum Wage	Minimum Benefit	Total	Occupation Title	Minimum Wage	Minimum Benefit	Total
Asphalt Raker	$15.75	$0.82	$16.57	Ironworker - Structural	$22.57	$5.88	$28.45
Backhoe Loader Operator	$17.00	$1.68	$18.68	Laborers (Incl.Helpers & Tenders)	$13.37	$0.75	$14.12
Boom Truck (Truck Crane) Operator	$25.00	$15.46	$40.46	Laborer - Skilled	$15.84	$2.19	$18.03
Bulldozer Operator	$18.00	$2.93	$20.93	Loader Operator - Front-End	$16.50	$2.53	$19.03
Carpenter	$18.50	$1.49	$19.99	Mechanic- Maintenance	$19.25	$2.37	$21.62
Carpenter - Rough	$17.00	$1.85	$18.85	Painter	$14.50	$0.00	$14.50
Cement Mason/Finisher	$17.05	$0.43	$17.48	Paver Operator	$16.25	$1.07	$17.32
Concrete Pump Operator	$20.50	$3.53	$24.03	Pipelayer	$35.72	$21.35	$57.07
Crane Operator =>15 Tons)	$23.25	$6.45	$29.70	Pump Installer	$21.00	$2.77	$23.77
Crusher Plant Operator	$18.50	$4.06	$22.56	Reclaimer Operator	$20.00	$10.84	$30.84
Diver	$25.00	$3.07	$28.07	Roller Operator - Earth	$19.36	$22.45	$41.81
Driller - Rock	$18.00	$5.01	$23.01	Roller Operator - Pavement	$16.00	$1.34	$17.34
Driller - Well	$14.00	$3.20	$17.20	Roofer	$16.00	$1.40	$17.40
Electrician - Licensed	$24.50	$5.86	$30.36	Screed/Wheelman	$18.00	$1.73	$19.73
Excavator Operator	$18.50	$2.14	$20.64	Truck Driver - Light	$15.50	$3.03	$18.53
Fence Setter	$12.00	$0.00	$12.00	Truck Driver - Medium	$15.00	$0.57	$15.57
Flagger	$10.00	$0.00	$10.00	Truck Driver - Heavy	$15.00	$1.40	$16.40
Grader/Scraper Operator	$16.25	$2.60	$18.85	Truck Driver - Tractor Trailer	$16.50	$0.84	$17.34
Highway Worker/Guardrail Installer	$14.21	$1.34	$15.55	Truck Driver - Mixer (Cement)	$11.42	$2.90	$14.32
Hot Top Plant Operator	$21.75	$10.34	$32.09				

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: HI-090-2014

Filing Date: July 9, 2014

Expiration Date: 12-31-2014

A true copy

Attest: Pamela J. Taylor
Pamela Taylor
Director
Bureau of Labor Standards

BLS 424HI (R2014) (Highway & Earthwork Cumberland)

THIS DOCUMENT MUST BE CLEARLY POSTED AT THE PERTAINING STATE FUNDED PREVAILING WAGE CONSTRUCTION SITE

State of Maine
Department of Labor
Bureau of Labor Standards
Wage and Hour 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 --------International Marine Terminal Expansion-All Rail Bed and Railway-Cassidy Point Drive and Terminal Site improvements, Loading Areas and Access

Location of Project –Portland, Cumberland County

2014 Fair Minimum Wage Rates
Heavy & Bridge Cumberland County

Occupation Title	Minimum Wage	Minimum Benefit	Total	Occupation Title	Minimum Wage	Minimum Benefit	Total
Backhoe Loader Operator	$18.79	$2.64	$21.43	Ironworker - Structural	$22.70	$6.70	$29.40
Boom Truck (Truck Crane) Operator	$25.00	$15.46	$40.46	Laborers (Incl.Helpers & Tenders)	$16.00	$2.84	$18.84
Bricklayer	$28.01	$17.04	$45.05	Laborer - Skilled	$16.83	$4.87	$21.70
Bulldozer Operator	$17.98	$2.55	$20.53	Line Erector - Power/Cable Splicer	$29.50	$7.35	$36.85
Carpenter	$19.38	$5.04	$24.42	Loader Operator - Front-End	$19.50	$2.73	$22.23
Carpenter - Rough	$18.00	$4.73	$22.73	Mechanic- Maintenance	$20.43	$5.20	$25.63
Communication Equip Installer	$18.00	$1.76	$19.76	Mechanic- Refrigeration	$23.22	$3.27	$26.49
Comm Trans Erector-Microwave & Cell	$20.14	$6.53	$26.67	Millwright	$22.25	$0.00	$22.25
Concrete Pump Operator	$20.50	$3.53	$24.03	Oil/Fuel Burner Servicer & Installer (Licensed)	$20.33	$4.04	$24.37
Crane Operator <15 Tons	$19.50	$4.66	$24.16	Painter	$17.75	$0.00	$17.75
Crane Operator =>15 Tons)	$23.94	$6.99	$30.93	Paver Operator	$17.25	$1.63	$18.88
Crusher Plant Operator	$17.00	$4.06	$21.06	Pile Driver Operator	$21.37	$5.97	$27.34
Diver	$25.00	$16.38	$41.38	Pipe/Steam/Sprinkler Fitter	$23.00	$7.48	$30.48
Driller - Rock	$18.00	$3.53	$21.53	Pipelayer	$17.55	$11.42	$28.97
Dry-Wall Taper & Finisher	$20.00	$1.04	$21.04	Propane & Natural Gas Servicer & Inst	$23.00	$3.44	$26.44
Electrician - Licensed	$26.00	$9.16	$35.16	Pump Installer	$21.00	$2.77	$23.77
Electrician Helper/Cable Puller (Licensed)	$17.00	$8.60	$25.60	Rigger	$20.50	$5.32	$25.82
Excavator Operator	$19.00	$3.06	$22.06	Roller Operator - Earth	$19.36	$22.45	$41.81
Flagger	$11.50	$0.00	$11.50	Roller Operator - Pavement	$17.25	$5.41	$22.66
Grader/Scraper Operator	$16.73	$2.98	$19.71	Truck Driver - Light	$15.50	$1.93	$17.43
Hot Top Plant Operator	$20.75	$9.69	$30.44	Truck Driver - Medium	$15.90	$2.71	$18.61
HVAC	$22.66	$4.51	$27.17	Truck Driver - Heavy	$13.75	$0.94	$14.69
Insulation Installer	$22.00	$9.75	$31.75	Truck Driver - Tractor Trailer	$18.00	$2.00	$20.00
Ironworker - Reinforcing	$22.00	$7.20	$29.20				

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-024-2014

Filing Date: July 9, 2014

Expiration Date: 12-31-2014

A true copy

Attest: Pamela D. Taylor

Pamela Taylor
Director
Bureau of Labor Standards

BLS 424HB (R2014) (Heavy & Bridge Cumberland)

THIS DOCUMENT MUST BE CLEARLY POSTED AT THE PERTAINING STATE FUNDED PREVAILING WAGE CONSTRUCTION SITE

State of Maine
Department of Labor
Bureau of Labor Standards
Wage and Hour 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 -------- International Marine Terminal Expansion-Building Structures

Location of Project –Portland, Cumberland County

2014 Fair Minimum Wage Rates
Building 2 Cumberland County
(other than 1 or 2 family homes)

Occupation Title	Minimum Wage	Minimum Benefit	Total	Occupation Title	Minimum Wage	Minimum Benefit	Total
Asbestos/Lead Removal Worker	$12.50	$0.33	$12.83	Ironworker - Structural	$20.00	$2.76	$22.76
Backhoe Loader Operator	$18.00	$2.43	$20.43	Laborers (Incl.Helpers & Tenders)	$12.55	$0.33	$12.88
Boom Truck (Truck Crane) Operator	$26.50	$15.46	$41.96	Laborer - Skilled	$15.00	$1.02	$16.02
Bricklayer	$23.15	$0.00	$23.15	Loader Operator - Front-End	$17.88	$3.12	$21.00
Bulldozer Operator	$17.98	$2.55	$20.53	Mechanic- Maintenance	$25.50	$1.87	$27.37
Carpenter	$19.50	$2.53	$22.03	Mechanic- Refrigeration	$22.00	$4.04	$26.04
Carpenter - Acoustical	$13.88	$2.97	$16.85	Millwright	$26.58	$16.85	$43.43
Carpenter - Rough	$19.00	$1.88	$20.88	Oil/Fuel Burner Servicer & Installer (Licensed)	$21.93	$7.38	$29.31
Cement Mason/Finisher	$17.75	$0.00	$17.75	Painter	$14.00	$0.00	$14.00
Communication Equip Installer	$22.50	$3.95	$26.45	Paver Operator	$17.25	$1.63	$18.88
Concrete Pump Operator	$20.50	$3.53	$24.03	Pipe/Steam/Sprinkler Fitter	$25.00	$13.84	$38.84
Crane Operator <15 Tons	$19.50	$4.66	$24.16	Plumber (Licensed)	$24.50	$3.40	$27.90
Crane Operator =>15 Tons)	$23.00	$4.36	$27.36	Plumber Helper/Trainee (Licensed)	$17.00	$2.61	$19.61
Crusher Plant Operator	$17.00	$4.06	$21.06	Propane & Natural Gas Servicer & Inst	$23.00	$3.44	$26.44
Driller - Well	$14.00	$3.20	$17.20	Pump Installer	$21.00	$2.77	$23.77
Dry-Wall Applicator	$21.00	$1.55	$22.55	Rigger	$20.00	$5.35	$25.35
Dry-Wall Taper & Finisher	$20.50	$0.80	$21.30	Roller Operator - Pavement	$17.25	$5.41	$22.66
Electrician - Licensed	$25.00	$6.44	$31.44	Roofer	$16.00	$1.69	$17.69
Electrician Helper/Cable Puller (Licensed)	$15.00	$2.77	$17.77	Sheet Metal Worker	$19.59	$3.09	$22.68
Elevator Constructor/Installer	$51.42	$30.35	$81.77	Sider	$16.00	$1.11	$17.11
Excavator Operator	$17.00	$2.26	$19.26	Stone Mason	$18.00	$0.77	$18.77
Flagger	$11.50	$0.00	$11.50	Tile Setter	$22.05	$3.73	$25.78
Floor Layer	$15.70	$1.96	$17.66	Truck Driver - Light	$16.00	$4.13	$20.13
Glazier	$26.00	$2.47	$28.47	Truck Driver - Medium	$15.00	$1.30	$16.30
HVAC	$24.55	$3.39	$27.94	Truck Driver - Heavy	$14.25	$0.71	$14.96
Insulation Installer	$18.50	$3.32	$21.82	Truck Driver - Tractor Trailer	$16.00	$4.21	$20.21
Ironworker - Reinforcing	$20.88	$1.00	$21.88	Truck Driver - Mixer (Cement)	$13.28	$0.84	$14.12

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: B2-081-2014

Filing Date: July 9, 2014

Expiration Date: 12-31-2014

A true copy

Attest: Pamela D. Taylor

Pamela D Taylor
Director
Bureau of Labor Standards

BLS 424BU (R2014) (Building 2 Cumberland)

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
AUGUSTA, MAINE

SPECIAL PROVISIONS

FOR:

PORTLAND INTERNATIONAL MARINE TERMINAL

EXISTING LAYDOWN AND CONNECTING CORRIDOR CONNECTION PROJECT

Portland, Maine

PROJECT WIN: 022809.20

July 11, 2014

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
AUGUSTA, MAINE

PORTLAND INTERNATIONAL MARINE TERMINAL

EXISTING LAYDOWN AND CONNECTING CORRIDOR CONNECTION PROJECT

Portland, Maine
WIN 022809.20

PROJECT DESCRIPTION

All work shall be governed by the Maine Department of Transportation Standard Specifications, Revision of December 2002, except for that work which applies to sections of the Maine Department of Transportation Supplemental Specifications dated July 2010 and the modifications, additions, and deletions contained herein.

General Description of Work

The objective of this project is to expand the Portland International Marine Terminal westward to create a container storage area along Commercial Street and bring a new rail line into the expanded facility. This work will include multiple disciplines and construction activities within the project site and on Commercial Street itself. A general description of the work is as follows:

First, the Work includes the procurement and installation of approximately 5,000 ft of railroad track from Cassidy Point Drive to a point near the intersection of Commercial Street and Beach Street. The rail will be installed in a newly acquired railroad corridor with a typical width of 52 ft and will contain a runaround track near its midpoint. Two timber grade crossings and underdrains will be installed within the corridor.

Second, the Work includes site/civil improvements immediately west of the existing Terminal in an area approximately 18 acres in size. Site improvements include grading, drainage, lighting, security features, and electrical provisions for refrigerator containers.

Third, the Work includes the construction of a concrete loading slab of approximate dimensions 750 ft long by 75 ft wide. The slab will be steel reinforced with a 4-ft high concrete barrier topped by a 6-ft high palisade security fence. The street-side façade of the wall will contain recessed panels with textured patterns for aesthetic purposes. Lights and standpipes will be installed along the top and inside face of the wall, respectively.

Fourth, the Work includes modifications and improvements to Commercial Street. More specifically, the Work includes signalization of the Commercial Street intersection at Beach Street, street paving and striping for approximately 1,650 ft of the roadway; construction of a multi-use trail on the north side of the street comprised of a 12-ft wide brick sidewalk and an 8-ft wide tree-lined esplanade; crosswalks, and landscaping.

Finally, the Work includes repairs and replacements to the fender system of the waterfront pier within the existing terminal. Several fender panels will be replaced with steel closed-box panels faced with a UHMW wearing surface. Other panels to remain will be repaired with new and salvaged UHMW elements.

Plans

The Contract Drawings are hereby incorporated into this project and are referred to as the Plans. They bear the general title "Portland International Marine Terminal, Existing Laydown and Connecting Corridor Connection Project," WIN 022809.20". The right is reserved by the Resident to make such minor corrections or alterations in the Plans as he deems necessary without change in the unit prices on the Schedule of Bid Prices of the Proposal.

SPECIAL PROVISION
SECTION 101
CONTRACT INTERPRETATION
(Definitions)

101.2 Definitions

This Subsection is added by inclusion of the following:

Terminal Manager:	Maine Port Authority. Contact: Patrick Arnold
New Yard, LLC:	Five-acre lot located immediately west of the project site.
Port Operation Area:	The existing 13-acre site located beneath and east of the Casco Bay Bridge and defined by the existing 8-ft high barbed-wire security fence. This area, which is also known as the Terminal, is designated as an MTSA 105 regulated site under the jurisdiction of Homeland Security. Workers entering this area must have TWIC credentials or must be escorted by someone with TWIC credentials.

SPECIAL PROVISION
SECTION 102
BIDDING
(Pre-Bid Meeting)

The following Subsection is added:

102.3.1 Pre-Bid Meeting

A mandatory pre-bid meeting will be held at the Portland International Marine Terminal on Thursday, July 24, 2014 at 1:00 p.m. The meeting will be held within the port office building located at 460 Commercial Street in Portland, Maine where the project will be presented to all Bidders. A walk-through of the project site will be provided. The pre-bid meeting is deemed mandatory to ensure that all Bidders fully understand the specifics of the project. Only the General Contractors (GC) who are present at the meeting will be allowed to bid. Subcontractors do not need to be present to provide bids to the GC.

SPECIAL PROVISION
SECTION 102
BIDDING
(Acknowledgement of Bid Amendments)

The following Subsection is added:

102.7.3 Acknowledgement of Bid Amendments

It is the Bidder's responsibility to check for all Amendments to the Bid Package prior to submitting their Proposal. The Contractor's Proposal must be accompanied by a completed Acknowledgement of Bid Amendments form located in this project Bid Book.

SPECIAL PROVISIONS
SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES
(Staging Area)

104.3.15 Contractor's General Authority and Responsibilities

This Subsection is added by inclusion of the following:

The Contractor staging areas shall be located within the Project Site immediately west of the existing Terminal as shown on the Contract Drawings. Additional staging areas may be available at the approval of the Resident, but must not interfere or obstruct the Commercial Street driveway, the Unitil/NGL corridor, the MaineDOT Bridge Maintenance Building access way, nor the existing and proposed New Yard access way along the waterfront. The Resident shall coordinate with the Terminal Manager prior to approving additional staging areas.

The staging area shall also accommodate the Contractor's field office without adversely affecting the aforementioned access ways. The Contractor shall coordinate with the Terminal Manager and with approval of the Resident to ensure that the staging area location is of sufficient size to accommodate all field offices, equipment, and delivered materials.

For the construction of the railroad corridor between Cassidy Point Drive and the proposed Terminal Entrance, the right of way within the project limits owned by MaineDOT shall be used for a Contractor staging area provided the existing railroad tracks are not fouled and do not impede train operations by Pan Am Railways. Other sites along the corridor may also be designated as Contractor staging areas by the Resident. The railroad corridor will be occupied for a short period of time by the New Yard LLC contractor in order to complete the installation of utility sleeves. Once delivered and accepted by the Contractor, stockpiled materials become the responsibility of the Contractor.

The MaineDOT will also have a field office trailer for this project, which shall be placed in close proximity to the Contractor's field office.

SPECIAL PROVISION
SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES
(Workers and Equipment)

104.3.4 Workers and Equipment

In addition to the standard experience requirements associated with a roadway, site, and signalization project, the Contractor shall employ for the duration of the contract, a superintendent who shall be dedicated solely to this project and who shall also have railroad maintenance and construction field supervisory experience. The following additional specific railroad specific categories shall include:

1. Railroad track construction;
2. Railroad track rehabilitation;
3. Cross tie installation;
4. Surfacing and lining, including special track work;
5. Special trackwork construction and installation.
6. Grade crossing installation.
7. Track removal.

The superintendent shall have a complete understanding of all track machinery necessary to accomplish the work specified. The Contractor shall furnish written evidence of the proposed superintendent's qualifications including a list with details of the most recent projects supervised. The prosecution of this project will comply with existing FRA safety standards and guidelines, AREMA recommendations and MaineDOT specifications. In the event of conflict, the more stringent criteria will govern.

The Contractor shall furnish an itemized list of all equipment to be used on this project, including:

1. Type of equipment (i.e. switch tamper, etc.);
2. Make, model and date of manufacture;
3. Ownership;
4. Location where equipment may be inspected by MaineDOT personnel prior to Contract award.

A specific track equipment requirement of this project shall be the use of a 16 tool automated, vibratory track tamper/liner during final contractor surfacing. This machine must be operated with a ballast regulator equipped with a mechanical broom.

Prior to beginning of work, the Contractor will be required to submit a prepared work plan detailing general construction procedure to meet track work requirements and tolerances specified in project specifications. The work plan shall include descriptions and sketches of the following:

1. Construction activities, sequence and duration
2. Material handling procedures (outline)
3. Handling and placing ties
4. Rail handling and installation
5. Handling and placement of ballast
6. Various types of equipment to be utilized

A specific requirement of this project shall be to phase the work to allow operation of the railroad as required and defined in Section 104, Utility Coordination, and Section 107, Time, of these Special Provisions.

Trackwork must also be coordinated with an NGL Supply, LLC representative and with all site work including earthwork, preparation of track bed, culvert construction, and slope stabilization.

SPECIAL PROVISION
SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES
(Progress Meetings)

104.4.3 Progress Meetings

This Subsection is amended by the addition of the following:

Progress meetings shall be held weekly or at an interval deemed necessary by the Resident. The time and location of the meetings shall be determined by the Resident; this time and place shall be agreeable to all parties: the Resident, the Terminal Manager, and the Contractor. As the project progresses, the Resident may reduce the frequency of the meetings.

SPECIAL PROVISION
SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES
(Utility Coordination)

UTILITY COORDINATION

The contractor has primary responsibility for coordinating their work with utilities after contract award. The contractor shall communicate directly with the utilities regarding any utility work necessary to maintain the contractor's schedule and prevent project construction delays. The contractor shall notify the resident of any issues. The Contractor shall plan and conduct his work accordingly.

MEETING

A Preconstruction Utility Conference, as defined in Subsection 104.4.6 of the Standard Specifications **is** required.

GENERAL INFORMATION

These Special Provisions outline the arrangements that have been made by the Department for utility and/or railroad work to be undertaken in conjunction with this project. 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.

SPECIAL NOTE TO CONTRACTOR

The work outlined in this specification may be time sensitive. The Contractor is encouraged to review this document completely and also reference the 105 and 107 specifications for more clarification. The Contractor is responsible for the coordination needed to meet the timeline needed to accomplish what is outlined in this and other documents.

Utilities have been notified and will be furnished a project specification.

Overview:

Utility/Railroad	Aerial	Underground	Railroad
Time Warner Cable	X		
Central Maine Power Company	X	X	
Fairpoint	X	X	
MaineCom Services	X		
Oxford Networks	X		
MDOT		X	X
Portland Sewer District		X	
Portland Water District		X	
Pan Am Railways			X
Unitil		X	
Portland Drainage		X	

Temporary utility adjustments are **not** anticipated. If temporary relocation becomes necessary, sufficient time will need to be allowed prior to the construction for all required temporary relocation.

If the **Contractor** feels temporary relocation is necessary they must notify the **Department** of their concerns prior to construction and extra time may be required.

The Contractor shall not excavate around any pole, street light or guy anchor to a depth that compromises the stability of the pole.

Utility working days are Monday through Friday, conditions permitting. Times are estimated on the basis of a single crew for each utility. Any times and dates mentioned are estimates only and are dependent upon favorable weather, working conditions, and freedom from emergencies. The Contractor 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 notified, by the Contractor, at least three weeks in advance before work in any area is to commence.

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

Unless otherwise specified, any underground utility facilities shown on the project plans represent approximate locations gathered from available information. The Department does not 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.

The Contractor shall plan and schedule his work in such a manner that the utilities that are located on this project will not be harmed, damaged or impacted in anyway. The Contractor shall make contact with the Utility directly when utility work is needed. The Contractor and Utility will coordinate their work plans in an effort not to interfere with each other's progress or the completion of the project.

New Yard LLC, through its agreement with the MaineDOT, will be installing utilities from Commercial Street to their facility across the rail corridor within the utility easement. These utility installs are off MaineDOT property and not part of the Contractor's work. The Contractor will need to coordinate their rail corridor work and Commercial Street improvements with New Yards contractor so not to interfere with each other's schedule. The contact for **New Yard LLC** will be determined at the pre-construction meeting held prior to the start of the job.

AERIAL

The following list is the proposed aerial utility adjustments that are anticipated as part of this project. If the old poles are not removed prior to paving the contractor shall have no claim against the department. All above ground utility locations (hydrants, poles, guys, etc.) will be reviewed for compliance with the Department's Above Ground Pole Policy following the completion of the paving operation. Any above ground utility locations not meeting the Department's Above Ground Pole Policy will require relocation to the proper offset.

The **Contractor** will provide an initial layout (stakes/nails) of the pole locations based on the pole list that is in the project proposal/specification book (below). The Utility will then place their own stakes and minor alignment changes may be needed. Once staked the poles should be checked by the Contractors GPS for any possible conflicts with curb or drainage. The **Contractor** is then responsible for maintaining and or replacing the pole location stakes/nails until the poles are set by the respective utilities. 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 utilities.

Pole #	Existing Station offset	Proposed Station-offset
63	209+86, 34.7L	209+86,37.8L
62	210+86.6, 33.2L	210+78.5, 38.2L
60	112+11, 40.1L	Push Pole added to existing
58	213+86.7, 23.7 R	213+72.42, 54.15R

There are 4 utilities that currently occupy these poles that will need to be relocated. Each company will need up to 1 week to complete their transfers. The Contractor shall communicate with these companies and plan accordingly.

Included in the bid documents the Contractor will be eliminating the existing aboveground three phase lines which serve New Yard, LLC at the location near the Unitil fence line (see Sheet C08 and Electrical drawings).

New **Traffic Signals** will be installed as part of this project. These bases, poles and masts will be installed close to existing wires. The Contractor shall discuss signal work, with the Resident, prior to ordering and installation. Adjustments can be made to the communication cables if needed but wires may run under the mast arm if other options are not available.

All above ground wire that currently exists over the site, with the exception of portions of the Unitil gated yard, will be removed. There is one above ground wire within the Unitil site in the area of the New Yard access way that will be removed and placed underground. The Contractor will need to work with CMP and Fairpoint to schedule the removal of these wires. Overhead wire removals cannot take place until the proposed underground power is connected to the grid. The power outage for this cutover will be communicated by the Contractor to the users and agreed upon at least two weeks prior to shut down. For more information please reference Sheets E01, E02, and E03 in the Contract Plans.

SUBSURFACE

There are many underground utilities and drainage pipes that run throughout the project. These consist of power, water, sewer, gas, communication cables, and storm drains. The Contractor shall, through the Digsafe process and utility contacts provided within, determine where these utilities currently exist prior to staking for base locations, installing drainage, electrical and water installation.

All underground Utilities, in cooperation with the MaineDOT have tried to eliminate any conflict to new drainage, road profile and curbing during design. The Contractor is urged to use the test pit pay item provided or equipment rental (Resident's choice), in advance, to determine if a conflict exist and a field re-design is necessary. Contractor should complete these conflict checks before ordering drainage materials. It is the intent of the department to make field changes as necessary to not impact existing utilities. The Contractor should expect some delays when in these areas and extra time should be allowed. No additional time or money will be granted for redesign.

There are many underground utilities and drainage pipes that run throughout the project. These consist of water, sewer, and storm drains. The Contractor shall, through the digsafe process, determine where these utilities currently exist prior to staking for **mast pole signal bases**. Once locations of the future signal structure bases are determined the Contractor may have to work in close proximity to these utilities. It is the intent of the Department to make field changes, as much as possible, so not to impact existing utilities. The Contractor should expect some delays when in these areas and extra time should be allowed. No additional money will be granted for redesign or Contractor delays. The Contractor shall plan and schedule his work in such a manner that the utilities that are located on this project will not be harmed, damaged or impacted in any way. The Contractor and Utility will coordinate and communicate their work plans in an effort not to interfere with each other's progress or the completion of the project. This work will be done by the Contractors Superintendent and the Utility contact listed below.

The **Portland Fire Department** has a fire alarm cable that runs under and aboveground within the project limits. The **Portland Fire Department** will require 3 working days notification to mark their underground line. The **Portland Fire Department** does not expect this line to interfere with construction but if encountered the Contractor will be expected to work around their line when possible. The contact for the **Portland Fire Department** is **Ben Diaz** at 874-8489.

The **City of Portland** has underground facilities in the form of highway overflow storm drains that run across the project. **Please reference the Contract Documents, Sheets C08 and C09, and Section 603 of the Special Provisions for** work to be completed on this pipe. The contact persons shall be **David Margolis-Pineo** at 874-8850.

The **Portland Water District** operates a water distribution within Commercial St. This system provides water to the current site for fire protection. There are adjustments to be made to the current water main entering the site. This work must be done within a specific time line so it does not leave the current facilities without fire protection for long. **Please reference Contract Plans, Sheets C07, C08, and C09,** for more details. The contractor shall provide at least a five (5) working day notice before commencing any work in these areas. If the scope of work changes in these areas the Contractor must contact the Water District before executing the change. The contact for the **Portland Water District** is **Christian Rodriquez** at 774-5961.

The **Portland Water District** has an existing hydrant along Commercial Street that needs to be relocated for sidewalk expansion. The Portland Water District will be doing this relocation with their own forces. Similar to utility poles, the new hydrant location will be laid out and staked by the Contractor. The Contractor shall schedule this work with the District. The contact for the Portland Water District is Christian Rodriquez at 774-5961.

The **Portland Sewer District** operates a 48" gravity main system (sewer interceptor) within the limits of the project. This main will be lined as part of the contract as well as adjusting the manholes to grade. The Contractor and Utility will coordinate and communicate their work plans in an effort not to interfere with each other's progress or adversely affect sewer flow. It is not the intent of the Department to relocate these sewer lines. **Please reference the Contract Documents, Sheets C08 and C09, and Sections 603, 801 and 802 of the Special Provisions for** work to be completed on this pipe. The contact for the **City of Portland** is **John Emerson** at 874-8468.

Central Maine Power operates an underground high voltage power line that is incased in a metal oil filed sleeve that runs parallel to the tracks. This line is not to be damaged or disturbed in any way. The pipe is surrounded with special thermal sand which must be replaced if disturbed. When excavating within close proximity of the transmission line, the Contractor shall contact CMP at least 2 weeks prior to excavation to request a Do Not Reclose (DNR) on that particular section of the transmission line. The DNR is a safety precaution in case the transmission line is struck. Also, prior to excavating within 20 ft of

this line the Contractor must notify CMP, at least 72hrs in advance, so they may have on site representation if they choose and set up the proper safety procedures. Any work within 3 ft in any direction around this pipe must be done by hand. Work which will occur in the vicinity of this line includes general site excavation and subbase placements, concrete slab construction, underdrain installation, fence posts installation, meter pit installation, and other miscellaneous utility installations as shown on the Contract Plans. This power line cannot be shut down. Contractor shall expect work in this area to be slow and no extra time or compensation can be requested. Any extra cost associated with this line shall be considered incidental to the drainage items. The pipe encasing the underground line is filled with pressurized mineral oil (on the order of 1200 gallons in the system at approx. 200 psi). While the system does a low-pressure cut-off system in the pump house at Sewall Street S/S, a considerable amount of mineral oil will escape from the line in the event of a breech. The Contractor shall have a Spill Control Plan in place with this in mind. The Contact for this line will be **Arthur Brown** at 626-9562. **Please reference the Contract Plans and Sections 304 and 703 of these Special Provisions for** work associated with the 115 KV line.

Central Maine Power operates an underground distribution line that runs down Commercial Street. This duct bank will be in close proximity to the signal base construction as well as drainage installation. Contractor shall expect work in this area to be slow and no extra time or compensation can be requested. Any extra cost associated with this line shall be considered incidental to the drainage items. The contact for **CMP** is **Gary Hawkes** at 318-6995.

Unitil Gas Co will be relocating its 10-inch steel gas line that currently exist within the Commercial Street ROW for about 1,000 ft from the NGL entrance running southerly. Unitil will install this line after frost is out and prior to April 15, 2015. Contractor shall communicate with Unitil about this work and coordinate their activities so as not to interfere with each other's operations. If the scope of work changes in these areas the Contractor must contact **Unitil** before executing the change. The Contact for **Unitil** is **Joe Renda** at 541-2568.

Unitil Gas Co. operates a gas regulating station within the existing fenced area adjacent to the Project Site. This station must stay operational at all times. There are 5 gas lines that run into the site, from Commercial St to the station. The contractor will be working in close proximity of these lines and extra time should be considered during bidding. No extra time or compensation will be granted for working around these lines.

The **Pan Am Railways** currently operates the rail line from Cassidy Point to the current NGL load out facility. The contractor shall be aware that the project site, known as Yard 8, will be used for railroad activities throughout the duration of the project. Work will need to be coordinated and planned as follows to maintain the existing railroad operation.

Pan Am Railways Yard 8 and various connecting tracks in the Project Area are presently operated for freight service on a daily basis. Freight service to NGL Supply, LLC is normally operated nightly, 7 days/wk.

At the start of each work day and prior to Contractor forces occupying the right-of-way, the Contractor superintendent will contact the NGL facilities Manager and discuss proposed Contractor operations and anticipated train activity. The Contractor must install a derail device (approved by Pan Am Railways) to the rail at an agreed upon location near the Cassidy Point road crossing. This device will serve as railroad protection during daytime construction and must be removed to accommodate the NGL nighttime deliveries. At no time shall any existing rail be disturbed so they cannot be used safely in the evenings.

Track outages** on the Yard 8 tracks, for the purpose of making connections to existing track, may be arranged in advance by the Contractor through coordination with the Pan Am Railways, MaineDOT, NGL Supply, LLC, and the Resident. There will be a 2 week window for a track outage in July 2015 for the new

track cut in work to existing. These consecutive two weeks will need to be discussed and agreed upon by the Contractor, NGL facilities Manager and Pan Am Railways. At least three weeks' advance notice shall be given for requests to take the Yard 8 tracks out of service for this work.

** *A track outage is to render the track impassible in any way such as removal of rail, thermite welding or any activity that would not allow passage of a train or track car.*

At the end of each work day, the Contractor shall inspect the work area to determine if the project area is safe for the passage of trains and derailer has been removed. The Contractor shall be required to keep sufficient personnel, materials and equipment at the site to correct any situation deemed necessary for safe train passage until the work area conditions are acceptable to Pan Am Railways and the MaineDOT coordinator. If in the opinion of the Pan Am Railways, the Resident, or the MaineDOT, the site is not suitable for train operations due to conditions caused by the Contractor, the Contractor shall correct the conditions as directed at no additional cost to MaineDOT or Pan Am Railways or, if corrective action is taken by Pan Am Railways or MaineDOT, such cost shall also be reimbursed by the Contractor

The Contractor will be required to continuously maintain the operation of all through right-of-way systems. These include, but are not limited to; grade crossing warning systems, grade crossings, utility crossings and drainage systems.

New Yard, LLC will be adding utility sleeves across the railroad corridor as shown on the plans. The contact for New Yard will be determined at the pre-construction meeting prior to the start of the job.

Pan Am Railways, Amtrak, and MaineDOT have an existing agreement with the American Association of Private Railroad Car Owners (AAPRCO) to deliver and park approximately thirty five (35) private rail cars on the Yard 8 tracks from September 21, 2014 to September 25, 2014. The contractor shall coordinate with all parties noted to maintain this operation. See Section 107 of these Special Provisions for more information.

It will be very important that the Contractor work and make contact directly for scheduling of their work. The contact for the **Pan Am Railways** is **Luke McCaul** at (978) 663-1255. The contact for **NGL** is **Kevin Fitzgerald** at 252-3970.

The **Maine Department of Transportation** operates a bridge open warning device in the project. The contact person shall be **Ron Cote** at 624-3602 for location and marking of the underground facilities. Dig safe may not mark these buried lines. The contractor shall provide at least a five (5) working day notice, to the Department for marking, before commencing any work in these areas. The contact for anything related to the Casco Bay Bridge operations is **Vincent Miniutti** at 592-2846.

The **City of Portland** operates and maintains traffic signals in Portland. When the Contractor sends their submittals to the State for approval, on the proposed signals settings, they shall include the City. The contact for the City of Portland Traffic is **Kevin Thomas** at 756-8291.

UTILITY SIGNING

Any utility working within the construction limits of this project shall ensure that the traveling public is adequately protected at all times. All work areas shall be signed, lighted, and traffic flaggers employed as determined by field conditions. All traffic controls shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices for Streets and Highways, as issued by the Federal Highway Administration.

SAFE PRACTICES AROUND UTILITY FACILITIES

The Contractor shall be responsible for complying with M.R.S.A. Title35-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 distribution electrical line or twenty (20) feet of transmission; the Contractor shall notify the aerial utilities as per section 757 of the above act.

DIG SAFE

The Contractor shall be responsible for determining the presence of underground utility facilities prior to commencing any excavation work and shall notify utilities of proposed excavation in accordance with M.R.S.A. Title 23 §3360-A, Maine "Dig Safe" System. The contractor is also reminded that all utilities on the project may not be members of Dig Safe.

MAINTAINING UTILITY LOCATION MARKINGS

The Contractor will be responsible for maintaining the buried utility location markings following the initial locating by the appropriate utility or their designated representative. **The Contractor shall communicate with all utilities directly using the contact information provided below. Utility Coordinator will be available if communication problems occur.**

Utility Contacts	Coordinator	Phone
State of Maine	Ron Cote	624-3602
Central Maine Power Company	Gary Hawkes	828-2832
Central Maine Power-Transmission	Arthur Brown	626-9562
Fairpoint	Marty Pease	797-1911
Time Warner Cable	Don Johnson	253-2291
Portland Water District	Christian Rodriquez	774-5961
Maine Com Services	Mark Curtis	441-9532
Portland Sewer District	John Emerson	874-8468
Oxford Networks	Scott Crocket	333-3471
Pan Am Railways	Luke McCaul	(978) 663-1255
Unitil	Joe Renda	541-2568
City of Portland-Traffic	Kevin Thomas	756-8291
City of Portland-Fire Alarm	Ben Diaz	874-8489
Casco Bay	Vincent Miniutti	592-2846
NGL	Kevin Fitzgerald	252-3970
City of Portland-Drainage	David Margolis-Pineo	874-8850

SPECIAL PROVISION
SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES
(Earthwork)

The following table is an approximation based on limited field data and shall be independently verified by the Contractor at the onset of the project.

COMMON EXCAVATION FOR ESTIMATE			Qnty (CY)		Total (CY)
COMMON EXCAVATION (COMM/BEACH & DRIVES)			2,791		
COMMON EXCAVATION (RAIL CROSS SECTIONS)			2,532		
COMMON EXCAVATION (CHASSIS YARD)			8,741		
GRUBBING IN FILL (RAIL)			813		
TOTAL COMMON EXCAVATION					14,877
FILL FOR BORROW CALCULATIONS					
COMMON FILL (RAIL)			162		
COMMON FILL (CHASSIS YARD)			1,482		
GRUBBING IN FILL (COMM ST.)			813		
TOTAL FILL					2,457
AVAILABLE COMMON EXCAVATION FOR BORROW CALCULATIONS					
(1) TOTAL COMMON EXCAVATION					14,877
DEDUCTIONS:					
GRUBBING IN CUT (CHASSIS YARD)			1,226		
GRUBBING IN CUT (SLAB)			1,350		
GRUBBING IN CUT (RAIL)			278		
GRUBBING IN CUT (COMMERCIAL ST.)			281		
GRUBBING IN FILL			813		
PAVEMENT SALVAGE IN CUT (CHASSIS YARD)			122		
PAVEMENT SALVAGE IN CUT (COMMERCIAL ST.)			388		
(2) TOTAL DEDUCTIONS					4,458
TOTAL AVAILABLE COMMON EXCAVATION (1) MINUS (2)					10,419
TOTAL AVAILABLE STRUCT. EXCAVATIONS (GAS, SD, UD)					1,820
TOTAL AVAILABLE STRUCT. EXCAVATIONS (SLAB)					7,750
TOTAL AVAILABLE NON-ROCK EXCAVATION					19,989
COMPUTATION FOR COMMON BORROW FOR ESTIMATE					
(3)TOTAL FILL					2,457
TOTAL AVAIL. NON-ROCK EXCAV.	19,989	x 0.85	16,991		
(4)TOTAL AVAILABLE EXCAVATION				=	16,991
BORROW NEEDED = TOTAL FILL MINUS TOTAL AVAILABLE EXCAVATION					-14,534
IF NO BORROW IS NEEDED, SURPLUS MATERIAL = AVAILABLE EXCAVATION MINUS					
TOTAL FILL, PLUS TOTAL WASTE MATERIAL TO BE WASTED					14,534
SURPLUS MATERIAL =	**14534**	**CY**			

SPECIAL PROVISION
SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES
(Coordination with Terminal Manger)

104.4.11 Coordination with Terminal Manager

This Subsection is amended by the addition of the following:

The Portland International Marine Terminal (IMT) is an active container terminal with various container movements anticipated to occur on a weekly basis. Successful completion of the proposed project will require coordination between the Contractor and the Terminal Manager on a weekly basis via project meetings to be held on-site. At these meetings, the Contractor will be required to provide an update on the progress of the project and will make requests to work within the Port Operations Area, or to perform repairs to the existing pier fender system. In a similar manner, the Terminal Manager will provide a weekly vessel schedule to the Contractor and will advise when the existing pier is not available, or if the temporary moveable fencing needs to be relocated along the pier or along the existing fence line boundary (located beneath the Casco Bay Bridge). The optimal location of the proposed temporary moveable fencing shall be positioned so that both port operations and construction activities can occur simultaneously without interruption or needing adjustments.

The Contractor is encouraged to follow the location of the two regularly scheduled Eimskip vessels to prepare and schedule its construction activities. The two vessels are the Skogafoss and the Reykjafoss and the location of both can be monitored at the following website by clicking on the Vessel Locations icon in the middle of the webpage: http://Eimskip.is/en/pages/default.aspx

Container operations are typically routine: upon arrival of a vessel, the mobile harbor crane positions itself on the pier and will offload containers non-stop until the containers have been moved to their final position within the Terminal. Containers may be temporarily placed on the pier where large reach-stacker machines may pick the containers and carry them to the Container Storage Area, the containers may be placed directly on chassis and brought to their final stacking location within the Terminal. Within approximately twelve hours, the vessel is underway and waterfront activity subsides.

The Contractor is advised that other vessels may berth at the pier during construction. For these irregular vessel calls, the Terminal Manager will provide at least one day notice to the Contractor, under which conditions any and all costs related to the vessel berthing and adjustments to the construction work shall be non-compensable.

The Contractor is also advised that while there is little available vacant space for Contractor storage within the Terminal area, the Project Site itself, most of which lies outside of the Container Terminal, is solely designated for Contractor use. Within the Terminal, the Contractor will require special access through the use of TWIC cards as described in Section 105 of these Special Provisions.

Emergency Vehicle Trips:

There may be occasion during construction for access by emergency personnel and vehicles to the Terminal area. Should this situation arise, the Contractor will suspend work immediately within the area to allow for safe and timely passage of emergency vehicles and personnel. The cost associated with this shall be considered incidental to the Contract and no additional compensation will be made.

Construction Schedule:

The Contractor will be required to submit a detailed written construction schedule. This schedule will be monitored closely and shall be updated weekly during construction meetings. When the Contractor is

prepared to commence work on site, in addition to the construction schedule, the Contractor shall provide on a regular basis a written day by day summary of the Construction activities that will occur for the upcoming three week period. This summary will also highlight activities that will have an impact on the use of facilities in the construction and adjacent areas.

Pollution Control:

All operation carried out by the contractor during the life of this contract shall comply with provisions and regulations for the control of air and noise pollution. The contractor shall make all applications and notices and comply with all appropriate provisions of the rules and regulations of Federal, State, and Local Agencies. The Contractor will also need to closely monitor debris and trash that is generated on site and ensure that it is properly contained and maintained. Trash must be removed regularly and as a minimum, at least weekly.

Construction Management Plan:

The Contractor shall submit a Construction Management Plan to the Resident for review and approval. The Resident will forward the Plan to the City of Portland for their files. The Contractor shall anticipate modifications to the Construction Management Plan based on comments from either the Resident or the City of Portland.

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Contractor Access to Restricted Areas)

105.11.1 Contractor Access to Restricted Areas

This Subsection is amended by the addition of the following:

The Contractor is advised that the Terminal is identified as a Marine Transportation Security Act (MTSA) 105 site defined by Homeland Security, and is essentially comprised of two separate container storage areas with different levels of restricted access. The first area is designated the International Container Storage Area, and comprises approximately 8 acres of the terminal site on the east side of the terminal. The second area is designated the Domestic Container Storage Area and comprises approximately 5 acres of the Terminal site on the west side of the Terminal.

Upon commencement of the project, the Contractor will establish its working areas with the newly acquired Project Site which lies immediately west of the existing Terminal. Once the Project Site is established, the Contractor will not be allowed to breech the Terminal's existing fencing perimeter at will in order to work in the restricted zones. Work by the Contractor in the restricted zone, namely the Port Operation Area, will be possible by the Contractor only on a scheduled basis and by employees with the proper security clearance, such as with TWIC Cards (Transportation Worker Identification Credential). Scheduling by the Contractor should be made on a weekly basis to ensure that access can be readily granted by the Terminal Manager. Similarly, the Terminal Manager will notify the Contractor on a weekly basis of scheduled vessel activity so that both container operations and construction work can occur simultaneously and without interruption.

The following activities will occur within the Port Operation Areas and therefore will require that the Contractor plan its efforts accordingly:

- Fence and gate removals and installations;
- Light pole removals and installations; and
- Gravel and subbase installation.

The Contractor will be required to obtain the proper Port Security clearance for its employees and subcontractors to the extent that these employees will be required to work outside of the Project Site. To ensure compliance with MTSA 105 at all times, the Contractor shall assume that all of its intended employees who will be working on the project will be required to have security clearance to be present within these otherwise restricted zones, and will maintain on its person at all times the Port Security badges it receives from the Port Authority (at the discretion of the Authority). Employees will be required to keep badges on their person at all times and will be required to return the temporary badges upon completion of the project or the completion of their portion of the work. Employees shall adhere to the restrictions placed on such temporary access, and will be required to acknowledge a basic understanding of these requirements upon completion of a 15-minute presentation by the Terminal Manager. While the presentation is routine in nature, the importance of site security at an international waterfront facility will be emphasized. Contact information for TWIC cards and Port Authority badges will be provide to the Contractor upon commencement of the project.

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Summary of Project Requirements)

105.11.2 Summary of Project Requirements

This Subsection is amended by the addition of the following:

The Contractor is advised that this project occurs within a secured/restricted facility as determined by Homeland Security, and contains security equipment for both the Terminal and City of Portland which must remain functional at all times. In addition, the on-going operations of the facility require that certain construction activities occur in a predefined sequence to ensure uninterrupted public utility services such as water, sewer, gas and electricity, and most importantly, uninterrupted site security via CCTV cameras throughout the site. For this reason, a general summary of project requirements has been developed to highlight the various aspects of the project. The manner by which these project requirements shall be addressed by the Contractor are presented in each special provision contained herein, but other approaches may be suggested by the Contractor, which are subject to review and approval by the Owner.

A summary of the project requirements is summarized below:

Site Security:

- Contractor must maintain as operational the existing site security equipment within the Terminal at all times. This will require the establishment of electrical utilities and temporary systems prior to completion of the project.
- CCTV systems and the City of Portland's emergency operator system must remain functional at all times. Again, electrical provisions will be required to maintain CCTV and emergency operator systems.
- Galaxy Integrated Technologies of Brighton, Massachusetts is the contractor responsible for servicing and monitoring the security system for the Portland IMT and the City of Portland. The Contractor shall coordinate with Galaxy at the onset of the project.

Utilities

- Utilities within the Project Site must remain functional throughout the project, but may be permitted short lapses of functionality (no more than four hours at a time) with scheduled notice to the Terminal Manager, the Resident, Unitil, NGL, and the owners of New Yard, LLC. For this reason, water, sewer, gas, electric, and communication lines must be fully understood by the Contractor so as to minimize impact to the other entities and organizations affect by the outages to the greatest extent possible.
- The Contractor shall also notify the Portland Water District at least two weeks in advance of the installation of linings within the PWD's 48-inch sewer interceptor.
- The Contractors shall also notify the City of Portland Fire Department at least one week in advance of the time when fire hydrants at New Yard and/or Unitil/NGL are rendered out-of service as a result of water pipe installations. Water outages at New Yard, Unitil, and NGL shall be coordinated with those parties at least two weeks in advance and during the weekly project meetings.

Domestic/International Container Storage Areas – Port Operations Work Area

- Temporary fencing, which shall be used by the Contractor to establish the temporary extents of the Project Site, particularly beneath the Casco Bay Bridge during fence removals and

installations, as well as along the pier during fender system work, must be placed in a mutually agreeable location with the Resident and Terminal Manager in order to provide ample working space for port operations. The location of the temporary fencing may be shifted throughout the project as needed and on a short term scheduled basis, by either the Terminal Manager or the Contractor to accomplish specific task.

Cooperation with Local Businesses

- Businesses within 1,000 ft of the Project Site shall be notified by the Contractor at the onset of the project of the construction schedule and particularly the planned activities along Commercial Street. The Contractor shall notify each business via US Mail at least four weeks in advance of construction activities along Commercial Street, and the Contractor shall invite the owners/managers of said businesses to the weekly project meetings to ensure collaborative dialog between the Contractor and the businesses. See Section 107 of these Special Provisions for more details. At any time, the owners/managers of the local businesses may call a special meeting with the Contractor and the Resident to address any concerns that may arise during construction, and to ensure that mutually agreeable solutions are developed to the satisfaction of the Contractor and the owners/managers.

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Submittal Requirements)

105.7.4 Submittal Requirements

This Subsection is amended by the addition of the following:

At the onset of the project, the Contractor shall provide to the Resident a submittal log, which identifies the manner by which all submittals will be organized and referenced throughout the project. The Contractor shall update the submittal log on a weekly basis or to the satisfaction of the Resident. RFIs and other correspondence may be organized in a similar manner at the discretion of the Resident.

The Contractor shall make all submittals including but not limited to RFIs, Designs, Shop Drawings, and Working Drawings in electronic format via email and in PDF file format. All submittals shall be accompanied by a cover sheet, which identifies the submittal number, subject, and date. Revisions to submittals should maintain the original submittal number but receive a designation which indicates the submittal has been revised.

Submittals which require the review of the Engineer of Record will be reviewed in electronic format using red-line markups to easily identify comments, corrections, or revisions. Submittal reviews will be returned in electronic format only. If hardcopies are needed by the Contractor, it will be the responsibility of the Contractor to print hardcopies for its own use.

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Permit Requirements)

105.8.2 Permit Requirements

This Subsection is amended by the addition of the following:

The Contractor is required to identify and obtain permits for the various construction activities within the project. All necessary permits shall be identified, obtained, and paid for as incidental costs to the respective pay items by the Contractor.

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Historical Resources)

105.9 Historic and Archeological Considerations

Standard Specification 105.9 of the State of Maine Standard Specifications (Revision of December 2002) is deleted and replaced by this Special Provision.

The MaineDOT has conducted consultation for archaeological resources in accordance with Section 106 of the National Historic Preservation Act (16 U.S.C. 470f), the Regulation (36 CFR Part 800), and the 2004 Section 106 Maine Programmatic Agreement.

Maine Historic Preservation Commission (MHPC) concluded that excavation for the concrete loading slab adjacent to Commercial Street has the potential to encounter archaeological resources (remnants of the "C&O Canal"). The contractor shall allow a small team of archeologists to monitor the excavation and record features of the canal if/as they are exposed.

The following requirements are project specific:

- The contractor shall invite Maine Historic Preservation Commission Archaeology staff (Leith Smith, (207) 287-8304, leith.smith@maine.gov; or Art Spiess, 287-2132, Arthur.spiess@maine.gov) to the pre-construction meeting to coordinate excavation in the proposed 750-ft concrete loading slab area. Alternatively, the contractor shall contact MHPC at least on week prior to any work in the concrete loading slab area to coordinate monitoring of the excavation. Archaeologists shall be permitted to be on site during the period of excavation. Delays in excavation of this area caused by archaeological study shall be no more than *one* 48 consecutive-hour period, or *two* separate 24- consecutive-hour periods. Any and all costs related to the archeological delay period(s) shall be non-compensable.

The following requirements are general requirements for all projects:

- *If the Contractor or any subcontractor discovers any object of potential historic archaeological or other historic interest (outside of the concrete loading slab adjacent to Commercial Street described above), the Contractor will notify the Resident immediately and work that could disturb the object will immediately cease and will not resume until investigation of the object and related deposits have been completed and if necessary recovered. Although not likely, potential deposits of significance may include burial grounds or campsites of Native Americans that reveal the bones of the dead and implements. Also the exposure of marine fossils or shells found mainly in clay deposits, as well as exposure of dumps in landfill areas, abandoned campfire sites, and building foundations.*

- *Any delay of the Contractor's operations resulting from unexpected discoveries outside of the concrete loading slab adjacent to Commercial Street will be analyzed in accordance with MaineDOT Standard Specification Section 109.5 – Adjustment for Delay, except that in no event will such delay be a compensable delay.*

- *The Contractor is notified of a Maine Statute, 27 MRSA §371, which states that artifacts, specimens, and material are public property by virtue of having been found on, in, or beneath State controlled lands, and places ownership of the same in the State of Maine.*

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).

SPECIAL PROVISION 105
CONSTRUCTION AREA

A Construction Area located in the **City of Portland** 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 city of Portland, Cumberland County on US 1A/ West Commercial Street.
(b) The section of highway under construction in the city of Portland, Cumberland County on Beach Street.
(c) (US 1A/ West Commercial Street) station 200+53.81 to station 217+25.00 of the construction plus approaches.
(d) (Beach Street) station 10+00.00 to station 11+21.00 of the construction 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 **City of Portland** 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
SECTION 107
TIME

107.1 Contract Time and Contract Completion Date

This Subsection is amended by the addition of the following:

Work shall commence on or before **September 1, 2014** at the discretion of Department, and all work shall be completed on or before **August 31, 2015**.

107.3.2 Night Work

This Subsection is amended by the addition of the following:

The Contractor shall be aware of the close proximity of the local residences. The Contractor shall conduct operations so as not to generate loud noises greater than 80 dB within 500 ft of any building used for residential purposes between the hours of 10:00pm and 7:00am unless otherwise approved. Local requirements concerning noise may impose additional restrictions and must be complied with by the Contractor. See Section 17 - 18 of the City of Portland Ordinance.

For this project, the MaineDOT through its State Traffic Engineer has issued a Taming Certificate dated May 21, 2014 which states the following:

> **The AADT is 20,000. All lane closures on Commercial Street shall only be allowed at night from 7pm to 7am, Sunday night through Friday morning. At a minimum, one 11-fo0t lane of alternative one way traffic shall be maintained.**

107.4.2 Schedule of Work Required

This Subsection is deleted and replaced with the following:

Within 21 Days of Contract Execution and before beginning any on-site activities, the Contractor shall provide the Department with its Schedule of Work. The Contractor shall plan the Work, including the activity of Subcontractor's, vendors, and suppliers, such that all Work will be performed in Substantial Conformity with its Schedule of Work. The Schedule must include sufficient time for the Department to perform its functions as indicated in this Contract, including QA inspection and testing, approval of the Contractor's TCP, SEWPCP, and QCP, and review of design submittals, product data, and working drawings.

At a minimum, the Schedule of Work shall include a bar chart which shows the major Work activities, milestones, durations, and a timeline. Milestones to be included in the schedule include: (A) start of Work, (B) beginning and ending of planned Work suspensions, (C) Completion of Physical Work, and (D) Completion. If the Contractor Plans to Complete the Work before the specified Completion Date, the Schedule shall so indicate.

Any restrictions that affect the Schedule of Work such as paving restrictions must be charted with the related activities to demonstrate that the Schedule of Work complies with the Contract.

The Department will review the Schedule of Work and provide comments to the Contractor within 20 days of receipt of the schedule. The Contractor will make the requested changes to the schedule and issue the finalized version to the Department.

107.4.3 Project Payment Schedule

This Subsection is amended by the addition of the following:

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.

107.4.6 Prosecution of Work

The following activities must be performed by the Contractor in accordance with the dates specified:

Commercial Street Work

▪ Final surface pavement courses throughout Commercial Street and drive entrances shall occur after the date specified, and the work shall be coordinated with Unitil's plan to relocate the 10-inch gas main adjacent to the Commercial Street ROW line.	After May 15, 2015

Railroad Work

▪ Railroad work between Stations 49+00 and 62+00 may commence at any time and will progress during the working hours stated in these Special Provisions.	Contract Dates
▪ Railroad work at Cassidy Point Road (Station 40+00 to Station 49+00) and at Unitil/NGL (Station 62+00 to Station 68+00) for the connection between new and existing railroad tracks (turnouts and the immediate vicinity thereof) must occur after the specified date, and must occur during the two-week work window for such connections as agreed by NGL and the Contractor. The Resident and the Contractor shall both coordinate the track connection work with NGL.	After June 30, 2015 (two-week window)
▪ Railroad track removals within the MaineDOT corridor cannot be performed until after the specified date, and must occur during the two-week work window for such connections as agreed by NGL and the Contractor. Track which services the NGL facility must be useable each night up to the date specified.	After June 30, 2015 (two-week window)
▪ Railroad track mainline work must be completed and fully functional by the date specified. This work is of paramount importance to the NGL operations, and the mainline track must be completed, fully installed, and inspected at the time of completion.	Prior to July 14, 2015 (or upon completion of the two-week window)

Sewer Interceptor and CSO Work

▪ The Portland Water District's sewer interceptor shall be lined, and the City of Portland's CSO shall be slip-lined/lined during low-flow periods between the months specified. Other dates may be allowed by the PWD, the City, and/or the Resident, and will require approval from those entities/agencies prior to commencement of work.	Sept. - Dec. 2014

Electrical Work associated with New Yard LLC

▪ Removal of the 3-Phase electrical service which feeds New Yard LLC between the New Yard LLC utility pole to the utility pole on the northern side of Commercial Street. Remove also the 60ft utility pole (currently in the middle of the proposed concrete slab). The pole will become the property of CMP unless otherwise directed by the MaineDOT. Coordinate the work with New Yard, LLC and CMP.	After August 31, 2014.
▪ Electrical work within the Commercial Street driveway entrance including the proposed New Yard LLC temporary access way through the Unitil/NGL corridor shall be completed by the date shown. Work includes the installation of underground electrical lines, pole installations, pole removals, removal of overhead wires, and the installation of motorized sliding gates and card readers.	Prior to December 1, 2014

Water Work associated with New Yard LLC

▪ Removal of the existing water service which feeds New Yard LLC from the southern-most fire hydrant shall be completed by the date shown. Remove a 10-ft section of pipe at the broken fire hydrant, by removing the broken fire hydrant itself and installing caps on the remaining sections. Coordinate the work with New Yard, LLC and the Portland Water District.	After August 31, 2014.

Site Work associated with New Yard LLC

▪ Install chain link fences and gates throughout the Unitil/NGL corridor.	Prior to December 1, 2014.

The following activities will be completed by others prior to the Contract commencement date:

Site Work

▪ Removal of the 3,000 cy (+/-) of muck between the Casco Bay Bridge and the eastern section of the Unitil fence line.	Prior to August 31, 2014
▪ Installation of the 4 utility sleeves within the eastern end of the MaineDOT railroad corridor.	Prior to August 31, 2014
▪ Installation of the remaining 8 utility sleeves throughout the railroad corridor.	Prior to October 15, 2014
▪ Installation of the electrical and water provisions for New Yard LLC.	Prior to August 31, 2014

107.4.7 Limitations of Operations

The Contractor shall note that New Yard LLC will continue to use the existing driveway off of Commercial Street and its westbound extension through the completion date of the Unitil/NGL corridor for New Yard LLC. This existing access way (shown on the Existing Conditions Plan) shall not be obstructed or altered in any way during construction, until the Unitil/NGL corridor is completed as noted in Section 107.4.6 above.

The Contractor shall also note that the MaineDOT Bridge Maintenance personnel require uninterrupted access to the Maintenance Building located along the waterfront and adjacent to the Casco Bay Bridge. The Contractor shall coordinate its construction activities with the bridge maintenance personnel so that their access is not hindered in any way during construction. Coordination shall consist of weekly meetings and distribution of the construction schedule. When the proposed fence is installed along Commercial Street, the bridge maintenance personnel will commence utilizing the existing primary driveway entrance at Unitil/NGL in order to access the Bridge Maintenance Building. At that time, a new temporary access way will need to be made available to the bridge maintenance personnel. Contractor shall coordinate these needs and the location of the temporary access way with the Resident and the bridge maintenance personnel.

The Contractor shall also note that the primary driveway entrance at Unitil/NGL is and will continue to be a shared-use driveway by Unitil, NGL, MaineDOT Bridge Maintenance, and New Yard LLC. As such, the Contractor shall ensure that the driveway is operational at all times throughout construction.

The Contractor shall also note that NGL (Osterman) receives daily rail deliveries of propane cars from September 1st through June 30th. The Contractor shall coordinate its rail construction and removals efforts with NGL through the Resident. The Contractor shall schedule the installation of the turnouts and track connections at Cassidy Point Road and NGL at the end of the project (July 2015) when NGL will allow for a two-week deferral of its propane shipments. Otherwise, the Contractor may perform the rail work at its discretion provided the rail is operable at the completion of each day's work.

The Contractor shall also note that the American Association of Private Railroad Car Owners (AAPRCO) has an agreement with Pan Am Railways to park approximately 30 to 35 private rail cars in Yard 8 (east of Cassidy Point Road) within the month of September from Sunday, September 21 through Thursday, September 25, 2014. The Contractor shall coordinate its rail construction and removals program around this timeframe by providing safe and sufficient storage space for the incoming rail cars for the time period specified. The Contractor shall be aware that the cars will arrive in two strings of cars and occupy both of the existing tracks. No work on or around the rail cars or this section of the rail shall occur during this time period. For more information about the group, please visit the following website: (http://www.aaprco.com/convention/2014/2014index.html).

Finally, the Contractor shall note that the businesses along Commercial Street in the immediate vicinity of the Beach Street intersection are vibrant businesses which rely on daily truck deliveries at all times of the day. The operations at these facilities require uninterrupted access along their street frontage and particularly their drive entrances including the roadway portion of Commercial Street (for truck maneuvering). Truck deliveries at Nova Seafood can range from 10 to 23 trucks per hour from 6:00am to 8:00pm, seven days per week. Night deliveries are frequent. The Contractor shall personally meet with the owner of Nova Seafood to understand and coordinate with Nova's truck movements, operational needs, and schedule. The Contractor shall note that frequent delays shall be expected as a result of these truck deliveries, and that the drive entrances must remain usable during construction. The Contractor shall employ a system of short work segments that enable truck movements across the drive entrance. A similar arrangement of work flow shall be employed at drive entrances to Graybar, Portland Rubber Company, and the Star Match Building parking lots. Methods

and materials used to complete the short work segments shall be discussed with the business owner and approved by the Resident.

The cost of these limits of operations shall be considered incidental to the Contract and no additional compensation will be made.

107.9 Project Closeout

The following is in addition to the requirements of Section 107.9.

The Contractor shall maintain at the site a set of Contract Plans and these Special Provisions, upon which shall be recorded accurately as the work progresses the actual dimensions and locations of all his work, indicating thereon all variations from the Contract Documents. The record shall include the work of all Subcontractors. Record drawings shall be reviewed by the Resident, and the Contractor shall make all necessary changes according to the Resident's review.

Prior to final acceptance of the Work, all recorded data shall be transferred by the Contractor, to a complete set of reproducible record specifications of the Contract Drawings showing "As-Built" conditions. The As-Built drawings shall be presented using neatly color-coded markups to identify changes, modifications, or deletions to the proposed work.

The additional project closeout requirements noted in this special provision shall be considered incidental to the contract and no separate payment will be made.

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 403.102 Mot Mix Asphalt – Special Areas
Item 403.206 Hot Mix Asphalt - 25 mm
Item 403.207 Hot Mix Asphalt - 19 mm
Item 403.2071 Hot Mix Asphalt - 19 mm (Polymer Modified)
Item 403.2072 Hot Mix Asphalt - 19 mm (Asphalt Rich Base)
Item 403.2073 Warm Mix Asphalt - 19 mm
Item 403.208 Hot Mix Asphalt - 12.5 mm
Item 403.2081 Hot Mix Asphalt - 12.5 mm (Polymer Modified)
Item 403.20813 Warm Mix Asphalt - 12.5 mm (Polymer Modified)
Item 403.2083 Warm Mix Asphalt - 12.5 mm
Item 403.209 Hot Mix Asphalt - 9.5 mm (sidewalks, drives, & incidentals)
Item 403.210 Hot Mix Asphalt - 9.5 mm
Item 403.2101 Hot Mix Asphalt - 9.5 mm (Polymer Modified)
Item 403.2102 Hot Mix Asphalt - 9.5 mm (Asphalt Rich Base)
Item 403.2103 Warm Mix Asphalt - 9.5 mm
Item 403.2104 Hot Mix Asphalt - 9.5 mm (3/4" Surface)
Item 403.211 Hot Mix Asphalt – Shim
Item 403.2111 Hot Mix Asphalt – Shim (Polymer Modified)
Item 403.2113 Warm Mix Asphalt - Shim
Item 403.212 Hot Mix Asphalt - 4.75 mm (Shim)
Item 403.2123 Warm Mix Asphalt - 4.75 mm (Shim)
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 Polymer Modified)
Item 403.2132 Hot Mix Asphalt - 12.5 mm (Asphalt Rich Base and intermediate course)
Item 403.2133 Warm Mix Asphalt - 12.5 mm (base and intermediate course)
Item 403.214 Hot Mix Asphalt - 4.75 mm (Surface)
Item 403.2143 Warm Mix Asphalt - 4.75 mm (Surface)
Item 403.301 Hot Mix Asphalt (Asphalt Rubber Gap-Graded)
Item 404.70 Colored Hot Mix Asphalt – 9.5mm (Surface)
Item 404.72 Colored Hot Mix Asphalt – 9.5mm (Islands, sidewalks, & incidentals)
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 403.102–6.2%			
Item 403.206–4.8%			
Item 403.207–5.2%	Item 403.2071–5.2%	Item 403.2072–5.8%	Item 403.2073–5.2%
Item 403.208–5.6%	Item 403.2081–5.6%	Item 403.20813–5.6%	Item 403.2083–5.6%
Item 403.209–6.2%			
Item 403.210–6.2%	Item 403.2101–6.2%	Item 403.2102–6.8%	Item 403.2103–6.2%
Item 403.2104–6.2%			
Item 403.211–6.2%	Item 403.2111–6.2%		Item 403.2113–6.2%
Item 403.212–6.8%			Item 403.2123–6.8%
Item 403.213–5.6%	Item 403.2131–5.6%	Item 403.2132–6.2%	Item 403.2133–5.6%
Item 403.214–6.8%			Item 403.2143–6.8%
Item 403.301–6.2%			
Item 404.70–6.2%			
Item 404.72–6.2%			
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 (Excluding the Connecticut market area), 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 (Excluding the Connecticut market area), 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 109.5
ADJUSTMENTS FOR DELAY
(Delays due to Flooding)

Subsection 109.5.1, Definitions- Types of Delays, is replaced with the following:

109.5.1 Definitions - Types of Delays Delays are defined as follows and may be divided into more than one type depending upon cause.

A. Excusable Delay Except as expressly provided otherwise by this Contract, an "Excusable Delay" is a Delay to the Critical Path that is directly and solely caused by: (1) an Uncontrollable Event, or (2) a flooding event at the effected location of the Project that results in a Q25 headwater elevation, or greater, but less than a Q50 headwater elevation. Theoretical headwater elevations will be determined by the Department; actual headwater elevations will be determined by the Contractor and verified by the Department.

B. Compensable Delay A "Compensable Delay" is a Delay to the Critical Path that is directly and solely caused by: (1) 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 (2) an Uncontrollable Event caused by a Utility Company or other third party (not Subcontractors) Working on Project-related Work within the Project Limits if, and only if, the Utility Company or such other third party offers the Department reimbursement for such Delay~~,~~ (3) acts by the Department that are in violation of applicable laws or the Contract, or (4) a flooding event at the effected location of the Project that results in a Q50 headwater elevation, or greater. Theoretical Q50 headwater elevations will be determined by the Department; actual headwater elevations will be determined by the Contractor and verified by the Department.

C. Inexcusable Delay "Inexcusable Delays" are all Delays that are not Excusable Delays or Compensable Delays.

For a related provision, see Section 101.2 - Definition of Uncontrollable Event.

SPECIAL PROVISIONS
SECTION 202
REMOVING STRUCTURES AND OBSTRUCTIONS
(Removing Pavement Surface)

The December 2002 Revision of the Standard Specifications, Section 202-Removing Structures and Obstructions, subsection 202.061-Removing Pavement Surface, has been removed and replaced in it's entirety by the following:

202.061 Removing Pavement Surface The equipment for removing the bituminous surface shall be a power operated milling machine or grinder capable of removing bituminous concrete pavement to the required depth, transverse cross slope, and profile grade by the use of an automated grade and slope control system. The controls shall automatically increase or decrease the pavement removal depth as required, and readily maintain desired cross slope, to compensate for surface irregularities in the existing pavement course. The equipment shall be capable of accurately establishing profile grades by referencing from a fixed reference such as a grade wire, or from the existing pavement surface using a 30 foot minimum contact ski (floating beam), or 24 foot non-contact grade control beam.

The Contractor shall locate and remove all objects in the pavement through the work area that would be detrimental to the planing or grinding machine. Any structures or obstructions left within the travel lane or shoulders shall have tapers installed according to Standard Detail 202(01).

The finished milled surface will be inspected before being accepted, and any deviations in the profile exceeding 1/2 inch under a 16 foot string line or straightedge placed parallel to the centerline will be corrected. Any deviations in the cross-slope that exceed 3/8 inch under a 10 foot string line or straightedge placed transversely to centerline will be corrected. All corrections will be made with approved methods and materials. Any areas that require corrective measures will be subject to the same acceptance tolerances. Excess material that becomes bonded to the milled surface will be removed to the Resident's satisfaction before the area is accepted.

On highways or expressways with directional traffic, the Contractor will be required to remove the pavement surface on the adjacent sections of travel lane and designated portions of adjacent shoulder before the end of the following calendar day unless the centerline edge is tapered to a 12:1. Failure to remove the centerline vertical edge by milling, using the approved taper, or matching the adjacent course the following day will constitute a traffic control violation unless an excusable delay is granted by the Department. The Contractor will be required to remove the specified pavement course over the full width of the mainline traveled ways prior to opening the sections to weekend or holiday traffic.

On roadways with two-way traffic, the Contractor will be required to remove the specified pavement course over the full width of the mainline traveled ways prior to opening the sections to weekend or holiday traffic.

During any period that a centerline vertical or tapered edge exists, the Contractor will be responsible for installing additional warning signage that clearly defines the centerline vertical or tapered edge and elevation differential hazard, as well as additional centerline delineation such as double RPM application, or temporary painted line. The Traffic Control Plan shall include the additional requirements. All signs and traffic control devices will conform to Section 719.01, and Section 652, and will be installed prior to the work, at a maximum spacing of 0.50 mile for the entire length of the effected roadway section. All additional signing, labor, traffic control devices, or incidentals will not be paid for directly, but will be considered incidental to the appropriate 652 bid items.

Any areas of concern, such as de-lamination or pot-holing shall be identified on a continuous basis as milling progresses. Proper corrective action will be determined by the Resident and paid for under the appropriate contract items, and if required, completed prior to opening lane to traffic. Any issues that arise **up to** 7 calendar days after being milled will be the responsibility of the MaineDOT unless otherwise noted in Special Provision Section 105 – Limitations Of Operations.

SPECIAL PROVISION
SECTION 203
EXCAVATION AND EMBANKMENT

203.09 Preparation of the Embankment Area

Add the following sentence to the beginning of Subsection 203.09:

Preparation of the subgrade in earthwork areas of the project shall be in accordance with Subsection 203.17 of this Special Provision.

203.17 Preparation and Protection of the Subgrade

Add the following paragraphs to the beginning of Subsection 203.17:

All existing vegetation, unsuitable existing fill materials, asphalt, topsoil and other organic or deleterious material shall be removed from earthwork areas of the project to expose suitable subgrade soils consisting of inorganic granular soils. The subgrade preparation area for the loading slab shall extend outward from the edge of the concrete slab to the limit of the zone of influence. The limit of the zone of influence is defined by a line extending downward and outward at a one horizontal to two vertical slope from a point two feet outside of the lower outside edge of the slab to the exposed subgrade surface. The subgrade should be prepared to 5 feet outside the limit of fill in other earthwork areas of the project.

Unsuitable subgrade soils observed in the earthwork areas shall be over-excavated and replaced using granular material that meets the material specifications for Granular Borrow for Underwater Backfill (MaineDOT Standard Specification 703.19). The subgrade soils shall be proof-rolled using a self-propelled static roller. Loose or yielding areas shall also be over-excavated and replaced using Granular Borrow for Underwater Backfill. Fill material shall be placed in loose lifts not to exceed 12 inches and compacted to 95 percent of the material's maximum dry density as determined by AASHTO T-180. Special placement and compaction methods may be warranted in wet areas. Crushed stone wrapped in geotextile fabric is typically used to fill depressions in wet areas.

SPECIAL PROVISION
SECTION 203
EXCAVATION AND EMBANKMENT
(Soil Management)

General. The work under this specification shall be performed in conformance with all the procedures and requirements described herein for the following activities: contaminated soil handling, reuse, temporary stockpiling, transportation, storage and disposal and, contaminated water handling, storage, treatment and disposal. This specification also addresses contaminated soil location, identification, and classification. The intent of this specification is to ensure that any contaminated soil and/or water encountered during construction will be managed in a manner that protects worker health and safety, public welfare and the environment.

Environmental Site Conditions. The Maine Department of Transportation has conducted an environmental assessment related to the planned work at the International Marine Terminal expansion project. The environmental assessment for the project area was completed to obtain a general understanding of the environmental conditions along the project corridor. The assessment included a review of relevant Maine Department of Environmental Protection's (MDEP's) and Environmental Protection Agency's (EPA's) databases and field reconnaissance of the project area. During this work it was noted that the southwestern and western portions of the project area (former Unitil site) have a variety of subsurface environmental concerns. These concerns are associated with the historical operation of a coal degasification facility; contaminants consist primarily of oil-like-materials (OLM) and other coal-gasification-related-materials (CGRM). Existing data also indicate that shallow soils in the remaining area of the project have been affected by heavy metals and polyaromatic hydrocarbons (PAHs). It appears that these soils have been influenced by historical railroad operations. The results of the environmental assessment are available for review from MaineDOT's Office of Safety and Compliance in Augusta (207-624-3004). The Soil Management Plan is provided in Appendix D

Identified Area of Contamination. MaineDOT's environmental assessment identified the project area as having shallow and deep soil contamination. Analytical laboratory results of samples taken from the borings associated with previous work by others on the project site indicate varying levels of OLM, CGRM, PAHs and metals are present in soils. These concentrations define the soils as potential special waste per State remedial guidelines.

Identifying and Screening Contaminated Soil and Groundwater. Excavated soils will be considered contaminated and will need to be either reused on site or taken to a MDEP approved facility for proper management.

Handling and Disposition of Soil Materials. In general, soils excavated during construction shall be handled as follows:

- Soils shall not be excavated without prior approval by the Resident.
- The contractor shall make every attempt to reuse the soils onsite. If possible the soil should be placed back into the area of excavation. However, it may also be reused elsewhere on site as long as the material is covered with a cap. The contractor is responsible for placing a cap on the material. This may include concrete, asphalt, or a marker layer and 12" of clean material.

- If soils cannot be reused on-site, the Contractor shall arrange and undertake disposal of all impacted soil at a landfill or treatment facility licensed to accept contaminated soil. The Contractor is responsible for all additional testing required by the receiving facility. If the Contractor proposes other disposal or treatment options, the Contractor is solely responsible for obtaining the associated permits and approvals from all relevant Municipal, State, and Federal agencies at no additional cost to the State.

  Work and the management of soils on the former Unitil site must be conducted in accordance with MDEP's No Action Assurance letter associated with the approved Voluntary Response Action Program (VRAP) remediation plan for the property. A copy of the Final Soil Management Plan for this property is attached.

  The Resident is responsible for signing any manifests or bills of lading required to transport and disposal of the impacted soil. The Resident will send all manifests and bills of lading to MaineDOT, Office of Safety and Compliance, Station 16, Augusta, Maine 04333.

Health and Safety/Right-to-Know. Contractors and subcontractors are required to notify their workers of the history of the site and contamination that may be present and to be alert for evidence of contaminated soil and groundwater. The Contractor shall notify the Resident at least three business days prior to commencing any excavation.

The Contractor shall prepare a site specific Health and Safety Plan (HASP) for its workers and subcontractors who may work in the contaminated areas of the site. A Qualified Health and Safety Professional shall complete the HASP. The Qualified Health and Safety Professional will be an expert in field implementation of the following federal regulations:

29 CFR 1910.120 or	Hazardous Waste Operations and
29 CFR 1926.65	Emergency Response
29 CFR 1910.134	Respiratory Protection
29 CFR 1926.650	Subpart D - Excavations
29 CFR 1926.651	General Requirements
29 CFR 1926.652	Requirements for Protective Systems

MaineDOT is voluntarily ameliorating the soil contamination associated with this initiative. Given that this is a voluntary clean up effort approved by a regulatory agency, the OSHA requirements as defined in 29 CFR 1910.120 apply. These requirements mandate that workers and any subcontractors working in the contaminated area shall comply with all OSHA regulations for Hazardous Waste Operations and Emergency Response including a 40 hour initial hazardous waste operations certification [OSHA 1910.120(e)], annual 8 hour refresher course within the last 12 months and medical surveillance [OSHA 1910.120(f)] within the last 12 months.

The contractor shall designate a person to provide direct on-site supervision of the work in the contaminated areas. This person shall have the training under OSHA 1910.120 (e) as above and in addition be qualified as a construction Competent Person. It is the responsibility of the competent person to make those inspections necessary to identify situations that could result in hazardous conditions (e.g., possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions), and then to insure that corrective measures are taken.

Submittals. The Contractor shall submit a site specific Health and Safety Plan (HASP) to the Resident at least two weeks in advance of any excavation work on the project. The Contractor shall not proceed with work until MaineDOT has reviewed the plan and notified the Contractor that it is acceptable.

Health and Safety Monitoring. Within the contaminated area of the project, the Contractor's designated on-site person shall monitor the work zone for those constituents specified in the Contractor's HASP. The Contractor shall provide all required health and safety monitoring equipment.

Dewatering. Groundwater may be encountered and its removal necessary to complete the work. It will be treated as "contaminated" water. The Contractor shall inform the Resident before any dewatering commences. The "contaminated" water shall be pumped into a temporary holding tank(s). The Contractor will be responsible for the procurement of any holding tank(s). Any testing, treatment and/or disposal of the stored, contaminated water shall be undertaken by the Contractor in accordance with applicable Federal, State and local regulatory requirements.

On-Site Water Storage Tanks - Materials. If dewatering within the identified contaminated area becomes necessary the holding tanks used for temporary storage of contaminated water pumped from excavations shall be contamination free and have a minimum capacity of 2,000 gallons.

Dust Control. The Contractor shall employ dust control measures to minimize the creation of airborne dust during the construction process in the contaminated area. As a minimum, standard dust control techniques shall be employed where heavy equipment and the public will be traveling. These may include techniques such as watering-down the site or spreading hygroscopic salts.

Unanticipated Contamination. If the Contractor encounters previously undiscovered contamination or potentially hazardous conditions related to contamination, the Contractor shall immediately suspend work and secure the area. The Contractor will then notify the Resident immediately. These potentially hazardous conditions include, but are not limited to, buried containers, drums, tanks, "oil saturated soils", strong odors, or the presence of petroleum sufficient to cause a sheen on the groundwater. The area of potential hazard shall be secured to minimize health risks to workers and the public and to prevent a release of contaminants into the environment. The source of any suspected contamination shall be evaluated by the Resident (or MaineDOT's Office of Safety and Compliance representative). As appropriate, the Resident will notify the MDEP's Response Services Unit in Portland and MaineDOT's Environmental Office. The Portland Fire Department must also be notified prior to removal of buried storage tanks and associated piping. The Contractor will evaluate the impact of the hazard on construction, amend the HASP if necessary, and with the Resident's approval, recommence work in accordance with the procedures of this Special Provision.

Method of Measurement. There will be no measurement for identification and environmental screening of contaminated soil material as all soil is considered contaminated.

Measurement for the development of a Health and Safety Plan (HASP) and providing health and safety equipment and personnel shall be by lump sum.

Measurement for the off-site treatment or disposal of impacted soil will be by the ton of Special Excavation.

There will be no measurement for additional laboratory testing of contaminated soil that is required by the landfill or treatment facility. Testing is incidental to the disposal of Special Excavation.

Measurement for the following items shall be according to Subsection 109:04 ("Change Order"/Force Account): any necessary contaminated water holding tank(s); and treatment or disposal of any contaminated groundwater.

Basis of Payment. There will be no payment for the identification and environmental screening of contaminated soil material as all soil is considered contaminated.

Payment for the development of a Health and Safety Plan (HASP) and providing health and safety equipment and personnel shall be by the lump sum

Payment for off site disposal or treatment of impacted soils at a regulatory approved facility shall be by the ton of Special Excavation.

Payment for the following items shall be according to Subsection 109:04 ("Change Order"/Force Account): any necessary contaminated water holding tank(s); and treatment or disposal of any contaminated groundwater.

Pay Item		Pay Unit
203.2312	Health and Safety Plan (HASP)	L.S.
203.2333	Disposal/Treatment of Special Excavation	Ton

SPECIAL PROVISION
SECTION 304
AGGREGATE BASE AND SUBBASE COURSE

304.02 Aggregate

Replace the second paragraph and table of Subsection 304.02 with the following sentence:

> Type and thickness of aggregate base and subbase materials shall be as depicted on the project drawings.

304.03 Placing

Replace the first paragraph of Subsection 304.03 with following paragraph:

> Aggregate base and subbase material shall be placed in loose lifts not to exceed 10 inches and compacted to 95 percent of the material's maximum dry density as determined by AASHTO T-180. The compacted thickness of each lift shall not exceed 8 inches.

Delete the second paragraph of the subsection.

304.04 Shaping, Compacting and Stabilizing

Modify the first and second paragraphs of Subsection 304.04 as follows:

Modify the second to last sentence of the first paragraph to read as follows:

> "The surface, compaction and stability shall be satisfactorily maintained until the overlying concrete slab or surface material has been placed and accepted."

Delete the last sentence of the first paragraph.

Delete the second paragraph of the subsection.

Delete the last paragraph of the subsection.

SPECIAL PROVISION
SECTION 304
AGGREGATE BASE AND SUBBASE COURSE
(Thermal Sand)

304.01 Description

The following paragraph is added:

The work specified in this section consists of installing a special thermal sand around the 115 KV line at locations along Commercial Street. Thermal sand provides protection for the 115 KV line through its special gradation and must be installed to the extent shown on the plans. Care shall be taken when installing thermal sand so as not to disrupt or damage the 115 KV line.

304.02 Installation

The following paragraph is added:

Thermal sand is a requirement of Central Maine Power, and must be installed around the 115 KV line upon completion of excavation and prior to backfilling. Thermal sand shall be installed within the annulus of any backfilling operation around the 115 KV line for a minimum distance of 16 inches from the perimeter of the steel pipe enclosure. For more information on thermal sand, see Section 722 of these Special Provisions.

304.06 Method of Measurement

The following paragraph is added:

Measurement for Thermal Sand shall be by the cubic yard properly installed and accepted.

304.07 Basis of Payment

This following paragraph is added:

Thermal Sand will be paid for at the Contract unit price per cubic yard which shall be full compensation for all materials, tools, equipment, labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Payment will be made under:

Pay Item		Pay Unit
304.14	Thermal Sand	Cubic Yard

SPECIAL PROVISION
DIVISION 400
PAVEMENTS

SECTION 401 - HOT MIX ASPHALT PAVEMENT
(Longitudinal joint construction using wedge/taper apparatus)

The Special Provision 400. Section 401 – Hot Mix Asphalt Pavement, subsection 401.15 – Spreading and Finishing, and subsection 401.17- Joints have been modified with the following revisions. All sections not revised by this Special Provision shall be as outlined in the Special Provision 400 Pavements, Section 401 – Hot Mix Asphalt Pavement. References to Standard Specifications, Special Provisions, or other documents, shall be determined as the most current version available at the time of bid, or as amended. All costs associated with this Item will not be paid for directly, but shall be considered included in the associated contract items.

401.15 Spreading and Finishing The section has been amended as follows:

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 that 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, or within this Special Provision.

When an approved longitudinal joint construction method is utilized, such as a manufactured notched wedge apparatus, the Department may allow the placement of mixtures in one continuous lane for each calendar day worked, with the following conditions:

The Contractor may utilize a manufactured notched wedge joint apparatus on all HMA layers 1 ½ inch or greater in Zone 1 between the dates of May 30th and the Saturday following September 1st, and in Zone 2 between the dates of May 15th and the Saturday following September 15th. When the work is to be performed, either by contract requirement or Contractor option, during conditions defined as “night work”, the same seasonal limitations shall apply unless the Department determines that the construction method is producing an unsound joint. This work will not be allowed during times of inclement weather as outlined in Division 400 – Special Provision 401; subsection 401.06 Weather and Seasonal Limitations.

If this option is utilized on roadways with two-way traffic, the Contractor will be required to place a matching course of HMA over the adjacent section of travel lane before the end of the following calendar day. Failure to match the centerline course the following day will constitute a traffic control violation unless an excusable delay is granted by the Department.

If this option is utilized on divided highways or expressways with directional traffic, the Contractor will be required to place a matching course of HMA over the adjacent section of travel lane within seven calendar days from placement of the initial paved lane. Failure to match the centerline course the within the seven calendar days will constitute a traffic control violation unless an excusable delay is granted by the Department.

The Contractor will also be responsible for installing additional warning signage that clearly defines the centerline elevation differential hazard, as well as additional centerline delineation such as double RPM application, or temporary painted line. The Traffic Control Plan shall include this option and the additional requirements. All signs and traffic control devices will conform to Section 719.01, and Section 652, and will be installed prior to the work, at a maximum spacing of 0.50 mile [0.80 km] for the entire length of the effected roadway section. On roadways with two-way traffic, the Contractor will be required to place the specified course over the full width of the mainline traveled way being paved prior to opening the sections to weekend or holiday traffic. If this option is utilized, all additional signing, labor, traffic control devices, or incidentals will not be paid for directly, but will be considered incidental to the appropriate 652 bid items.

The Department reserves the right to have centerline cores cut by the Contractor's QC personnel for informational purposes to monitor the density along the joint. Informational cores at the centerline joint will be taken centered over the tapered part of the wedge joint.

Any notched wedge joint constructed areas that become cracked or broken shall be trimmed back to the limits affected prior to placing the adjoining lane. Any materials that become unbound or separated from the wedge or tapered joint section, or contaminated by materials determined by the Department as being detrimental to the construction of a sound construction joint, shall be removed by sweeping, compressed air and lance, or by hand tools as required. This work, if necessary, will not be paid for directly, but shall be considered incidental to the related contract items.

<u>401.17 Joints</u> The following section has been amended as follows:

Should the notched wedge joint device be used, the Contractor shall apply a coating of emulsified asphalt on the vertical and tapered surface of the longitudinal centerline joint immediately before paving. The rate of application shall be approximately 0.050 G/SY. This application shall be in addition to the normal application of tack coats to the construction joint face and horizontal surfaces prior to placing a new lift. 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.

SPECIAL PROVISION 400 - PAVEMENTS

SECTION 401 - HOT MIX ASPHALT PAVEMENT

401.01 Description The Contractor shall furnish a uniformly blended, homogeneous mixture placed as 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 MaineDOT 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
RAP for HMA Pavement	703.08
HMA Mixture Composition	703.09

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 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

Summary of RAP test results (if used), including count, average and standard deviation of binder content and gradation

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 150 ton for stone stockpiles, 75 ton for sand stockpiles, and 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 MaineDOT 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. Should all of the Acceptance samples of a Lot be obtained prior to the receipt of the first Acceptance result, the Department will not allow the aim changes to be applied to that Lot. 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 reduced up to 10 percentage points from the amount listed on the JMF and shall not exceed the percentage of RAP approved in the JMF or for the specific application under any circumstances.

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.

401.031 Warm Mix Technology The Contractor may place Hot Mix Asphalt Pavement produced with an accepted WMA technology if approved by the Department. Methods or technologies shall generally be at the Contractors option, but will be limited to proven, Agency and Industry accepted practice. Mixture production,

placement and volumetric testing details, including temperatures, shall be included in the project specific QCP, and submitted to the Department for approval prior to any work.

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 275 to 325°F
At the Paver – allowable range 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 Contractor may utilize either a 64-28 or 58-28 PGAB. The Contractor must stipulate which PGAB grading will be used to construct the entire HMA pavement structure prior to starting work. For mixtures containing greater than 20 percent but no more than 30 percent RAP the PGAB shall be PG 58-34 (or PG 52-34 when approved by the Department). The PGAB shall meet the applicable requirements of AASHTO M320 - Standard Specification for PGAB. Polymer-modified PGAB shall meet the applicable requirements of AASHTO MP 19. 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 40°F or higher.
The Contractor may place Hot Mix Asphalt Pavement produced with an accepted WMA technology for any base, intermediate base, or shim 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 35°F or higher, and the area to be paved is not frozen. The Hot Mix Asphalt Pavement produced with an approved WMA technology shall meet the requirements of section 401.04 - Temperature Requirements, unless otherwise approved by the Department.

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 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 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 40°F or higher.

On all sections of overlay with wearing courses less than 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 MaineDOT 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. The inspector will notify the producer to take corrective action on any discrepancy over 1.0%. The producer may continue to operate for 48 hours under the following conditions.

1. If the discrepancy does not exceed 1.5%; payment will still be governed by the printed ticket.
2. 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.

If, after 48 hours the discrepancy has not been addressed and reduced below 1.0%, than plant operations will cease. Plant operation may resume after the discrepancy has been brought within 1.0%.

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 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 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 30 ft, a non-contact grade control with a minimum span of 24 ft, except that a 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 density testing across the mat being placed, prior to being compacted by equipment at 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

<u>401.10 Rollers</u> Rollers shall be static steel, pneumatic tire, oscillatory, 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, on irregular or milled surfaces, or on bridges, at least one roller shall be 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 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.

e. The use of an oscillating steel roller shall be required to compact all mixtures placed on bridge decks.

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 16 ft straightedge or string line placed directly on the surface, parallel to the centerline of pavement.
b.) A 10 ft straightedge or string line placed directly on the surface, transverse to the centerline of pavement.

The Contractor shall correct variations exceeding 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. All delivery slips shall conform to the requirements of 401.073.

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 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. The resultant material shall be a uniformly blended, homogeneous HMA mixture.

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 Mix Asphalt Pavement.

In addition, hot mix asphalt pavement placed on bridges shall also conform to Section 508.04 and the following requirements.

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

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

c. The Contractor will not be required to cut sample cores from the compacted pavement on the bridge deck, unless otherwise directed by Special Provision.

d. After the top course has been placed, the shoulder areas shall be sealed 3 ft wide with two applications of an emulsified bituminous sealer meeting the requirements of Section 612.03 – Sealing and 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.

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

f. The atmospheric temperature for all courses placed on bridge decks shall be 50°F or higher.

<u>401.16 Compaction</u> 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 and longitudinal 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 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 personnel of the Department and the Contractor who have significant information relevant to the paving items shall attend, including the responsible onsite paving supervisor for the Contractor. The Resident will prepare minutes of the conference and distribute them to all attendees. Any requests to revise the minutes must be made to the Resident within 7 Days of Receipt. These minutes will constitute the final record of the Pre-paving conference.

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, daily paving report, and delivery slip template for any plant to be utilized.
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 or production limitations. If a warm-mix technology is utilized, a proposed target production temperature range (not to exceed 50°F) will be provided for each mix design.
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 MaineDOT Policies and Procedures for HMA Sampling and Testing.
r. A detailed description of RAP processing, stockpiling and introduction into the plant as well as 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.
v. Provisions for how the QCP will be communicated to the Contractor's field personnel

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, and that delivery slips and plant recordation accurately reflects the mix being produced with all the required information. 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 ton (As noted in QC Plan)	ASTM D2950
%TMD (Base)	1 per 250 ton (As noted in QC Plan)	AASHTO T269
Fines / Effective Binder	1 per 500 ton	AASHTO T 312*
Gradation	1 per 500 ton	AASHTO T30
PGAB content	1 per 500 ton	AASHTO T164 or T308
Voids at N_{design}	1 per 500 ton	AASHTO T 312*
Voids in Mineral Aggregate at N_{design}	1 per 500 ton	AASHTO T 312*
Rice Specific Gravity	1 per 500 ton	AASHTO T209
Coarse Aggregate Angularity	1 per 5000 ton	ASTM D5821
Flat and Elongated Particles	1 Per 5000 ton	ASTM D4791
Fine Aggregate Angularity	1 Per 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 MaineDOT 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 1000 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 gradation 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, percent passing 0.075 mm sieve or density 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.

The Contractor shall notify the Resident in writing as to the reason for shutdown, as well as the proposed corrective action, by the end of the work day. 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.

If 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 notify the Resident in writing of any proposed corrective action by 1:00 PM the next working day.

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.

<u>401.19 Quality Control Method D</u> 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 MaineDOT 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.

<u>401.20 Acceptance Method A, B & C</u> 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

In the event the Department terminates a Lot prematurely but fails to obtain the required number of acceptance samples to calculate the volumetric property pay factor under the test method specified in the contract, the pay factor shall be calculated using the number of samples actually obtained from the contract. Should the number of acceptance samples taken total less than three, the resulting pay factor shall be 1.0 for volumetric properties. A minimum of three cores will be used for a density pay factor using the contract's specified Acceptance method, if applicable, for quantities placed to date.

Should the Contractor request a termination of the Lot in progress prior to three acceptance samples being obtained, and the Department agrees to terminate the Lot, then the pay factor for mixture properties shall be 0.80. A minimum of three cores will be used to determine a density pay factor using the contract's specified Acceptance method, if applicable, for quantities placed to date.

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.

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 MaineDOT Policies and Procedures for HMA Sampling and Testing, which will then be transported by the Contractor to the designated MaineDOT Laboratory within 48 hours (except when otherwise noted in the project specific QCP due to local restrictions), as directed by MaineDOT 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, a change in process 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 for Method A and C or below 0.86 for Method B, 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 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. Cores for Acceptance testing shall be cut such that the nearest edge is never within 9 inches of any joint. The cores will be placed in a transport container provided by the Department and transported by the Contractor to the designated MaineDOT 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 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 MaineDOT 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 3/4 in or less in thickness, there shall be no pay adjustment for density otherwise noted in Section 403 - Hot Mix Asphalt Pavement. For overlays designed to be 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 Mix Asphalt 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 tons, with unanticipated over-runs of up to 1500 ton rolled into the last lot. Sublot sizes shall be 750 ton for mixture properties, 500 ton for base or binder densities and 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

Percent Passing 4.75 mm and larger sieves	USL and LSL
Percent Passing 2.36 mm to 1.18 mm sieves	Target +/-7%
Percent Passing 0.60 mm	Target +/-4%
Percent Passing 0.30 mm to 0.075 mm sieve	Target +/-3%
PGAB Content	Target +/-2%
Air Voids	Target +/-0.4%
Fines to Effective Binder	4.0% +/-1.5%
Voids in the Mineral Aggregate	0.9 +/-0.3
Voids Filled with Binder	LSL Only from Table 1
% TMD (In-place Density)	Table 1 values plus a 4% production tolerance for USL only
Percent Passing 4.75 mm and larger sieves	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	0.9 +/-0.3
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 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 tons, with unanticipated over-runs of up to 1500 ton rolled into the last lot. Sublot sizes shall be 750 ton for mixture properties, 500 ton for base or binder densities and 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	0.9 +/-0.3
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 Method D For hot mix asphalt items designated as Method D in Section 403 - Hot Mix Asphalt Pavement, one sample will be taken from the paver hopper or the truck body per 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. Contractor shall cut two 6 in cores, which shall be tested for percent TMD per AASHTO T-269 unless otherwise noted in Section 403 - Hot Mix Asphalt Pavement. If the average for the two tests falls below 92.5% the disincentive shall apply. If the test results for each 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%

401.21 Method of Measurement The Department will measure Hot Mix Asphalt Pavement by the 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.

In addition, for 9.5 mm NMAS mixtures the following pay adjustment shall also apply:

The average percent passing for the 0.075 mm sieve shall be evaluated for each Lot. If the average is greater than 6.5%, a pay adjustment according to Table 8C below shall apply in addition to the other pay adjustments for the given method of testing.

TABLE 8C: 0.075 mm SIEVE PAY ADJUSTMENT

AVERAGE PERCENT PASSING 0.075 MM SIEVE	PAY ADJUSTMENT
6.6% - 7.0%	-5% Pay Adjustment
> 7.0%	-10% Pay Adjustment

The Department shall notify the Contractor whenever the average of at least three samples in a given Lot is greater than 6.5%.

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 re-cut 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 except for 9.5mm NMAS mixtures as outlined in Table 4A. Gradations for Methods A and B shall be monitored 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 ton
P = Contract price per 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 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 at least 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 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 MaineDOT) 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

For Methods A and B: The Contractor may dispute any or all of the following 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 the G_{mb} or G_{mm} 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. The Contractor may dispute the 0.075 mm sieve test result when a 9.5 mm NMAS mixture is used.

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 - Hot Mix Asphalt Pavement

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 3000 lane-feet. A sublot will consist of 20 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 100 ft of bridge joints)
Acceleration and deceleration lanes
Shoulders and ramps
Side streets and roads
Within 100 ft of transverse joints at the beginning and end of the project
Within 100 ft of railroad crossings
Urban areas with speed limits of 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	60 in/mile
II	70 in/mile
III	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 MIX ASPHALT PAVEMENT

403.01 Description This work shall consist of constructing one or more courses of Hot Mix Asphalt 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 HMA pavement shall be composed of a mixture of aggregate, filler if required, and asphalt 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.

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

403.05 Basis of Payment The accepted quantities of hot mix asphalt pavement will be paid for at the contract unit price per ton for the mixtures, including hot mix asphalt 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 Mix Asphalt Pavement, for Method location).

Payment will be made under:

	Pay Item	Pay Unit
403.102	Hot Mix Asphalt Pavement for Special Areas	Ton
403.206	Hot Mix Asphalt, 25 mm Nominal Maximum Size	Ton
403.207	Hot Mix Asphalt, 19.0 mm Nominal Maximum Size	Ton
403.2071	Hot Mix Asphalt , 19.0 mm Nominal Maximum Size (Polymer Modified)	Ton
403.2072	Asphalt Rich Hot Mix Asphalt, 19.0 mm Nominal Maximum Size (Asphalt Rich Base and Intermediate course)	Ton
403.2073	Warm Mix Asphalt, 19.0 mm Nominal Maximum Size	Ton
403.208	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size	Ton
403.2081	Hot Mix Asphalt - 12.5 mm Nominal Maximum Size (Polymer Modified)	Ton
403.20813	Warm Mix Asphalt - 12.5 mm Nominal Maximum Size (Polymer Modified)	Ton
403.2083	Warm Mix Asphalt, 12.5 mm Nominal Maximum Size	Ton
403.209	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals)	Ton
403.210	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size	Ton
403.2101	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Polymer Modified)	Ton
403.2102	Asphalt Rich Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Asphalt Rich Intermediate course)	Ton
403.2103	Warm Mix Asphalt, 9.5 mm Nominal Maximum Size	Ton
403.2104	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Thin Lift Surface Treatment)	Ton
403.211	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Shimming)	Ton
403.2111	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Shimming, Polymer Modified))	Ton
403.2113	Warm Mix Asphalt, 9.5 mm Nominal Maximum Size (Shimming)	Ton
403.212	Hot Mix Asphalt, 4.75 mm Nominal Maximum Size	Ton
403.2123	Warm Mix Asphalt, 4.75 mm Nominal Maximum Size	Ton
403.213	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course)	Ton
403.2131	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course, Polymer Modified)	Ton
403.2132	Asphalt Rich Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course)	Ton
403.2133	Warm Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course)	Ton
403.214	Hot Mix Asphalt, 4.75 Nominal Maximum Size (5/8” Surface Treatment)	Ton
403.2143	Warm Mix Asphalt, 4.75 Nominal Maximum Size (5/8” Surface Treatment)	Ton

SPECIAL PROVISION
SECTION 401
HOT MIX ASPHALT PAVEMENT

401 HOT MIX ASPHALT LONGITUDINAL JOINT DENSITY

401.30 Description The Department will measure the pavement density of longitudinal joints constructed between adjoining travel lanes. Core samples shall be tested according to AASHTO T-166. The Department will randomly determine core locations. The Contractor shall cut 6 in 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 MaineDOT Lab as directed by the Department. Pre-testing of the acceptance 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 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 a MaineDOT 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.

Cores shall be taken directly over the construction joint. Should the notched wedge joint device be used, the cores shall be cut directly over the center of the taper portion of the wedge (approximately centered 3” from the visible joint).

As part of the project specific QCP, the Contractor shall include details as to methods of construction, rolling and compaction efforts, and action plan to adjust methods or equipment should the Quality level fall below 50 percent within limits. The Contractor shall be required to measure the joint density at randomly selected locations with a minimum frequency of one measurement per 750 linear feet. The Contractor shall have the option to cut calibration/verification cores at a rate not to exceed 1 per day.

If the Quality level for density falls below 50 percent within limits, the Contractor shall make corrective action to the longitudinal joint construction method before proceeding with the Lot, or before starting a new Lot. In cases where the corrective action can be shown to immediately increase density, such as with informational cores or density gauge readings, the Contractor may elect to resume production once the corrective action methods are established. Additional QC testing shall be performed to verify the effectiveness of the corrective action. Should the Quality Level for density remain at or fall below 50 percent within limits, then the Contractor shall be required to make further adjustments to the construction method. The Department will consider corrective action acceptable if the density pay factor increases based on verification samples or acceptance samples.

401.31 Acceptance This method utilizes Quality Level Analysis and pay factor specifications as described in Section 106. 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:

Lot size will be the entire length of longitudinal joint for the given HMA layer for the project, or equal Lots of a size agreed upon at the Pre-paving conference. The maximum sublot size shall be 1500 linear feet of longitudinal joint for density and the minimum number of sublots for any Lot shall be five. The Lot will be divided up into sublots of equal length. There shall be a separate Lot for each lift of HMA pavement, and Lots shall not be comprised of results from more than one HMA layer.

The Department will determine a pay factor using acceptance limits from Table 1.

TABLE 1: LONGITUDNAL JOINT DENSITY ACCEPTANCE LIMITS

PROPERTY	LSL
% TMD (In-place density)*	91.0

* The Theoretical Maximum Density will be determined from the average of the Gmm values used to determine the percent compaction of the nearest acceptance cores on either side of the Centerline Joint Core from each adjacent mat.

The Department will calculate the Pay Adjustment for Centerline Joint Density as follows:

PA = (joint density PF- 1.0)(Q)(P) x0.40

Where

PA = Pay Adjustment
Q = Quantity of traveled way pavement represented by PF in tons
P = Contract price per ton
PF = Pay Factor

If the joint density Pay Factor is less than 0.88, the Pay Adjustment shall be:

PA = (-0.05)(Q)(P)

SPECIAL PROVISION
SECTION 401
HOT MIX ASPHALT
(Thin Lift Treatment - 3/4 inch and 1 inch)

401.01 Description

The following paragraph is added:

The Contractor shall furnish a uniformly blended, homogeneous mixture placed as 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 shall accept this work under Quality Assurance provisions as specified in Special Provision Section 400; Subsection 401 - Hot Mix Asphalt Pavement, and Standard Specifications Section 106 - Quality.

The Thin Lift Surface Treatment shall meet all of the Materials, Seasonal Limitations, Equipment, and Construction requirements of Section 401, with the following additions and changes

401.02 Materials

The following paragraph is added:

The combined aggregate gradation required for this item shall be classified as a 9.5mm Thin Lift Mixture (TLM) mixture, using the Aggregate Gradation Control Points as defined in 703.09.

401.16 Compaction

The following paragraph is added:

As a minimum, compaction of the Thin Lift Surface Treatment will be obtained using a minimal roller train consisting of a 10 ton vibratory roller, 16 ton pneumatic roller, and a 10 ton finish roller. Once the methods are established, rolling patterns, equipment, and methods will become part of the QCP. Failure to conform to these requirements will be treated as a second incident under 106.4.6 QCP Non-compliance.

401.204 Acceptance Method A, B, & C - Test Strip Requirements

The following paragraphs are added:

If the proposed JMF has been used and approved under Method A or B testing requirements for mix volumetric and density on a current MaineDOT project, including carryover mix designs used the previous year, a test strip will not be required. A test strip at a nominal depth of 1¼ inch, full lane width, shall be required with any new JMF's. The test strip is intended to allow the Contractor to establish a method of compaction for the Thin Lift Surface Treatment areas. The Contractor may elect to forgo the test strip in favor of the Control Strip Option as detailed in this specification.

All test strips (onsite or offsite) shall be evaluated using Method B testing protocol. Mix samples and cores will be obtained from the test strip. A minimum of three mix samples shall be randomly selected from the test strip. Three cores shall be randomly sampled from the mat and tested for density. If the pay factor for Density falls below 0.86 for Method B, all of the cores will be randomly re-cut. A new pay factor will be calculated that combines all initial and retest results. If the resulting pay factor is below 0.86 for Method B, the Department will reject the test strip. The Contractor will remove and replace rejected test strips at their expense. After completion of the test strip, the Contractor shall make any final adjustments to the job mix formula in accordance to Standard

Specifications, Section 401, subsection 401.03 – Composition of Mixtures, or compaction method. Paving operations shall not resume until the Contractor and the Department determines that material meeting the Contract requirements can be produced, and any changes to the Job Mix Formula have been approved by the Department. The Department shall pay for an accepted test strip as determined Section 401.222 – Pay Factor A and B, for this item

The Contractor shall notify the Department at least 48 hours in advance of placing the test strip. Onsite test strips will not be excluded from the Project QA analysis, but will be evaluated in accordance with Section 401.03. On roads open to two way traffic, the test strip shall be placed over the full width of the travel way section, not to exceed 2000 ft in length, or 400 ton production. Prior to the placement of the test strip a passing verification test is required. A fog coat of bituminous tack coat shall be applied to the level course prior to surfacing. Payment will be made under the 409.15 – Bituminous Tack Coat pay item.

The Department may allow the Contractor to establish offsite test strips. If the Contractor proposes an offsite test strip the Department will require it to meet the onsite test strip requirements outlined in this specification with the exception that the offsite test strip will be excluded from the Project QA analysis.

Once the methods are established, the rolling patterns, equipment, and methods will become part of the QCP. The test strip will allow for any necessary adjustments to the mix design and or plant mixing procedures, as well as for the Department to evaluate the quality of the pavement. Changes to the compaction effort, number, or type of rollers may be permitted by the Department if damage to the HMA course becomes evident on the Thin Lift Surface Treatment areas. The use of a 10 ton vibratory roller, 16 ton pneumatic roller, and a 10 ton finish roller is required on all mixtures placed under this specification, unless otherwise authorized by the Department

401.205 Control Strip Option

The following paragraphs are added:

The Contractor may elect to forgo the test strip for the Thin Lift Surface Treatment. If this option is selected, the Contractor will be required to provide a QCT onsite for the placement of the Thin Lift Surface Treatment to monitor placement activities and maximize the density of the material for each day of placement. The QCT will be required to perform density testing of the mixture using a density meter (according to ASTM D 2950). A control section will be established at the beginning of the first day of production to establish roller patterns. The control section mixture will be rolled until the density readings show less than 1 pcf change for the final roller passes. This density will be used as the target TMD for the mixture. The remainder of the areas to be paved shall be compacted to a minimum density of 98% of the target density as determined in the control section

The Contractor shall record and provide reports of each day's results, including a daily paving report listing the mixture type, mixture temperatures, equipment used, environmental conditions, and number of roller passes used to obtain the target TMD. Reports shall be signed by the QCT and presented to the Department's representative by the end of the working day. If this option is selected, the QCT will be required to monitor the densities for the entire production run. The QCT shall be required to be onsite during all mainline paving operations.

The Department may halt the production and placement of the Thin Lift Surface Treatment and require the construction of a new test strip if the Department finds that material being produced, hauled, or placed does not meet the requirements of Sections 401.08 through 401.18

401.06 Method of Measurement

The following paragraph is added:

The Department will measure Hot Mix Asphalt pavement by the ton in accordance with Section 109 - Measurement and Payment.

401.07 Basis of Payment

This following paragraph is added:

The Department will pay for the Work, in place and accepted, in accordance with the applicable sections of this Special Provision; at the contract unit price per ton for the Pay Item listed in Special Provision Section 403 – Hot Mix Asphalt.

Payment will be made under:

Pay Item		Pay Unit
403.2104	9.5mm HMA - Thin Lift Surface Treatment	Ton

SPECIAL PROVISION
SECTION 403
HOT MIX ASPHALT

Desc. Of Course	Grad Design.	Item Number	Total Thick	No. Of Layers	Comp. Notes
¾" HMA Overlay Areas					
Mainline Travelway, Shoulders, & Approach Roads (As Indicated)					
Wearing	9.5 mm	403.2104	¾"	1	1,4,10,11,14,20,22
Variable-Depth Mill & 2" HMA Overlay Areas					
Mainline Travelway & Shoulders (As Indicated Typicals)					
Wearing	12.5 mm	403.208	2"	1	1,5,8,20
HMA Base Areas					
Mainline Travelway & Shoulders					
2" Depth to 6" Depth Areas (See Plans for Limits of HMA Lifts)					
Base	12.5 mm	403.213	2"	1	1,4,8
Base	12.5 mm	403.213	2"	1	1,4,8
Base	12.5 mm	403.213	2"	1	1,4,8
Spot Shims –Areas as Directed					
Shim	9.5 mm	403.211	variable	1/more	1,2,4,10,11,14
Drives, Islands, Misc.					
Wearing	9.5 mm	403.209	2"	1	2,3,10,11,14

COMPLEMENTARY NOTES

1. The required PGAB for this mixture will meet a **PG 64-28** grading.
2. The incentive/disincentive provisions for density shall not apply. Rollers shall meet the requirements of this special provision. The use of an oscillating steel roller shall be required to compact all mixtures pavements placed on bridge decks.
3. The design traffic level for mix placed shall be <0.3 million ESALS. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **50 gyrations**.
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**.
5. The aggregate qualities shall meet the design traffic level of 3 to <10 million ESALS for mix placed under this contract. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **75 gyrations**.
8. Section 106.6 Acceptance, (2) Method B. The Contractor may request a contract modification to change to testing method "A" prior to work starting on this item.

10. Section 106.6 Acceptance, (2) Method D.

11. The combined aggregate gradation required for this item shall be classified as a 9.5mm "**fine graded "** mixture, (using the Primary Control Sieve control point) as defined in 703.09.

14. The combined aggregate gradation required for this item shall be classified as a 9.5mm Thin Lift Mixture (TLM) mixture, using the Aggregate Gradation Control Points as defined in 703.09.

20. The Contractor may place the specified HMA pavement course, not to exceed 2" inch compacted depth, over the full single travel lane width, for each production day. If this option is utilized the Contractor will be required to place a matching course of HMA over the adjacent section of travel lane before the end of the following calendar day. The Contractor will also be responsible for installing additional warning signage that clearly defines the centerline elevation differential hazard, as well as additional centerline delineation such as double RPM application, or temporary painted line. The Traffic Control Plan shall be amended to include this option and the additional requirements. All signs and traffic control devices will conform to Section 719.01, and Section 652, and will be installed prior to the work, at a maximum spacing of 0.50 mile for the entire length of effected roadway section. On roadways with two-way traffic, the Contractor will be required to place the specified course over the full width of the mainline traveled way being paved prior to opening the sections to weekend or holiday traffic. If this option is utilized, all additional signing, labor, traffic control devices, or incidentals will not be paid for directly, will be considered incidental to the appropriate 652 items

22. See Special Provision 401 – Thin Lift Surface Treatment for project specifics.

Tack Coat

A tack coat of emulsified asphalt, RS-1 (see Special Provision 409) 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 /base courses 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 409
BITUMINOUS TACK COAT

409.06 Preparation of Surface

The following paragraph is added:

All existing pavement on which bituminous concrete mixtures are to be placed shall receive a tack coat. The surface area where the tack coat is to be applied shall be dry and cleaned of all dirt, sand, and loose material. Cleaning shall be accomplished by use of revolving brooms or mechanical sweepers. Undesirable material not removed by the above means shall be cleaned by hand-brooming or scraping, or a combination of both. Small areas otherwise inaccessible may be broomed with hand brooms. The tack coat shall be applied only when the existing surface is dry.

409.08 Method of Measurement

This subsection is replaced with the following:

Measurement for Bituminous Tack Coat will be measured by the gallon applied and accepted.

409.09 Basis of Payment

This subsection is replaced with the following:

Bituminous Tack Coat will be paid for at the Contract unit price per gallon which shall be full compensation for all materials, tools, equipment, labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Payment will be made under:

Pay Item		Pay Unit
409.15	Bituminous Tack Coat, Applied	Gallon

SPECIAL PROVISION
SECTION 419
SAWING AND SEALING JOINTS IN BITUMINOUS PAVEMENT
(Sawing Bituminous Pavement)

419.01 Description

This work consists of sawing bituminous concrete pavement as shown on the Plans, as specified herein or as approved by the Resident.

419.02 General

The bituminous concrete pavement to be sawed shall be accurately marked before cutting. The marking shall be in accordance with the locations as shown on the Plans or as approved by the Resident. Cutting shall be with an approved power driven saw with an abrasive blade.

Unless otherwise noted or directed, the sawcut shall be vertical, a minimum of 3/8 inch wide, and extend to a depth sufficient to create a clean cut line but no less than 2 inches, or as approved by the Resident.

Residue or debris from the sawing operation shall be removed immediately and legally disposed of by the Contractor.

419.03 Method of Measurement

Sawing Bituminous Pavement will be measured by the linear foot of pavement actually cut and accepted. No additional payment will be made for variations in the pavement thickness.

419.04 Basis of Payment

Sawing Bituminous Pavement will be paid for at the Contract unit price per linear foot which shall be full compensation for all materials, tools, equipment, labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident. The disposal of sawcut residue shall be incidental to the pay item.

Payment will be made under:

Pay Item		Pay Unit
419.30	Sawing Bituminous Pavement	Linear Foot

SPECIAL PROVISIONS
SECTION 502
STRUCTURAL CONCRETE
(Structural Concrete– Loading Slab)
(Structural Concrete– Loading Slab Barrier)
(Concrete Slab Scuppers)

502.01 Description

The following paragraphs are added:

This work shall consist of furnishing and installing Portland Cement structural concrete including labor, materials, and equipment necessary to complete the work of this Section. The extent of cast-in-place concrete work is shown on the drawings and includes concrete, forming, and finishing. Work also includes plastic rub strips and their connections to the corner of the barrier near the terminal entrance and accommodation for other construction elements such as block-outs for water standpipes, conduit runs, and concrete slab scuppers.

502.03 Materials

The following paragraphs are added:

Concrete slab scuppers shall be cast iron heavy-duty drains with bolted grates manufactured by Neenah Foundary of Stoughton, MA (www.neenahfoundary.com) or approved equal with the following properties:

Manufacturer:	Neenah Foundary
Model Number:	R-3921-B1, Grate Type B.
Material:	Cast Iron
Opening:	0.7 SF
Weir Perimeter:	4.5 LF

A clear protective concrete coating shall be applied to the finished exposed surfaces of the Concrete Loading Slab and the Concrete Loading Slab Barrier in accordance with SP 515.

502.031 Special Textured Surfaces

The following paragraphs are added:

The Concrete Loading Slab Barrier shall receive an aesthetic treatment of alternating flat surfaces and recessed textured patterns produced via concrete form liners in designated areas along the vertical façade facing Commercial Street throughout the length of the wall as shown on the structural plans and details. Up to five textured patterns will be chosen by the client. The patterns shall be created/provided to the general dimensions shown for the recessed panels in the plans. The patterns will be in the form of geometric shapes similar to the images of the following form liners noted below:

Type 1

Manufacturer:	Fitzgerald Formliners
Pattern Number:	16938
Style:	Vertical striation pattern.

Type 2
Manufacturer: Fitzgerald Formliners
Pattern Number: 17948
Style: Waves.

Type 3
Manufacturer: Fitzgerald Formliners
Pattern Number: 17944
Style: Rectangular patterns.

Type 4
Manufacturer: Fitzgerald Formliners
Pattern Number: 17949
Style: Triangular patterns.

Type 5
Manufacturer: Fitzgerald Formliners
Pattern Number: 17947
Style: Horizontal lines.

502.032 Submittals

The following paragraph is added:

The Contractor shall submit graphical images of the form liner proposed for the project for review and approval.

502.05 Composition and Proportioning

The following paragraph is added:

All cast-in-place concrete shall be MaineDOT Concrete Class LP.

Modify Table 1 in accordance with the following:

Concrete Class LP shall include Note 3: inclusion of Calcium Nitrite.

Modify Table 1 in accordance with the following:

Calcium Nitrite shall be added at a rate of 5.0 gallons per cubic yard.

502.0501 Quality Control METHOD A, METHOD B, and METHOD C

The following paragraph is added:

Quality Control for Portland Cement structural concrete shall be based on Method C.

502.18 Method of Measurement

The following paragraphs are added:

Structural Concrete – Loading Slab shall be measured by the cubic yard completed and installed in accordance with the Plans, and shall include the slab, edge beams, and front and back side curbs placed atop the slab.

Structural Concrete – Loading Slab Barrier shall be measured by the cubic yard completed and installed in accordance with the Plans, and shall include the textured surface along Commercial Street and the plastic rub strips at the corner of the barrier near the terminal entrance.

Concrete Slab Scuppers shall be measured by the unit complete and installed in accordance with the Plans.

502.65 Basis of Payment

The following paragraphs are added:

Payment for Structural Concrete – Loading Slab shall be paid for at the cubic yard Contract price and shall include all forming, blockouts (for the 115 KV line, standpipes and post indicator valve), concrete, finishing (including saw cutting during curing and the placement of joint sealants), and other incidentals necessary to complete the work for the slab including the edge beams and curbs in accordance with the Plans. Excavation, subbase materials, thermal sand, backfilling, grading, and compacting, steel reinforcement, coatings, underdrain connections, anchor devices (for fences), and scuppers are not included herein, but rather shall be paid for under their respective pay items.

Payment for Structural Concrete – Load Slab Barrier shall be paid for at the cubic yard Contract price and shall include all forming, concrete, finishing, textured fascia surfaces (Commercial Street side), plastic rub strips at the corner of the barrier near the terminal entrance, and other incidentals necessary to complete the work in accordance with the Plans. Steel reinforcement, coatings, utility conduits, and anchor devices (for fences, signs, and light poles) are not included herein, but rather shall be paid for under their respective pay items.

Concrete Slab Scuppers shall be paid for at the unit Contract paid and shall include all placement and leveling within the slab and connection to the underdrain pipe connecting components.

Payment will be made under:

Pay Item		Pay Unit
502.496	Structural Concrete – Loading Slab	Cubic Yard
502.497	Structural Concrete – Loading Slab Barrier	Cubic Yard
502.76	Concrete Slab Scuppers	Each

SPECIAL PROVISIONS
SECTION 502
STRUCTURAL CONCRETE
(Structural Concrete– Transformer Foundation)
(Structural Concrete– Security Building Slab)

502.01 Description

The following paragraphs are added:

This work shall consist of furnishing and installing Portland Cement structural concrete including labor, materials, and equipment necessary to complete the work of this Section. The extent of cast-in-place concrete work is shown on the drawings and includes excavation, formwork, reinforcing steel, concrete, anchor devices (where applicable), accessories, coatings, and finishing. Work also includes accommodation for other construction elements such as block-outs for conduits related to the Modular Building, Security Minor (see Section 815).

502.03 Materials

The following paragraphs are added:

All steel reinforcement shall be epoxy coated bars with a minimum yield strength of 60 ksi and shall conform to the requirements of Section 503 of the Standard Specifications.

All steel anchor devices shall be galvanized steel with a minimum yield strength of 36 ksi and shall conform to the requirements of Section 505 of the Standard Specifications.

A clear protective concrete coating shall be applied to the finished exposed surfaces of the concrete transformer foundation and the concrete security building slab in accordance with Special Provision 515.

502.05 Composition and Proportioning

The following paragraph is added:

All cast-in-place concrete shall be MaineDOT Concrete Class LP.

Modify Table 1 in accordance with the following:

Concrete Class LP shall include Note 3: inclusion of Calcium Nitrite.

Modify Table 1 in accordance with the following:

Calcium Nitrite shall be added at a rate of 5.0 gallons per cubic yard.

502.0501 Quality Control METHOD A, METHOD B, and METHOD C

The following paragraph is added:

Quality Control for Portland Cement structural concrete shall be based on Method C.

502.18 Method of Measurement

The following paragraphs are added:

Structural Concrete – Transformer Foundation shall be measured by the lump sum completed and installed in accordance with the Plans. Anchor devices installed to secure the transformer will not be measured separately but rather will be incidental to this pay item.

Structural Concrete – Security Building Slab shall be measured by the lump sum completed and installed in accordance with the Plans. Anchor devices installed to secure the Modular Security Building unit will not be measured separately but rather will be incidental to this pay item.

502.65 Basis of Payment

The following paragraphs are added:

Payment for Structural Concrete – Transformer Foundation shall be paid for at the lump sum Contract price and shall include all excavation, subbase materials, backfilling, grading, and compacting, forming, concrete, steel reinforcement, finishing, anchor devices, and other incidentals necessary to complete the work in accordance with the Plans.

Payment for Structural Concrete – Security Building Slab shall be paid for at the lump sum Contract price and shall include all excavation, subbase materials, backfilling, grading, and compacting, forming, concrete, steel reinforcement, finishing, anchor devices, and other incidentals necessary to complete the work in accordance with the Plans.

Payment will be made under:

Pay Item		Pay Unit
502.601	Structural Concrete – Transformer Foundation	Lump Sum
502.606	Structural Concrete – Security Building Slab	Lump Sum

SPECIAL PROVISIONS
SECTION 502
STRUCTURAL CONCRETE
(Quality Level Analysis)

502.01 Description

The following paragraphs are added:

This work shall consist of furnishing and installing Portland Cement structural concrete including labor, materials, and equipment necessary to complete the work of this Section. The extent of cast-in-place concrete work is shown on the drawings and includes removals of pavement and concrete, excavation, formwork, reinforcing steel, concrete, anchor devices (where applicable), accessories, and finishing. Work also includes accommodation for other construction elements such as conduits and curbing described in their respective Sections.

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

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

TABLE 1- Methods A, B, and C

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 PROVISIONS
SECTION 502
STRUCTURAL CONCRETE
(QC/QA Acceptance Methods)

CLASS OF CONCRETE	ITEM NUMBER	DESCRIPTION	P	METHOD
LP	502.601	Structural Concrete – Transformer Foundation	-	C
LP	502.606	Structural Concrete – Security Building Slab	-	C
LP	502.496	Structural Concrete – Loading Slab	-	C
LP	502.497	Structural Concrete – Loading Slab Barrier	-	C
A	526.35	Permanent Concrete Jersey Barrier	-	C
A	608.292	Pervious Precast Concrete Slabs	-	C
A	626.32	24-Inch Dia., Foundation - Light Standard - 11ft	-	C
A	626.32	24-Inch Dia., Foundation - Card Reader and Pedestal Pole - 5ft	-	C
A	626.323	Pedestal Reefer Outlet Foundations	-	C
A	626.332	30-Inch Dia., greater than 8-feet long, and all 36-inch and 42-inch dia. Foundations.	-	C
A	626.333	48-Inch Dia., 54-inch Dia., and 60-inch dia. Foundations.	-	C

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

SPECIAL PROVISIONS
SECTION 504
STRUCTURAL STEEL
(Remove and Dispose Existing Steel Fender Panel)
(Remove and Reinstall UHMW Wearing Surface, 11-ft Piece)
(Remove and Reinstall UHMW Wearing Surface, 1-ft Piece)
(Remove and Dispose Bent Steel Fender HP10x42 Member)
(Replace Lower Shear Chain)
(Replace Upper Shear Chain)
(Weight Chain)
(UHMW Wearing Surface, 11-ft Piece)
(UHMW Wearing Surface, 1-ft Piece)
(Steel Fender Panels, Closed-Box, w/UHWM Wearing Surface)

504.01 Description

The following paragraphs are added:

This work shall consist of replacing the specified number of steel fender panels along the Terminal's waterfront pier with a steel closed-box fender panel faced with a UHMW low-friction wearing surface. Only a portion of the total number of steel fender panels will be replaced at this time and at the locations shown on the Contract Plans, and only the steel panel itself (not the existing rubber arch fenders) will be replaced.

In addition, the work shall also consist of miscellaneous repairs and modifications to the existing and remaining fender panels, which will include the following work: chain replacements, UHMW replacements/installations, and modifications to damaged steel sections within the fender panels.

With respect to the above work elements, the Contractor shall coordinate the work contained within this special provision with the Terminal Manager to prevent conflicts with the Eimskip vessel schedule. See Section 104 of the Special Provisions for more information.

504.02 Materials

The following paragraphs are added:

The steel fender panels shall have a minimum yield strength of 36 ksi and all welding shall be in accordance with AWS D1.1 latest edition standards. The steel fender panels shall be manufactured by Maritime International of Broussard, LA or an approved equal.

The steel fender panels shall have a high chemical-resistant coating suitable for severe marine exposure such as a coating comprised of a cycloaliphatic amine epoxy topped with a coat of aliphatic acrylic polyurethane. Coatings shall be manufactured by Carboline of St. Louis, MO or an approved equal.

All steel chains, bolts, and anchors shall be galvanized steel with a minimum yield strength of 36 ksi. The socket type embedment hardware must have a 316 stainless steel female socket and an ASTM A153 hot dipped galvanized ASTM A307 embedment bolt behind the socket. All bolts shall be ASTM A307 hot dipped galvanized. Panel side female mounting sockets shall be ASTM A304 stainless steel. All hardware for mounting the fender panel including, chains, bolts, nuts, and washers shall be supplied by the fender manufacture to ensure a proper fit.

The UHMW wearing surface shall be made of 100% virgin material and cover the face of the panel including the faces of the bevels. The wearing surface shall be a minimum of 1.25 inches thick and black in color. The UHMW must be 2.5% UV stabilized. The UHMW materials must meet the following minimum standards as outlined in Table 1.

TABLE 1

Property	**Test Method**	**English Unit**	**English Value**
Density	ASTM D-792	lbs/ft³	58
Molecular Weight	Viscosimetric	g/mol	4,200,000
Yield Strength	ASTM D-638	psi	3050
Ultimate Strength	ASTM D-638	psi	5800
Elongation at Break	ASTM D-638	%	250
Hardness	ASTM D-2240	Type D	68
IZOD Impact Strength	ASTM D-4020	ft-lbs/in²	34
Tensile Impact	DIN 53448	ft-lbs/in²	1050
Sand Wheel Wear	ASTM G-65	AR-01 Steel=100	90
Static Friction	ASTM D-1894	Unitless	0.15
Dynamic Friction	ASTM D-184	Unitless	0.12
Coefficient of Thermal Exp.	ASTM D-696	°F⁻¹	0.00011
Melting Point	ASTM D-3417	°F	278-289
Water Absorption	ASTM D-570	%	nil

504.031 Submittals

The following paragraphs are added:

The steel fender panel shop drawings and all associated material specifications shall be submitted for review and approval. The following is a general list of the components to be included in the fender submittal:

- Detailed shop drawings illustrating the arrangement and dimensions of the proposed steel closed-box fender panel, wearing surface, chains, anchorages, and hardware;
- Calculations justifying the proposed design of the steel closed-box fender panel and the chains, particularly the number of new chains required to support the panels given the arrangement of the existing rubber arch fenders;
- Welding procedures and individual qualifications and certifications;
- Catalog data sheets for the proposed paint system;
- Product liability insurance certificate;
- A list of five completed projects with the same or similar steel closed-box fender panel;
- UHMW material data sheet;
- Packing and delivery procedures;
- Pressure test report of the steel closed-box fender panel;
- Test certificates for the rubber material properties; and
- Detailed installation and handling procedures for the supplied steel closed-box fender panel.

504.032 General Requirements

The following paragraphs are added:

Steel Closed-Box Panel

The proposed panel shall be of the close box type and be rectangular in shape. The vertical length and horizontal width of the panel shall be as called out in the project drawings. Only the flat area of the panel that contacts the vessel shall be considered when calculating the hull pressure. The panel shall be designed and constructed according to the AISC Steel Construction ManualSpecifications13thedition.

The panel shall be designed to include all possible loads imparted by the vessel onto the fender and shall include, but not be limited to, two line loads at the extreme top and bottom of the flat portion of the panel.

The weight of the panel with the UHMW wearing surface shall not exceed 10,000 lbs. Additional weight chains shall be installed to support the weight of the panels. The Contractor shall coordinate the number and location of additional support chains necessary to support the panels. Support chains are included as a unit item in these Special Provisions for this reason.

External fillet welds to be seal welds to prevent corrosion. Pressure testing shall be performed to ensure an air and water tight seal. Pressure test results must be provided to the approval engineer prior to delivery of the panels.

All bolt holes to be drilled or punched. The manufacturer is to supply current welding procedures as well as individual welder qualifications and certifications as part of their submittal documentation.

Steel Closed-Box Panel Coating System

The proposed steel closed-box panel shall receive a surface preparation in accordance with SSPC-SP10 with an anchor profile of 2.5 mils. The minimum DFT of the coating shall be 16 mils nominal and inspected per SSPC-PA2. One manufacturer shall provide the coating system to ensure compatibility between coats and quality control of the final product. The specified coating thickness of the three-coat system shall be as follows:

1st Coat: 7 mils of Carboguard 890 (or approved equal)
2nd Coat: 7 mils of Carboguard 890 (or approved equal)
3rd Coat: 2 mils of Carbothane 134, black (or approved equal)

Chains, Anchorages, and Hardware

The proposed chains, anchorages, and hardware shall prevent excessive shear and weight-induced deflection of the existing fenders. All hardware such as shackles and tensioners required for attaching the chains are to be included and supplied by fender manufacturer. All items shall be hot dipped galvanized. All chains are mandatory and must be included in the design. Chain loads shall have a factor of safety of 3.

For weight chains: shall be sized to include the shearing force from friction as well as the weight of the panel and one-half the weight of the proposed fenders. See the Plans for the location and number of existing support chains (weight chains) that can be used toward this requirement.

For tension chains: shall be sized considering a partial deflection of the fender from a vessel rolling into the panel at 5° from vertical and 5° from horizontal berthing angles.

For shear chains, shall be sized considering the maximum possible shearing and tension forces on the fender. Shearing forces on the panel shall be calculated from the maximum reaction of the fender and a coefficient of friction of 0.20 for the UHMW face pads.

All anchor pad eyes for attaching the proposed chains to mounting surface are to be included and supplied by the fender manufacturer. All pad eyes and mounting hardware to be hot dipped galvanized.

UHMW Wearing Surface

The pads shall be drilled and counter bored for the studs or mounting bolts. The counter bored hole shall leave a minimum of ¾" of material between the panel and the washer. The wear surface shall be a minimum of ½". All mounting studs (or bolts) shall be a minimum of ⅝" in diameter. All studs, bolts, washers and nuts shall be 316 stainless steel. All exposed edges of the UHMW shall include ¾" x ¾" chamfers.

Removal of Bent HP10x42 Members

Prior to removing the Bent HP10x42 sections of the existing fender panels, the Contractor shall notify the Resident and the Engineer so that a visual and tactile inspection may be conducted to determine the extent of removals which will be based on the extent of damage and location of the connection points.

504.033 Performance Requirements

The following paragraphs are added:

The manufacturer of the steel closed-box panels shall review the design criteria shown on the Contract Plans regarding the vessel characteristics, berthing requirements, and minimum standoff requirements prior to designing and submitting the panel shop drawings and material specifications.

The Contract shall be advised that the steel closed-box fender panels may require additional steel members to provide the proper offset between the existing rubber fender elements and the steel panels so that the position of the vertical wearing surface is either aligned or slightly outboard of the remaining fender panels. The thickness of the steel closed-box panel system shall be no less than 12-inches and no more than 13 inches when considering the thickness of the steel box, the UHMW wearing surface, and the inclusion of any spacers.

504.034 Method of Measurement

The following paragraphs are added:

Remove and Dispose Existing Fender Panel shall be measured by the unit completed and removed in accordance with the Plans.

Remove and Reinstall UHMW Wearing Surface, 11-ft Piece shall be measured by the unit fully removed from one of the removed steel fender panels and then reinstalled on an existing fender panel to remain. Connection hardware required to install the wearing surface will not be measured separately, but rather shall be incidental to this pay item.

Remove and Reinstall UHMW Wearing Surface, 1-ft Piece shall be measured by the unit fully removed from one of the removed steel fender panels and then reinstalled on an existing fender panel. Connection hardware required to install the wearing surface will not be measured separately, but rather shall be incidental to this pay item.

Remove and Dispose Bent Steel Fender HP10x42 Member shall be measured by the linear foot fully removed from the existing steel fender panel to remain. The remaining edges are to be ground flush and will not be measured separately. The measured quantity shown in the Schedule of Items is estimated based on limited field inspections. The Contractor, the Resident, and the Engineer shall evaluate the extent of damaged steel fender HP10x42 members prior to proceeding with the work.

Replace Lower Shear Chain and Replace Upper Shear Chain shall be measured by the unit fully removed and replaced with an in-kind hot-dipped galvanized steel chain.

Weight Chain shall be measured by the unit fully installed and accepted.

UHMW Wearing Surface, 11-ft Piece shall be measured by the unit installed on an existing fender panel. Connection hardware required to install the wearing surface will not be measured separately, but rather shall be incidental to this pay item.

UHMW Wearing Surface, 11-ft Piece shall be measured by the unit installed on an existing fender panel. Connection hardware required to install the wearing surface will not be measured separately, but rather shall be incidental to this pay item.

Steel Fender Panels, Closed-Box, w/UHMW Wearing Surface shall be measured by the unit and shall include coatings, threaded inserts, UHMW wearing surfaces, and any offsetting steel pieces.

502.65 Basis of Payment

The following paragraphs are added:

Payment for Remove and Dispose Existing Fender Panel shall be paid for at the Contract unit price and shall include all demolition, temporary storage (for UHMW salvage), disposal, and other incidentals necessary to complete the work in accordance with the Plans.

Payment for Remove and Reinstall UHMW Wearing Surface, 11-ft Piece shall be paid for at the Contract unit price and shall include all fastener hardware, labor, equipment, and materials necessary to complete the work in accordance with the Plans.

Payment for Remove and Reinstall UHMW Wearing Surface, 1-ft Piece shall be paid for at the Contract unit price and shall include all fastener hardware, labor, equipment, and materials necessary to complete the work in accordance with the Plans.

Payment for Remove and Dispose Bent Steel Fender Panel Member shall be paid for at the Contract unit price and shall include removal of the steel, grinding flush the remaining steel member, labor, equipment, and materials necessary to complete the work in accordance with the Plans.

Payment for Replace Lower Shear Chain and Replace Upper Shear Chain shall be paid for at the Contract unit price to perform the work including all labor, equipment, and materials necessary to complete the work in accordance with the Plans.

Payment for Weight Chain shall be paid for at the Contract unit price to install support chains in accordance with the manufacturer's design drawings and the Plans.

Payment for UHMW Wearing Surface, 11-ft Piece shall be paid for at the Contract unit price to install the proposed wearing surface pieces on an existing fender panel. Connection hardware, labor, equipment, and materials required to install the wearing surface shall be incidental to this pay item.

Payment for UHMW Wearing Surface, 1-ft Piece shall be paid for at the Contract unit price to install the proposed wearing surface pieces on an existing fender panel. Connection hardware, labor, equipment, and materials required to install the wearing surface shall be incidental to this pay item.

Payment for Steel Fender Panels, Closed-Box, w/UHMW Wearing Surface shall be paid for at the Contract unit price to supply and install the fender panels to the satisfaction of the Resident. All labor, equipment, and materials necessary to install the steel fender panels shall be incidental to this item.

Payment will be made under:

Pay Item		Pay Unit
504.623	Remove and Dispose Existing Fender Panel	Each
504.631	Remove and Reinstall UHMW Wearing Surface, 1-ft piece	Each
504.632	Remove and Reinstall UHMW Wearing Surface, 11-ft piece	Each
504.633	Remove and Dispose Bent Steel Fender HP10x42 Member	Linear Foot
504.641	Replace Lower Shear Chain	Each
504.641	Replace Upper Shear Chain	Each
504.642	Weight Chain	Each
504.643	UHMW Wearing Surface, 1-ft piece	Each
504.644	UHMW Wearing Surface, 11-ft piece	Each
504.65	Steel Fender Panels, Closed-Box, w/UHMW Wearing Surface	Each

SPECIAL PROVISIONS
SECTION 515
PROTECTIVE COATING FOR CONCRETE SURFACES
(Protective Coating for Concrete Surface, Special)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 515 – PROTECTIVE COATING FOR CONCRETE SURFACES, with the following modifications:

MODIFICATIONS:

Section 515.01 Description

This section is deleted and replaced with the following:

The work shall include the surface preparation and application of a protective sealant on concrete surfaces to protect new cast-in-place concrete and precast concrete structural elements in the marine/waterfront environment. The sealant shall be applied to the following components: the exposed areas of the transformer slab, the security building slab, and the entire exposed area of the concrete barrier and the concrete loading slab (including curbs and wheel stops).

Section 515.02 Materials

This section is deleted and replaced with the following:

The penetrating concrete sealant shall be Saltguard WB by Consolideck / ProSoCo; a penetrating water and salt barrier comprised of a VOC compliant silane/siloxane water repellent and chloride screen, or an approved equal.

Section 515.04 Application

This section is deleted and replaced with the following:

The penetrating concrete sealant shall be applied in one coat in strict accordance with manufacturer's recommendations.

The aesthetic façade of the concrete barrier is not a smooth surface. Use a bristled brush or an air spray device to apply the protective coating to ensure that the coating is applied to all surfaces of the wall.

Section 515.05 Method of Measurement

This section is deleted and replaced with the following:

The Protective Coating will be measured by the square yard, satisfactorily applied and accepted.

Section 515.06 Basis of Payment

This section is deleted and replaced with the following:

Protective Coating for Concrete Surfaces will be paid at the Contract unit price per square yard which price shall be full compensation for all labor, materials, equipment, and incidentals required for furnishing and applying the penetrating sealant as shown on the Plans and in accordance with these Specifications. Surface preparation and protection of surfaces will not be measured separately for payment, but shall be incidental to the Protective Coating for Concrete Surfaces.

Pay Item		Pay Unit
515.20	Protective Coating for Concrete Surfaces, Special	Square Yard

SPECIAL PROVISION
SECTION 525
GRANITE MASONRY
(Interpretive Sign Foundation)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 525 – GRANITE MASONRY, with the following modifications:

MODIFICATIONS:

Section 525.01 Description

The work covered by this section includes furnishing all labor, materials, equipment and incidentals for the installation of granite foundations for interpretive signs as shown on the Landscape Plans and Details.

525.02 Materials

The granite shall be obtained from an approved quarry and be free from materials which, by weathering, would cause discoloration or deterioration. The granite for the entire Project shall be uniform in color and free from seams, cracks and other structural defects.

Interpretive Sign Foundations shall be standard Woodbury gray granite or approved equal in color and 3’-6” wide x 2’-6” deep x 4’-1” total back height beveled down to 3’-2” total front height. The foundations shall have a thermal top with eased top edges, shallow rock faces on four sides, and a sawn bottom.

The finish on exposed surfaces of the stones shall be free from tool marks. Irregular projections shall be limited to a maximum of 2 inches for any one stone measured from the pitch line. Irregular depressions shall be limited to a maximum of 1 inch for any one stone measured from the pitch line. Stones shall have their edges pitched to a true line with tops and bottom parallel and cut to lie on their natural beds. The top and bottom beds shall be the full size of the stone, and hollow beds shall not be permitted.

525.031 Submittals

Submit shop drawing from manufacture for product dimensions, color, and finishes.

525.032 Construction

Granite foundations shall be delivered and handled to prevent soiling and damage. Store bench off the ground until area is prepped and made ready for installation.

Set foundations, level, true, and parallel to sidewalk / road, keyed 4” into ground on prepared subbase, as shown on Landscape Details or as directed by landscape architect. Maintain a minimum 12” depth of compacted type ‘D’ gravel aggregate base, modified to a max. 4” size, under foundations; compact in 4” lifts.

Perform cleaning during installation of work and upon completion of work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from installation operations.

525.09 Method of Measurement

Interpretive Sign Foundation will be measured by the individual unit, complete and accepted in place.

525.10 Basis of Payment

Interpretive Sign Foundation will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment, labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Payment will be made under:

Pay Item		Pay Unit
525.74	Interpretive Sign Foundation	Each

SPECIAL PROVISIONS
SECTION 526
CONCRETE BARRIER
(Permanent Concrete Jersey Barrier)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 526 – CONCRETE BARRIER with the following additions and modifications:

Section 526.01 Description

This section is modified by addition of the following:

The work shall include the permanent installation of concrete jersey barrier along the southern property line of the MaineDOT railroad corridor in order to support the side-slopes of the railroad ballast in areas where grade differential between the railroad track and the existing ground is greater than the normal repose angle of ballast and subballast. These areas are shown in the plan views of the railroad drawings. Concrete jersey barrier shall be in fair condition or better for permanent installation as a retaining wall system along the ballasted track. Concrete jersey barrier shall be transported to the site and installed in trenches to the grades shown on the cross-sections. Once installed, the concrete jersey barriers will remain in place as part of the completed project.

Section 526.02 Materials

This section is modified by addition of the following:

Permanent Concrete Jersey Barrier shall be made of Class A concrete (or better) and 60-ksi steel reinforcement similar to standard jersey barriers used for temporary traffic control. Barrier elements shall have a positive connection on the side so that adjacent elements are connected and cannot shift laterally apart from one another. Concrete barriers shall not be treated with protective concrete coating.

Upon connection of the barriers and prior to backfilling, the gap between the barriers shall be covered with a strip of pressure treated plywood so as to prevent migration of the ballast materials through the barrier. The plywood shall extend to the base of the barrier to 2 inches above the top of ballast, and in no instance shall it extend above the concrete barrier.

At the Contractor's option, concrete jersey barrier may be either 32-inches in height or 36-inches in height. The barrier height shall be determined by the Contractor based on his understanding and ability to avoid any and all impacts to the adjacent property. A taller barrier will provide a few nominal inches of buffer between the concrete barrier and the property line as a function of the ballast side-slope as shown on the railroad typical cross-section.

Section 526.03 Construction Requirements

This section is modified by addition of the following:

The Permanent Concrete Jersey Barrier shall be installed atop a separate layer of subballast material and completely placed within the railroad corridor so as to avoid impacts to the adjacent property. Hand excavation near the property line may be necessary and may be coupled with a temporary vertical divider to support the adjacent property during installation of the barrier. Once the barrier is in place, the gap between the barriers shall be covered prior to placement of the subballast and ballast for a distance of at least 4 inches beyond each side of the gap. Material shall be tamped or vibrated into place in accordance with the special provisions for subballast and ballast materials.

Section 526.04 Method of Measurement

This section is modified by addition of the following:

Permanent Concrete Jersey Barrier will be measured for payment by the linear foot, satisfactorily installed and accepted.

Section 526.05 Basis of Payment

This section is modified by addition of the following:

Permanent Concrete Jersey Barrier will be paid at the Contract unit price per linear foot which price shall be full compensation for all labor, materials, equipment, and incidentals required for furnishing and installing the barrier as shown on the Plans and in accordance with these Specifications. Plywood supplied and installed to cover the gaps shall be incidental to the Permanent Concrete Jersey Barrier pay item.

Excavation is not included herein, but rather shall be paid for under its respective pay item.

Subballast installed beneath the Permanent Concrete Jersey Barrier as a base foundation material is not included herein, but rather shall be paid for under it respective pay item.

Pay Item		Pay Unit
526.35	Permanent Concrete Jersey Barrier	Linear Foot

SPECIAL PROVISION
SECTION 603
PIPE CULVERTS AND STORM DRAINS
(12-Inch RCP, Class III)
(15-Inch RCP, Class III)
(18-Inch RCP, Class III)
(24-Inch RCP, Class V)
(Concrete Pipe Collar)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 603 – PIPE CULVERTS AND STORM DRAINS, with the following additions and modifications:

Section 603.12 Basis of Payment

The Subsection is amended to include the following:

Payment will be made under the following Pay Item:

Pay Item		Pay Unit
603.155	12 Inch, RCP, Class III	Linear Feet
603.165	15 Inch, RCP, Class III	Linear Feet
603.175	18 Inch, RCP, Class III	Linear Feet
603.1952	24 Inch, RCP, Class V	Linear Feet
603.4105	Concrete Pipe Collar	Each

SPECIAL PROVISION
SECTION 603
PIPE CULVERTS AND STORM DRAINS
(Storm Overflow Slipline)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, and the MaineDOT Supplemental Specifications dated July 2010, with the following additions:

603.01 Description

The work shall consist of providing and installing a high density polyethylene pipe within an existing wooden Storm Overflow (CSO) in accordance with the location designated on the Plans. Installation shall be performed from the open-end of the CSO at the bank of the Fore River, without the use of excavations or trenches. Upon installation of the pipe, the annulus of the pipe shall be grouted.

Storm Overflow Slipline shall be performed during a non-rain weather window and during a low tide period so as to alleviate the need for by-pass pumping.

603.011 Submittals

The Contractor shall submit proposed installation procedure for approval. Submittal shall include the manner by which the Contractor intends to install the pipe and contain the grout during installation. Submittal shall be stamped by a Professional Engineer licensed in the State of Maine.

603.012 Materials

The materials shall comprise a watertight, snap-tite pipe with gasketed joints (butt-fusion joints are not allowed) encased within a cementitious grout with the following properties:

High Density Polyethylene in accordance with:
- ASTM D-3350-02
- Plastic Pipe Institute designation PE 3408
- ASTM F-714, minimum DR of 32.5
- Smooth non-corrugated interior/exterior

Gasket in accordance with:
- ASTM D3212

Cementitious Grout in accordance with:
- MaineDOT Standard Specification 502, Class “Fill”, or a lean cementitious grout of 2,500 psi (min.) compressive strength.

603.013 Preparations

Prior to installation of the pipe, the Contractor shall review the existing video tape of the CSO to validate its condition. The video will be provided by the MaineDOT upon request. Upon acceptance of the documented condition, the Contractor may proceed with the slip lining operations.

603.014 Installation

The work shall be performed in the following manner:

1. Select and prepare the existing culvert. Inspect culvert to ensure the liner can be inserted without obstruction. Flush/clean existing culvert pipe.
2. Insert one end of snap tite liner into existing culvert by pushing or pulling the pipe with various techniques. Leave 5 feet exposed prior to this step. A nose cone may be needed.
3. Position and install snap tite liner with the proper alignment with the same slope.
4. Install gasket on the male end to ensure a water-tight seal. The gasket should be installed on the groove furthest from the end.
5. Hoist pipe with chains by double wrapping at least 2 feet away from the coupling.
6. Snap liner together. Aligning the ends with the male bevel inside of the female bevel. Pull the couplings together forcing the female end to expand and allowing the male end to move into the female end.
7. Push the joined liners into the culvert and repeat process until lining is complete.
8. Seal culvert ends. Seal the annular space between the snap tite liner and existing pipe with appropriate grout.
9. Grout the annular space.

603.11 Method of Measurement

The accepted quantities of Storm Overflow Slipline will be full compensation for all labor, materials, incidentals, and equipment necessary to satisfactorily complete the work in accordance with the Plans and Specifications, and will be paid for at the Contract unit price per linear foot.

603.12 Basis of Payment

Storm Overflow Slipline will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Payment will be made under:

Pay Item		Pay Unit
603.98	Storm Overflow Slipline	Linear Foot

SPECIAL PROVISION
SECTION 603
(PIPE CULVERTS AND STORM DRAINS
(Storm Overflow Lining)
(Reline Existing Sewer)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, and the MaineDOT Supplemental Specifications dated July 2010, with the following additions:

603.01 Description

The work shall consist of providing and installing a cured-in-place pipe (CIPP) within an existing 48-inch sewer interceptor pipe owned by the Portland Water District, as well as a 24-inch Storm Overflow (CSO) owned by the City of Portland, both in accordance with the location designated on the Plans.

603.011 General

It is the intent of this specification to provide for the reconstruction of pipelines by the installation of a resin-impregnated flexible tube that is either inverted or pulled into the original pipeline and expanded to fit tightly against said pipeline by the use of water or air pressure. The resin system shall then be cured by elevating the temperature of the water or air used for the inflation to a sufficient enough level for the initiators in the resin to effect a reaction. The finished CIPP shall be such that when the thermosetting resin cures, the total wall thickness shall be a homogeneous and monolithic felt and resin composite matrix, chemically resistant to withstand internal exposure to domestic sewage or stormwater.

603.012 Qualifications

Only proven products with substantial successful long-term track records will be approved. In order for the CIPP and Installation Contractor to be deemed commercially acceptable and approved for this project they must meet the following criteria:

A. CIPP

1. The CIPP product must have been installed in a minimum of 500,000 linear feet or 1,000 manhole to manhole line sections of successful wastewater collection system installations in the U.S. and must be documented to the satisfaction of the Owner.

2. The CIPP shall comply with the latest versions of ASTM D5813, F1216 or ASTM F1743, including appendices.

3. For the CIPP to be considered Commercially Proven, it shall have been successfully in service in an application similar to this project for a minimum of 5 years and documented to the satisfaction of the Owner.

4. The lining tube manufacturer shall operate under a quality management system that is third party certified to ISO 9001 or other internationally recognized organization standards. Proof of certification shall be submitted with the Bidder's bid and required for approval.

5. Third-party test results supporting the structural properties and long-term performance of the CIPP shall be submitted for approval, and such data shall be satisfactory to the Owner. No CIPP will be approved without independent third party testing verification.

B. Installation Contractor

1. The Installation Contractor shall satisfy all insurance, financial and bonding requirements of the Owner In addition, the Installation Contractor shall have had at least 5 years active experience in the installation of CIPP.

2. The Installation Contractor superintendent(s) designated for the project shall have installed a minimum of 10,000 lineal feet and shall have 5 years of installation experience of CIPP. This shall be documented to the Owner's satisfaction in the form of a resume of work experience detailing scope of work (linear footage and pipe diameters), location of work, and reference contact information for each project listed.

603.013 Structural Requirements

A. Each CIPP shall be designed to withstand internal and/or external loads as dictated by the site and pipe conditions. The design thickness of the CIPP shall be derived using the standard engineering methodology as found in ASTM F1216, Appendix X1. The long-term flexural modulus shall not exceed 50 percent of the short-term value for the CIPP and shall be substantiated through third-party testing. The thickness calculations, signed and sealed by a professional engineer licensed in the State of Maine, shall be submitted to the Owner prior to CIPP installation.

B. The layers of the finished CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or such that the knife blade moves freely between the layers. If separation of the layers occurs during testing of the field samples, new samples will be cut from the work. Any reoccurrence may be cause for rejection of the work.

C. The Enhancement Factor 'K' to be used in the CIPP design shall be assigned a value of 7.

D. Long-term testing in general accordance with ASTM D2990 must have been performed for flexural creep of the CIPP pipe material to be installed. Such testing results are to be used to determine the long-term, time dependent flexural modulus to be utilized in the product design. This is a performance test of the materials (CIPP Tube and Resin) and general workmanship of the installation and curing as defined within the relevant ASTM standard. A percentage of the instantaneous flexural modulus value (as measured by ASTM D790 testing) will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. Retention values exceeding 50% of the short-term test results shall not be applied unless substantiated by qualified third party test data to the Owner's satisfaction. The materials utilized for the contracted project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in the CIPP design.

E. The CIPP shall meet the following minimum strength requirements:

MINIMUM PHYSICAL PROPERTIES

Property	ASTM Test Method	Polyester System	Filled Polyester System	Vinyl Ester System
Flexural Strength	D790	4,500 psi	4,500 psi	5,000 psi
Flexural Modulus (initial)	D790	250,000 psi	400,000 psi	300,000 psi
Flexural Modulus (50-year)	D790	125,000 psi	205,000 psi	150,000 psi

F. The required CIPP wall thickness shall be based as a minimum on the physical properties in Section 1.3.E. above (or greater values if substantiated by third-party testing) and in accordance with the design equations in the Appendix X1 of ASTM F1216, and the following design parameters:

Design Safety Factor (typically used value)	=	2.0
Retention Factor for Long-Term Flexural Modulus to be used in Design	=	50% max
(As determined by long-term tests described in Section 3.1.B and approved by the Owner)		
Ovality* (calculated from (X1.1 of ASTM F1216)	=	% (1)
Enhancement Factor, K	=	7.0
Groundwater Depth (above invert of pipe)	=	feet (1)
Soil Depth (above crown of pipe)	=	feet
Soil Modulus (only required for fully deteriorated design conditions)	=	psi (1)
Soil Density (only required for fully deteriorated design conditions)	=	lb/ft^3(1)
Live Load (only required for fully deteriorated design conditions)	=	e.g. H20 Highway
Design Condition (partially or fully deteriorated)*	=	*

* Based on review of video logs, design conditions of pipeline can be fully or partially deteriorated. (See ASTM F1216 Appendix) The Owner will be sole judge as to pipe conditions and parameters utilized in design.

(1) In the absence of other information and to ensure uniformity in bidding, the following assumptions shall be used: ovality = 2%; groundwater depth at half depth to invert; soil modulus = 1000 psi; soil density = 120 lb/ft^3.

603.014 Other Material Requirements

A. CIPP Tube

1. The CIPP tube shall consist of one or more layers of a flexible needled felt or an equivalent nonwoven or woven material, or a combination of nonwoven and woven materials, capable of carrying resin, withstanding installation pressures and curing temperatures. The CIPP tube should be compatible with the resin system to be used on this project. The material should be able to stretch to fit irregular pipe sections and negotiate bends.

2. The CIPP tube should be fabricated under controlled conditions to a size that, when installed, will tightly fit the internal circumference and the length of the original conduit. Allowances should be made for the longitudinal and circumferential stretching that occurs during placement of the CIPP tube. Maximum stretching allowances shall be as defined in ASTM F1216 or ASTM F1743. The Installation Contractor shall verify the lengths in the field before cutting the CIPP tube to length. Continuous individual liners can be made over one or more manhole to manhole sections.

3. The CIPP tube shall be uniform in thickness and when subjected to the installation pressures shall meet or exceed the designed wall thickness.

4. Any plastic film applied to the CIPP tube on what will become the interior wall of the finished CIPP shall be compatible with the resin system used, translucent enough that the resin is clearly visible, and shall be firmly bonded to the felt material.

5. At time of manufacture, each lot of CIPP tube shall be inspected and certified to be free of defects. The CIPP tube shall be marked for distance at regular intervals along its entire length, not to exceed five feet. Such markings shall also include the CIPP tube Manufacturer's name or identifying symbol.

6. The CIPP tube may be made of single or multiple layer construction where any layer must not be less than 1.5 mm thick. A suitable mechanical strengthener membrane or strip may be placed in between layers where required to control longitudinal stretching.

B. Resin Components

1. The resin system shall be a corrosion resistant polyester or vinyl ester, along with a compatible catalyst system.

2. The resin used shall not contain non-strength enhancing fillers.

3. When combined with the CIPP tube, the resin system shall provide a CIPP that meets the structural requirements of ASTM F1216 or ASTM F1743, the minimum physical properties specified in Section 1.3.E., and those properties which are to be utilized in the design of the lining system for this project.

4. When combined with the CIPP tube, the resin system shall provide a CIPP that complies with the chemical resistance requirements specified in ASTM F1216 or ASTM F1743.

603.015 Installation

The Installation Contractor shall deliver the resin impregnated CIPP tube to the site and provide all equipment required to insert and cure the CIPP within the host pipe. The Installation Contractor shall designate a location where the CIPP tube will be vacuum impregnated with the resin prior to installation. If requested by the Owner, the Installation Contractor shall notify the Engineer at least 48 hours prior to wet out to allow the Engineer to observe the materials and wet out procedure. All procedures to prepare the CIPP for installation shall be in strict accordance with the Manufacturer's recommendations.

The CIPP shall be vacuum impregnated with resin not more than 120 hours before the time of installation and stored out of direct sunlight at a temperature of less than 70° F.

603.016 Notification and Preparation

A. The Installation Contractor shall notify the resident at least 24 hours prior to any service disruption affecting their service connection. The Installation Contractor shall make every effort to maintain service usage throughout the duration of the project.

B. The Installation Contractor shall perform cleaning and inspection prior to installation of the CIPP. The Installation Contractor shall remove all debris from within the pipe that will interfere with the installation of the CIPP. The Contractor shall provide a dumpsite for such debris removed during the cleaning operations.

C. It shall be the responsibility of the Installation Contractor to notify the Owner of line obstructions, offset joints or collapsed pipe that will prevent the insertion of the tube or significantly reduce the capacity of the sewer. The Owner, with input from the Installation Contractor, shall determine the method of pipe repair required and shall address these concerns on a case-by-case basis.

D. Protruding laterals or services shall be trimmed flush with the inside of the main sewer wall prior to installation of the CIPP. Trimming shall not cause damage to the lateral or service beyond the inside face of the main sewer.

603.017 By-Pass Pumping

A. The Installation Contractor shall provide for the flow of sewage around the sections of sanitary sewer pipe designated for repair in accordance with the By-Pass Pumping Special Provision in Division 800 of these Special Provisions.
B. By-Pass pumping is not required for the 24-Inch CSO.

603.018 Television Inspection

A. The Installation Contractor shall provide video equipment capable of properly documenting the conditions as found within the pipe. Lighting for the video camera shall illuminate the entire periphery of the sewer. The camera shall be radial view type capable of viewing 360° within the pipe and shall provide an unobstructed view of the full pipe.

B. The video shall begin with a clear identification of the pipeline location, upstream and downstream manhole designation, and pipe diameter. The video shall provide an accurate length measurement of the entire segment and of the distance to each lateral connection. The Installation Contractor shall pan all lateral connections on both the pre and post videos.

C. Reverse video set-ups shall be utilized when line obstructions prevent full segment televising from the initial set-up direction.

D. Both a pre-lining and post-lining video shall be submitted to the Owner for approval. The discs shall be clearly and properly labeled.

603.019 Vacuum Impregnation

A. The CIPP shall be installed in accordance with the practices given in ASTM F1216 (for direct inversion installations) or ASTM F1743 (for pulled-in-place installations). The quantity of resin used for the CIPP tube's impregnation shall be sufficient to fill the volume of air voids in the CIPP tube with additional allowances being made for polymerization shrinkage and the loss of any resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used in conjunction with a roller system to achieve a uniform distribution of the resin throughout the CIPP tube.

B. The resin-impregnated CIPP tube shall be installed into the host pipe by methods specified in ASTM F1216 or ASTM F1743 and proven through previous successful installations. The insertion method

shall not cause abrasion or scuffing of the CIPP tube. Hydrostatic or air pressure shall be used to inflate the CIPP tube and mold it against the walls of the host pipe. There will be no use of sewage in place of clean water for insertion of the CIPP tube, or for the curing of the CIPP.

C. Temperature gauges shall be placed between the CIPP tube and the host pipe's invert position to monitor the temperatures during the cure cycle.

603.020 Curing

A. After the CIPP tube installation is completed the Installation Contractor shall supply a suitable heat source and recirculation equipment (if required). The equipment shall be capable of delivering hot water or steam throughout the section to uniformly raise the temperature above the temperature required to affect a cure of the resin.

B. The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing heat supply (for water cure) and outgoing heat supply (for steam cure). Water or air temperature in the pipe during the cure period shall be as recommended by the resin Manufacturer.

C. Initial cure shall be deemed to be completed when inspection of the exposed portions of CIPP appears to be hard and sound and the remote temperature sensor(s) indicates that the temperature is of a magnitude to realize an exotherm. The cure period shall be of a duration recommended by the resin Manufacturer, as modified for the installation process, during which time the recirculation of the heat and/or cycling of the heat exchanger to maintain the temperature continues.

603.021 Cool Down

Cool down may be accomplished by the introduction of cool water or air to replace water or pressurized air being relieved. Care shall be taken in the release of the hydrostatic head so that a vacuum will not be developed.

603.022 Finish

A. The finished CIPP shall be continuous over the entire length of an insertion run and be as free as commercially practical from visual defects such as foreign inclusions, dry spots, pinholes, and delamination. The CIPP shall be homogeneous and free of any leakage from the surrounding ground to the inside of the CIPP.

B. Where the CIPP is installed through an intermediate manhole uninterrupted, the invert shall be maintained smooth through the manhole, with approximately the bottom half of the CIPP continuous through the manhole. The invert of the manhole shall be shaped and grouted as necessary to support the liner. The cost of this work shall be included in the CIPP unit price.

C. During the warranty period, any defects which will affect the integrity or strength of the CIPP, collect solids, or reduce hydraulic flow capabilities of the product shall be repaired at the Installation Contractor’s expense in a manner mutually agreed upon by the Owner and the Installation Contractor.

603.023 Reinstate Laterals and Services

A. Accurate location of the lateral and service connections shall be made by inspection of the pre-installation video or sewer walk.

B. After the CIPP has been installed, all existing active lateral sewers and services shall be reinstated unless otherwise indicated by the Owner or on the plans. The reinstatement of laterals and services shall be done without excavation unless otherwise specified by the Engineer. Reinstatement of laterals and services will be accomplished from the interior of the CIPP by means of a video camera directed cutting device or by direct man entry when feasible.

C. All cut lateral and service connections shall be free of burrs, frayed edges, or any restriction preventing free flow of wastewater. Laterals shall be reinstated to a minimum of 90% of their original diameter and no more than 100% of their minimum diameter. The CIPP shall be tightly sealed at the cut openings with no gaps.

603.024 Quality Assurance Procedures

A. For every two thousand five hundred (2,500) lineal feet of liner installed, two (2) flat plate samples shall be processed and tested. For pipe diameters less than 18 inches, restrained end samples may also be utilized. The CIPP physical properties shall be tested in accordance with ASTM F1216, Section 8, using either allowed sampling method. The flexural properties must meet or exceed the values listed in Section 1.3.E. of this specification and the values submitted to the Owner by the Installation Contractor for this project's CIPP wall design, whichever is greater.

B. Testing shall be completed by an accredited, independent laboratory. Testing results shall be provided to the Owner within 7 days of receipt of such results.

C. Wall thickness of samples shall be determined in a manner consistent with 8.1.2 of ASTM D5813. The minimum wall thickness at any point shall not be less than 87.5% of the specified design thickness calculated in 1.3.F of this document.

D. Flexural testing of the collected samples shall be conducted in accordance with ASTM D790, latest version, with only the structural portion of the CIPP being tested.

E. CIPP installation shall be inspected by post-lining video inspection. Variations from true line and grade may be inherent because of the conditions of the original piping. No infiltration of groundwater should be observed. All service entrances should be unobstructed and accounted for.

603.11 Method of Measurement

The accepted quantities of Reline Existing Sewer will be full compensation for all labor, materials, incidentals, and equipment necessary to satisfactorily complete the work in accordance with the Plans and Specifications, and will be paid for at the Contract unit price per linear foot.

The accepted quantities of Storm Overflow Lining will be full compensation for all labor, materials, incidentals, and equipment necessary to satisfactorily complete the work in accordance with the Plans and Specifications, and will be paid for at the Contract unit price per linear foot.

The following items will not be measured separately but rather shall be incidental to the respective pay item: cleaning of the pipe, lateral reinstatement, mobilization/demobilization, and traffic control.

By-pass pumping will be measured separately under Pay Item 801.01.

603.12 Basis of Payment

Reline Existing Sewer will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Storm Overflow Lining will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Payment will be made under:

Pay Item		Pay Unit
603.99	Storm Overflow Lining	Linear Foot
802.211	Reline Existing Sewer	Linear Foot

SPECIAL PROVISION
SECTION 604
MANHOLES, INLETS, AND CATCH BASINS
(Utility Vault, 4ft x 8ft)
(48-Inch Manhole)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 604 – MANHOLES, INLETS, AND CATCH BASINS with the following additions and modifications:

604.01 Description

Add the following paragraph:

The work shall include providing and installing a 48-inch manhole and a utility vault of size 4 ft by 8 ft in accordance with the locations and designated on the Plans.

604.02 Materials

Add the following paragraph:

The 48-inch manhole and the utility vault shall both meet the requirements of Standard Specification Section 604 and be rated for highway truck loads such as AASHTO designated HS20 design loadings. Both structures shall be a precast concrete unit constructed per the requirements of Section 604 of the Standard Specifications.

604.05 Method of Measurement

Add the following:

48-Inch Manhole will be measured by the individual unit.

Utility Vault, 4ft x 8ft will be measured by the individual unit.

604.06 Basis of Payment

Add the following paragraphs:

48-Inch Manhole shall be paid by the Contract unit price completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; and for all incidentals necessary to complete the work.

Utility Vault, 4ft x 8ft shall be paid by the Contract unit price completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; and for all incidentals necessary to complete the work.

Pay Item		Pay Unit
604.152	48-Inch Manhole	Each
604.158	Utility Vault, 4ft x 8ft	Each

SPECIAL PROVISION
SECTION 607
FENCES

(Temporary Chain Link Fence - 6 ft, Moveable)
(Chain Link Fence - 8 ft, High-Security Fencing)
(Remove Chain Link Fence)
(Repair Chain Link Fence)
(Chain Link Fence Gate - 4 ft Crash Gate)
(Chain Link Fence Gate - 3 ft)
(Chain Link Fence Bracing Assembly)
(Chain Link Gate, 16-ft Swing Gate)
(Chain Link Gate, 24-ft Double-Leaf Swing Gate)
(Chain Link Gate, 32-ft Double-Leaf Swing Gate)
(Motorized Slide Gate, 24-ft, Chain Link)
(Remove and Reset Motorized Slide Gate, 20-ft, Chain Link)
(Remove 24-ft Swing Gate)
(Remove 4-ft Swing Gate)
(Remove 16-ft Swing Gate)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 607 – FENCES, with the following modifications:

607.01 Description

Add the following paragraph:

The work shall also include temporary fencing used during the duration of the project. Temporary fencing will consist of a 6-ft high moveable chain link fence with individual panels used throughout the site: at the pier during fender repairs and within the terminal along the existing fence line beneath the Casco Bay Bridge. Based on vessel schedules and terminal operations, the Contractor shall anticipate relocating the temporary fencing as needed by the terminal manager. The Contractor, Resident, and the Terminal Manager shall discuss the appropriate location of the temporary fence so as to minimize disruptions to the terminal operations while enabling the Contractor to efficiently conduct its work.

The section of the existing fence to be repaired is located behind the MaineDOT's Bridge Maintenance Building and shall comprise the addition of metal lateral bracing bars and at the mid-height and bottom of the chain link fence as shown on the plans.

607.02 Materials

Replace the fifth paragraph with the following:

Concrete for anchoring metal posts shall be Class A.

607.03 General

Add the following paragraphs:

Gate posts for the 16-ft swing gate, 24-ft double-leaf swing gate, and 32-ft double-leaf swing gate shall be a minimum of 6" O.D. (nom.) round Schedule 40 steel galvanized pipe.

Gate posts for the 24-ft motorized sliding gate shall be a minimum of 6" O.D. (nom.) round Schedule 40 steel galvanized pipe.

Concrete foundations shall be in accordance with MaineDOT Standard Details for fence posts with the exception of the 32-ft double-leaf swing gate which shall be anchored to the concrete loading in accordance with manufacturer's specifications.

Metal fence posts sizes shall be in accordance with MaineDOT Standard Details for fence posts.

Metal fence posts installed within the Unitil/NGL area shall be installed with care given the uncertainty of existing and/or abandoned utility lines shown or unknown.

The Chain Link Fence Gate - 4ft Crash Gate shall be installed within the bisecting corridor for Unitil employees in the event of an emergency within their parceled acreage.

607.05 Chain Link Fence

Add the following sentences to the outlined section as indicated:

b. Gates: The 24-ft sliding cantilever gate system shall be manufactured by one of the following manufacturers or an approved equivalent:

- Tymetal Corp.
- Hoover Fence Co.

e. Barbed Wire: All permanent and temporary chain link fencing and gates shall be equipped with 3 strands of barbed wire with the exception of the 6-ft temporary movable panels. In the event that barbed wire cannot be salvaged from fence called out to be removed and reset, the contractor will provide new barbed wire at no additional cost.

607.06 Method of Measurement

Add the following paragraphs:

Measurement for Temporary Chain Link Fence - 6-ft, Moveable shall be by the linear foot installed and accepted. Measurement will not be made for relocating the temporary fencing.

Measurement for Chain Link Fence - 8-ft, High-Security Fencing shall be by the linear foot fully installed and accepted.

Measurement for Remove Chain Link Fence shall be by the linear foot fully installed and accepted.

Measurement for Repair Chain Link Fence shall be by the linear foot.

Measurement for Chain Link Fence Bracing Assembly shall be by the unit fully installed and accepted.

Measurement for removal of gates shall be by the unit fully removed including any motorized devices, barbed wire, and bracing assemblies.

Measurement for chain link gates shall be by the unit fully installed and accepted.

607.07 Basis of Payment

Add the following paragraphs:

Temporary Chain Link Fence - 6-ft, Moveable shall be paid by the Contract price per linear foot installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials and relocating the temporary fence as directed by Resident.

Chain Link Fence - 8-ft, High-Security Fencing shall be paid by the Contract price per linear foot completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; excavation and installation of posts and concrete foundations, chain link fencing, barbed wire, and for all incidentals necessary to complete the work.

Chain Link Fence Gate - 4 ft Crash Gate, shall be paid by the Contract price per unit completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; excavation and installation of posts and concrete foundations, chain link fencing, barbed wire, and for all incidentals necessary to complete the work.

Chain Link Fence Gate - 3 ft, shall be paid by the Contract price per unit completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; excavation and installation of posts and concrete foundations, chain link fencing, barbed wire, and for all incidentals necessary to complete the work.

Remove Chain Link Fence shall be paid by the Contract price per linear foot completely removed to the satisfaction of the resident. Payment will be full compensation for removal of the chain link fence including barbed wire and concrete foundations (unless otherwise directed by the Resident).

Repair Chain Link Fence shall be paid by the Contract price per linear foot completely repaired to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; and for all incidentals necessary to complete the work.

Remove Swing Gates shall be paid by the Contract price per unit completely removed to the satisfaction of the resident. Payment will be full compensation for removal of the gate including barbed wire, gate posts, and concrete foundations (unless otherwise directed by the Resident).

Chain Link Gate, 16-ft Swing Gate shall be paid by the Contract price per unit completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; excavation and installation of posts and concrete foundations, chain link fencing, barbed wire, and for all incidentals necessary to complete the work.

Chain Link Gate, 24-ft Double-Leaf Swing Gate shall be paid by the Contract price per unit completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; excavation and installation of posts and concrete foundations, chain link fencing, barbed wire, and for all incidentals necessary to complete the work.

Chain Link Gate, 32-ft Double-Leaf Swing Gate shall be paid by the Contract price per unit completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; installation of posts and anchorage of the posts to the concrete loading slab, chain link fencing, barbed wire, and for all incidentals necessary to complete the work.

Motorized Slide Gate, 24-ft, Chain Link, shall be paid by the Contract price per unit completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; excavation and installation of posts and concrete foundations, chain link fencing, barbed wire, motorized devices and mechanical components, and for all incidentals necessary to complete the work.

Remove and Reset Motorized Slide Gate, 20-ft, Chain Link, shall be paid by the Contract price per unit completely removed and re-installed to the satisfaction of the resident. Payment will be full compensation for dismantling and re-assembling all materials; excavation and installation of posts and concrete foundations, motorized devices and mechanical components, and for all incidentals necessary to complete the work.

Payment will be made under the following Pay Items:

Pay Item		Pay Unit
607.1701	Temporary Chain Link Fence - 6-ft, Moveable	Linear Foot
607.181	Chain Link Fence - 8 ft, High-Security Fencing	Linear Foot
607.231	Chain Link Fence Gate - 4 ft Crash Gate	Each
607.232	Chain Link Fence Gate - 3 ft	Each
607.243	Remove Chain Link Fence	Linear Foot
607.244	Repair Chain Link Fence	Linear Foot

607.251	Remove and Reset Chain Link Fence and Gate	Linear Foot
607.490	Chain Link Gate, 16-ft Swing Gate	Each
607.4902	Chain Link Gate, 24-ft Double-Leaf Swing Gate	Each
607.4903	Chain Link Gate, 32-ft Double-Leaf Swing Gate	Each
607.4911	Motorized Slide Gate, 24-ft, Chain Link	Each
607.4922	Remove 4-ft Swing Gate	Each
607.4923	Remove 24-ft Swing Gate	Each
607.4924	Remove 16-ft Swing Gate	Each
607.4925	Remove and Reset Motorized Slide Gate, 20-ft, Chain Link	Each

SPECIAL PROVISION
SECTION 607
FENCES
(Heavy Steel High Security Palisade Fence, 6 ft)
(Heavy Steel High Security Palisade Fence, 9 ft)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 607 – FENCES, with the following modifications:

607.01 Description

Add the following paragraph:

The heavy steel palisade fence shall be a steel ornamental pale high-security fence system including all components such as pales, rails, and hardware. The fence system shall be manufactured by one of the following manufacturers or an approved equivalent:

- Ameristar Impasse II Anti-Scale, Gauntlet-style palisades.

The heavy steel palisade fence shall be provided in two sizes: 6-ft high for atop the concrete barrier; and 9-ft high for areas along Commercial Street and a short segment along the concrete slab as noted on the plans. For the fences along the top of the concrete barrier and along Commercial Street, the fence posts shall be embedded into the concrete substrate as shown on the plans. For the short segment of 9-ft fence along the concrete slab, the fence posts shall be anchored directly to the top of the slab via a base plate and galvanized anchors. The base plate shall be fully welded to the bottom of the post and the anchorage design shall be of sufficient size and strength to withstand the horizontal forces prescribed herein.

607.011 References

- ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
- ASTM B117 - Practice for Operating Salt-Spray (Fog) Apparatus.
- ASTM D523 - Test Method for Specular Gloss.
- ASTM D714 - Test Method for Evaluating Degree of Blistering in Paint.
- ASTM D822 - Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.
- ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
- ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
- ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
- ASTM D3359 - Test Method for Measuring Adhesion by Tape Test.
- ASTM F2408 – Ornamental Fences Employing Galvanized Steel Tubular Pickets.

607.012 Submittals

The manufacturer's submittal package shall be provided prior to installation.

607.013 Product Handling

Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

607.014 Product Warranty

All structural fence components (i.e. rails, pickets, and posts) shall be warranted within specified limitations, by the manufacturer for a period of 15 years from date of original purchase. Warranty shall cover any defects in material finish, including cracking, peeling, chipping, blistering or corroding.

Reimbursement for labor necessary to restore or replace components that have been found to be defective under the terms of manufactures warranty shall be guaranteed for five (5) years from date of original purchase.

607.02 Materials

Replace the fifth paragraph with the following:

Concrete for anchoring metal posts into the ground shall be MaineDOT Class A.

Add the following paragraphs:

The heavy steel palisade high security fence system shall conform to Ameristar Impasse II Anti-Scale, Gauntlet Type, 3 Rail style manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma, or an approved equivalent.

Steel material for fence framework (i.e., corrugated pales, rails and posts), when galvanized prior to forming, shall conform to the requirements of ASTM A924/A924M, with a minimum yield strength of 45,000 psi (310 MPa). The steel shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.90 oz/ft^2 (276 g/m^2), Coating Designation G-90.

Material for corrugated pales shall be a nominal 2.75” x .75” x 14 Ga. The cross-sectional shape of the rails shall conform to the manufacturer's Impasse II® rail design a nominal 2” x 2” x 11 Ga. Pre-drilled holes in the Impasse II® rail shall be spaced 4-3/16” on center, providing a pale airspace of no greater than 1-1/2” (38mm). Tamperproof fasteners shall be used to fasten each pale to rail at every intersection. Fence posts shall meet the minimum size requirements of Table 1 (below).

607.03 General

Add the following paragraphs to this subsection:

607.031 Fabrication

Add the following paragraphs:

Pales, rails and posts shall be pre-cut to specified lengths. Anti-climb rails shall be pre-punched to accept tamperproof security fasteners. Post flange shall be pre-punched to accept rail to post attachment. Post web shall be punched providing a clear opening for interior of rails to align throughout the entire system for affixing conduit, video cabling, IDS wiring, and other components for a complete systems integration. Anti-climb rails shall be attached to post flange providing a bracket-less design at each intermediate post. The bottom rail shall be positioned so as to avoid the top of the concrete barrier (see structural details drawings).

The manufactured galvanized framework shall be subjected to the PermaCoat® thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including, as a minimum, a six-stage pretreatment/wash (with zinc phosphate), an electrostatic spray application of

an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils (0.0508mm). The topcoat shall be a "no-mar" TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.0508mm). The color shall be Black. The stratification-coated framework shall be capable of meeting the performance requirements for each quality characteristic shown in Table 2.

Completed panels shall be capable of supporting a 400 lb. load (applied at midspan) without permanent deformation. Panels shall be biasable to a 30˚ change in grade.

607.032 Installation

Add the following paragraphs:

All new installation shall be laid out by the contractor in accordance with the construction plans.

Fence post shall be spaced according to Table 3, plus or minus ½". For installations that must be raked to follow sloping grades, the post spacing dimension must be measured along the grade. Fence panels shall be attached to posts with brackets supplied by the manufacturer. Posts shall be set in concrete footers having a minimum depth of 36" (Note: In some cases, local restrictions of freezing weather conditions may require a greater depth). The "Earthwork" and "Concrete" sections of this specification shall govern material requirements for the concrete footer. Posts setting by other methods such as plated posts or grouted core-drilled footers are permissible only if shown by engineering analysis to be sufficient in strength for the intended application

When cutting/drilling rails or posts adhere to the following steps to seal the exposed steel surfaces; 1) Remove all metal shavings from cut area. 2) Apply zinc-rich primer to thoroughly cover cut edge and/or drilled hole; let dry. 3) Apply 2 coats of custom finish paint matching fence color. Failure to seal exposed surfaces per steps 1-3 above will negate warranty. Ameristar spray cans or paint pens shall be used to prime and finish exposed surfaces; it is recommended that paint pens be used to prevent overspray. Use of non-Ameristar parts or components will negate the manufactures' warranty

The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.

Table 1 – Minimum Sizes for Posts

Fence Posts	Panel Height
3" x 2.75" x 12 Gage I-Beam	For 6-ft Fence Height
4" x 2.75" x 11 Gage I-Beam	For 9-ft Fence Height

Table 2 – Coating Performance Requirements

Quality Characteristics	ASTM Test Method	Performance Requirements
Adhesion	D3359 – Method B	Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).
Corrosion Resistance	B117, D714 & D1654	Corrosion Resistance over 3,500 hours (Scribed per D1654; failure mode is accumulation of 1/8" coating loss from scribe or medium #8 blisters).
Impact Resistance	D2794	Impact Resistance over 60 inch lb. (Forward impact using 0.625" ball).
Weathering Resistance	D822 D2244, D523 (60˚ Method)	Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).

Table 3 – Anti-Climb Post Spacing		
Span	10' Nominal (95" Rail)	
	Line & End Posts	
Post Size	3" x 2.75" x 12 Ga. I-Beam	4" x 2.75" x 11 Ga. I-Beam
Post Settings ± ¼" O.C. *		
Atop Concrete Barrier (6-ft High)	120 inches	120 inches
Along Commercial Street (9-ft High)	96 inches	96 inches
Along Concrete Slab (9-ft High)	96 inches	96 inches

* Note special requirements for post settings. See drawings for additional details.

607.06 Method of Measurement

Add the following paragraphs:

Measurement for Heavy Steel Palisade Fencing shall be by the linear foot fully installed and accepted.

607.07 Basis of Payment

Add the following paragraph:

Heavy Steel High Security Palisade Fence, 6 ft shall be paid by the Contract price per linear foot completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; installation of posts and/or anchorages into the top of the concrete barrier, fencing materials, and for all incidentals necessary to complete the work.

Heavy Steel High Security Palisade Fence, 9 ft shall be paid by the Contract price per linear foot completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; installation of posts including excavation and concrete fill, fencing materials, and for all incidentals necessary to complete the work.

Payment will be made under the following Pay Items:

Pay Item		Pay Unit
607.92	Heavy Steel High Security Palisade Fence, 6 ft	Linear Foot
607.94	Heavy Steel High Security Palisade Fence, 9 ft	Linear Foot

SPECIAL PROVISION
SECTION 608
SIDEWALKS
(Granite Pavers with Concrete Base)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 608 – SIDEWALKS, with the following modifications:

MODIFICATIONS:

608.01 Description

The work covered by this section includes furnishing all labor, materials, equipment and incidentals for the installation of granite cobblestone paving within special areas of Commercial Street as shown on the Plans and Details. Cobblestones placed in these areas shall have a special 6-inch fiber-reinforced concrete base whose purpose is to withstand heavy truck traffic while providing a visual delineation to the truck-only areas to be utilized by Nova Seafood, Inc.

608.02 Materials

Cobblestones shall be gray Belgium Block cobblestones, slightly larger than standard cobblestones in size and not less than 9” long x 5” wide x 5” thick.

Dry sand cement setting bed and joint filler shall be six (6) parts washed mortar sand to one part Portland Cement.

A fiber-reinforced concrete base shall be installed as shown as the plans. Concrete shall be MaineDOT Class A.

608.021 Submittals

Submit a minimum of (3) full size sample cobblestones and certificates for bedding materials.

608.42 Construction

Cobblestones shall be delivered and handled to prevent soiling and damage. Stack cobblestones off the ground.

Remove and replace damaged (cobblestones) that are broken, chipped or stained.

Install fiber-reinforced concrete base in as shown on the plans.

Hand set cobblestones in a running bond patterns as shown on Landscape Details or as directed by landscape architect. Maintain a maximum ½” joint spacing between cobblestones, minimum 2” depth of dry sand cement setting bed, and minimum of 10” depth of compacted type ‘D’ gravel aggregate base, modified to a max. 4” size, under cobblestones; compact in 5” lifts.

Minimum cut cobblestone size for corners and infill of running bond pattern shall be 4” long x 4” wide.

Once the cobblestones have been set, the dry sand cement mixture shall be spread on the surface and swept into the joints to within ¼” to ½” of the paver surface. Surplus sand cement mixture shall be swept from the surface.

After cleaning sand cement from the surface, sand only shall be swept onto the surface of the joints.

Perform cleaning during installation of work and upon completion of work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from cobblestone paving operations.

608.05 Method of Measurement

Granite Pavers with Concrete Base will be measured by the square yard, complete and accepted in place.

608.06 Basis of Payment

Granite Pavers with Concrete Base will be paid for at the Contract unit price which shall be full compensation for all materials including sand, cement, and fiber-reinforced concrete base, excavation, tools, equipment, labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Payment will be made under:

Pay Item		Pay Unit
608.282	Granite Pavers with Concrete Base	Square Yard

SPECIAL PROVISION
SECTION 608
SIDEWALKS
(Curb Ramp Detectable Warning Field)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 608 – SIDEWALKS, with the following modifications:

MODIFICATIONS:

608.01 Description

This work shall consist of furnishing and installing curb ramp detectable warning plates with truncated domes at the locations shown on the plans or as established by the Resident.

608.02 Materials

Detectable Warnings

The Contractor shall provide new cast iron detectable warning plates as manufactured by one of the manufacturers listed on MaineDOT's Qualified Products list of Cast Iron Detectable Warning plates. This list can be found at: http://www.maine.gov/mdot/tr/qpl/

Each field shall match the width of the ramp and shall have a natural finish.

Prior to starting this work, the Contractor shall submit for approval the name of the selected supplier, manufacturer's literature describing the product, installation procedures, and routine maintenance required.

Concrete

Portland cement concrete shall meet the requirements of Section 502, Structural Concrete, ClassA.

608.021 Submittals

Submit a minimum of (3) full size sample cobblestones and certificates for bedding materials.

608.42 Construction

Existing Concrete Curb Ramps

Existing concrete shall be saw-cut to a dimension 4 inches larger than the detectable warning plates. New concrete shall be placed in the resulting opening and finished, and the new plates set into the wet concrete, according to manufacturer recommendations. New plates shall be set square with the curb edge and the base of the truncated domes shall be flush with adjacent surfaces to allow proper drainage.

New Concrete Curb Ramps

New concrete shall be placed and finished for the ramp, and the new plates set into the wet concrete, according to manufacturer recommendations. New plates shall be set square with the curb edge and the base of the truncated domes shall be flush with adjacent surfaces allow proper drainage.

New Asphalt Ramps

Asphalt shall be saw cut and removed to provide an opening that will allow for the dimensions of the cast iron plate surrounded by an additional 4-inch border on all sides of the plates. New concrete shall be placed in the resulting opening and finished, and the new plates set into the wet concrete,

according to manufacturer recommendations. New plates shall be set square with the curb edge and the base of the truncated domes shall be flush with adjacent surfaces to allow proper drainage.

608.05 Method of Measurement

Detectable warning fields properly placed and accepted shall be measured for payment by the square foot. Measurement shall include actual plate area, not surrounding concrete.

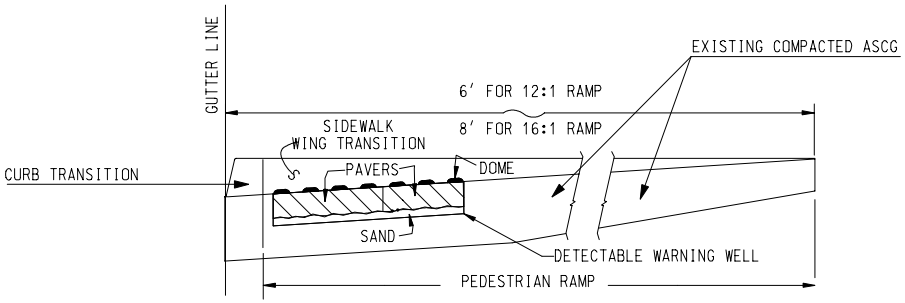
608.06 Basis of Payment

Payment will be full compensation at the contract unit price for all labor, materials, and equipment required to install the detectable warning fields. This shall include surface preparation and removal of concrete or asphalt, and necessary replacement concrete. On new concrete ramps, concrete shall be paid for under separate items.

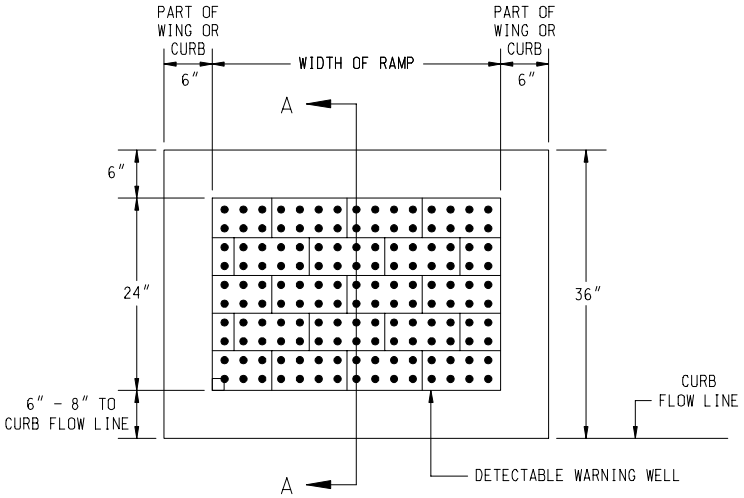
Payment will be made under:

Pay Item		Pay Unit
608.26	Curb Ramp Detectable Warning Field	Square Foot

VIEWS AND DETAILS OF THE DETECTABLE WARNING

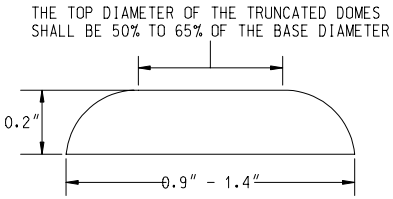


SIDE SECTION VIEW OF
DETECTABLE WARNING, WELL, CURB, AND GUTTER

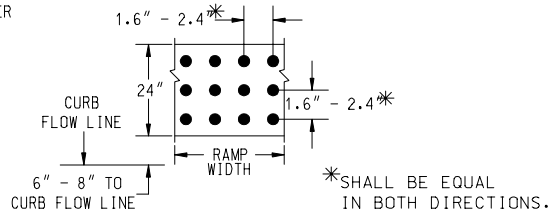


PLAN VIEW OF
DETECTABLE WARNING AND WELL

(PAVERS NOT DRAWN TO SCALE)

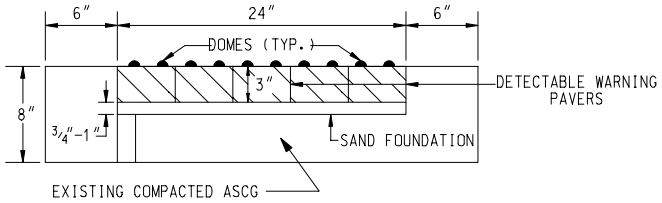


ELEVATION VIEW



PLAN VIEW

DOME AND DETECTABLE WARNING DETAILS



SECTION A–A

NOTE:
ALL DETECTABLE WARNING AREAS SHALL START 6 INCHES FROM THE FLOW LINE OF THE CURB, AND BE 24 INCHES IN DEPTH, AND COVER THE COMPLETE WIDTH OF THE RAMP AREA ONLY.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

CURB RAMP

VIEWS AND DETAILS OF THE DETECTABLE WARNING

DETAILS

SHEET NUMBER

1

SPECIAL PROVISION
SECTION 608
SIDEWALKS
(Granite Pavers with Sand/Cement Base)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 608 – SIDEWALKS, with the following modifications:

608.01 Description

The work covered by this section includes furnishing all labor, materials, equipment and incidentals for the installation of granite cobblestone paving around benches and interpretive sign bases as shown on the Landscape Plans and Details.

608.02 Materials

Cobblestones shall be standard gray cobblestones approximately 9” long x 4” wide x 4” thick.

Dry sand cement setting bed and joint filler shall be six (6) parts washed mortar sand to one part Portland Cement.

608.021 Submittals

Submit a minimum of (3) full size sample cobblestones and certificates for bedding materials.

608.42 Construction

Cobblestones shall be delivered and handled to prevent soiling and damage. Stack cobblestones off the ground.

Remove and replace damaged (cobblestones) that are broken, chipped or stained.

Hand set cobblestones in a running bond patterns as shown on Landscape Details or as directed by landscape architect. Maintain a maximum ½” joint spacing between cobblestones, minimum 2” depth of dry sand cement setting bed, and minimum of 10” depth of compacted type ‘D’ gravel aggregate base, modified to a max. 4” size, under cobblestones; compact in 5” lifts.

Minimum cut cobblestone size for corners and infill of running bond pattern shall be 4” long x 4” wide.

Once the cobblestones have been set, the dry sand cement mixture shall be spread on the surface and swept into the joints to within ¼” to ½” of the paver surface. Surplus sand cement mixture shall be swept from the surface.

After cleaning sand cement from the surface, sand only shall be swept onto the surface of the joints.

Perform cleaning during installation of work and upon completion of work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from cobblestone paving operations.

608.05 Method of Measurement

Granite Pavers with Sand/Cement Base will be measured by the square yard, complete and accepted in place.

608.06 Basis of Payment

Granite Pavers with Sand/Cement Base will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment, labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Payment will be made under:

Pay Item		Pay Unit
608.28	Granite Pavers with Sand/Cement Base	Square Yard

SPECIAL PROVISION
SECTION 608
SIDWALKS
(Pervious Precast Concrete Slabs)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 608 – SIDEWALKS, with the following modifications:

608.01 Description

Add the following paragraphs:

The work shall also include the installation of pervious precast concrete slabs as shown on the Plans. Before slab units are installed, ensure all materials and preparation for subbase and edge restraints are acceptable to installer and manufacturer of precast pervious concrete paving slabs. Preparation of subbase materials shall include proper compaction procedures, placement of geotextiles, conditions of subgrade soils, and any other potential obstructions to a satisfactory installation as specified herein. Furnish all labor, materials, equipment and incidentals required and install the precast pervious concrete paving slab units, edge restraint, and subbase materials as shown on the drawings and as specified herein.

608.011 References

Add the following paragraphs:

American Society for Testing and Materials (ASTM) Current Edition:

- ASTM C33 Standard Specification for Concrete Aggregates
- ASTM C42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
- ASTM C136 Testing Method for Sieve Analysis of Fine and Coarse Aggregates
- ASTM C1701Standard Test Method for Infiltration Rate of In Place Pervious Concrete.
- ASTM D 1883, Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils

American Concrete Institute (ACI) Current Edition:

- ACI 522R-06 Pervious Concrete

608.012 Submittals

Add the following paragraphs:

The Contractor shall submit for review and approval the following information.

A. Shop drawings; installation plan showing layout of each full and partial precast porous concrete paving slab complete with lifting points in surface, edge restraint detail(s), and geotextile manufacturer specification sheets, indicate materials outside perimeter and profiles/sections.

B. Test results performed by an independent testing laboratory of the following:
   1. Particle-size analysis in accordance with ASTM C 136 for the crushed stone storage reservoir (subbase) and crushed stone choker (base) with source(s) of supply noted.
   2. Infiltration rate in accordance with ASTM C 1701/C 1701M and bulk density for the precast porous concrete paving slabs conforming to ACI 522R-06.
   3. Average Core Compressive strength in accordance with ASTM C42/C42M of cores obtained from the precast concrete paving slabs; conforming to ACI 522R-06.

C. Mix Design including concrete composition, rebar, and origination of materials.

D. Quality control procedures.

608.013 Quality Assurance

Add the following paragraphs:

A. Installation Contractor Qualifications

1. Installation shall include planning the work, horizontal and vertical layout, fine grading of subgrades, installing membrane and/or geotextile in accordance with the respective manufacture's recommendations, placing and compacting crushed stone reservoir storage (subbase), place and screed crushed stone leveling course (base), installation of edge restraint, and placing precast porous concrete paving slabs.

2. Installation contractor shall have documented experience with the successful installation of precast porous concrete paving slabs similar in complexity of this project.

3. The installation contractor shall use adequate forces including equipment and skilled workers. Workers shall be trained and experienced in the necessary crafts and completely familiar with the specified methods needed for proper performance of this Specification.

4. All materials, methods of installation and workmanship shall conform to requirements of ASTM, ACI, MaineDOT, or other applicable Standards.

5. Federal, State and/or Municipal approvals, if required for this project.

6. Precast porous concrete paving slabs shall be visually inspected by the manufacturer for completeness, texture and consistency with installation drawings. A small amount of "skinning", not to exceed 5% of the top or bottom of slab surface areas, will be allowed.

7. Review the contractor's installation plan in a pre-construction meeting with manufacturer's representatives, paving slab installation contractor, general contractor, project design professional and owner's representative (optional).

608.014 Weather Considerations

Add the following paragraphs:

A. Do not place and/or compact crushed stone subbase in rain or snow, or on saturated or frozen subgrade.

B. Do not place and/or screed crushed stone base in rain or snow, or on saturated or frozen subbase.

C. Do not install precast porous concrete slabs in rain or snow, or on saturated or frozen base.

608.014 Delivery, Handling, and Storage

Add the following paragraphs:

A. Coordinate delivery to not interfere with other construction and avoid delays.

B. Slabs shall be offloaded two at-a-time by forklift operated by a trained and experienced operator. Forklift must be equipped with 6-ft. long forks to safely offload slabs. Slabs

delivered on pallets can be offloaded in its entirety.

C. Verify safe load capacity of forklift in accordance with Occupational Safety & Health Administration (OSHA) recommended practices. Only use forklifts with adequate safe load capacity.

D. Store slabs on level ground and propped with 4-in. by 4-in., minimum, timbers placed parallel to one another located directly beneath imbedded lifting points. Place timbers between each slab.

E. Slabs shall be stored in stacks not more than 6 slabs high. Slabs delivered on pallets can be stored in their entirety.

F. Store slabs such that they are kept free from mud, dirt, grass cuttings, accumulation of foliage and debris.

608.02 Materials

Add the following paragraphs:

Pervious Precast Concrete Slabs

A. Pervious Precast Concrete Slabs shall be manufactured by Stormcrete or an approved equal, and supplied by Porous Technologies, LLC of North Yarmouth, ME.

B. Permanent lifting points shall be imbedded in the top of the slabs for ease of slab installation, maintenance, removal and reinstallation.

C. Typical dimensions of precast porous concrete slabs shall be 4 ft. by 8 ft. in plan; half-sized shall be 4 ft. by 4 ft. in plan.

D. Pervious Precast porous concrete slabs shall be at least 5 in. thick and capable of supporting wheel loads from AASHTO-designated HS-20 trucks in a low-velocity truck storage lane application as shown on the Contract Plans associated with Commercial Street.

E. Average core compressive strength at 28 days shall be the greater of 3,000 psi or the strength dictated by ASTM C42/C42M and conforming to ACI 522R-06 and applicable ASTM specifications.

F. Wire mesh fabric used to sustain the loading requirement noted above shall either be epoxy coated or plastic coated.

G. Infiltration rate in accordance with ASTM C 1701/C 1701M; conforming to ACI 522R-06.

H. The slab unit shall include a minimum of 2 lifting permanent lifting points.

I. Pervious precast porous concrete slabs shall be cured by the manufacturer's approved methods; slabs shall not be shipped until the porous concrete has achieved 85% of the minimum compressive strength

Edge Restraints

A. Edge restraint shall be installed at exterior sides of pervious precast concrete slabs as follows:
   i. Material: 1/2 –inch thick pre-molded expansion joint filler conforming to ASTM D1751

608.44 Pervious Precast Concrete Slab Installation

Add the following paragraphs:

Compaction of the soil subgrade to at least 95% Modified Proctor relative compaction per ASTM D 1557

Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3). While heavy-duty rollers are preferred, manually operated compactors may be used in areas not accessible to self-propelled rollers.

608.441 Infiltration System Subgrade Preparation

Add the following paragraphs:

A. Verify that all field infiltration and permeability testing of the subgrade has been performed, that test results meet the project design requirements and construction of the underdrain components has been approved by the Resident.

B. Prepared subgrades shall not be subject to construction equipment traffic.

C. Restore any subgrade areas damaged by erosion, ponding, or traffic compaction to design line and grades prior to installation of pervious precast concrete slabs.

608.442 Examination

Add the following paragraphs:

A. Acceptance of Site Conditions:

1. General contractor shall inspect, accept and document in writing to the slab installation subcontractor that site conditions meet specifications for the following items prior to installation of concrete paving slabs.
2. Verify that subgrade is dry and relative compaction, surface tolerances and elevations conform to construction drawings and specified requirements.
3. Verify location, type, and elevations of edge restraints, utility structures, and manholes.
4. Do not proceed with installation of precast porous concrete paving system until site conditions are corrected by the general contractor or designated subcontractor.

608.443 Installation

Add the following paragraphs:

A. General

1. Any excess thickness of soil placed over the soil subgrade to trap sediment transported by runoff from adjacent construction areas shall be removed before placement of the pervious precast concrete slabs.
2. Keep area where precast porous concrete paving slabs are to be installed free of sediment during the entire construction period.
3. Do not damage drainpipes, underdrains, observation wells, roadway boxes, manholes or any other utilities during installation. Report any damage immediately to the Resident.
4. Installation of pervious precast concrete slabs shall be in accordance with the manufacturer's recommendations; information contained in this specification; and Plans.
5. Any excess soil placed on subgrade to trap sediment shall be removed before placement of subbase; Keep area where pervious precast concrete slabs are to be installed free of sediment during the entire construction period.
6. Subbase crushed stone contamination with sediment shall be removed and replaced with clean materials; Do not damage drainpipes, underdrains, observation wells, roadway

boxes, manholes, or other utilities during installation. Report any damage immediately to the Resident. Any damage shall be replaced or repaired as part of the bid price of this item by the Contractor.

B. Aggregate Subbase Course - Gravel

1. Place and spread material in accordance with SP 304 Aggregates. Compact to no less than 95% Modified Proctor.
2. The surface tolerance of the screed leveling layer shall be ± 1/4 in. under a 10 ft. straightedge.

C. Pervious Precast Concrete Slabs

1. Install the pervious precast concrete slabs in the pattern shown on the Contract Plans
2. Slabs shall only be lifted and placed using swivels and spreader chains. Chains, cables or slings should never be wrapped around slabs for lifting under any circumstances. Swivels shall be securely bolted snug but not over-tightened to avoid damage to the surface.
3. Precast porous concrete paving slabs shall be separated with ¼" spacers provided by the manufacturer of the precast porous concrete paving slabs. Joint widths and lines should be continually straightened as installation proceeds
4. Place units hand tight without using metal hammers, pry bars or drift pins. Make horizontal adjustments to placement of laid slabs with wood wedges and levers, and rubber mallets as needed.
5. Care should be taken to place adjacent slabs at same elevation (i.e. level to each other). Slabs shall not deviate by more than 1/4" vertically from one to the next. The surface tolerance of the screed leveling layer shall be ± 1/4 in. under a 10 ft. straightedge.
6. Joints shall be left open – No stone or sand is to be placed in joints.

D. Edge Restraint

1. Install edge restraints per the manufacturer's recommendations along all edges of the pervious precast concrete slabs which abut asphalt pavement.

608.444 Protection

Add the following paragraphs:

A. After work in this section is complete, the Contractor shall protect the slab from damage and/or contamination with mud, dirt, grass cuttings, accumulation of foliage and debris. Use plastic caps to fill permanent lifting points to protect the holes from filling with dirt or debris

608.05 Method of Measurement

Add the following paragraph:

Pervious Precast Concrete Slab will be measured by the square yard, complete and accepted in place.

608.06 Basis of Payment

Add the following paragraph:

Pervious Precast Concrete Slab will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment, labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Payment will be made under:

Pay Item		Pay Unit
608.292	Pervious Precast Concrete Slabs	Square Yard

SPECIAL PROVISION
SECTION 620
GEOTEXTILES
(Separation Geotextile, Special)
(Strip Drains)

620.02 Materials

Replace Subsection 620.02 with the following:

Special separation geotextile to be placed over prepared subgrade where depicted on the project drawings shall meet the requirements of Special Provision 722.

Strip drains to be placed over the special separation geotextile where depicted on the project drawings shall meet the requirements of Special Provision 722.

620.03 Placement

Add the following at the end of Subsection 620.03:

d. Strip Drain

Strip drains shall be placed where depicted on the project drawings by unrolling the material with the dimple side of the polystyrene molded core facing down on top of the special separation geotextile. The surface of the special separation geotextile on which the strip drain is placed shall be relatively smooth such that the strip drain will drain towards its outlet at an underdrain. The downgradient end of the strip drains shall outlet into an underdrain as depicted on the project drawings and in such a manner as to maintain positive discharge of water collected by the strip drain into the underdrain.

Care shall be taken during installation so as to avoid damage occurring to the geotextile wrap or molded core as a result of the installation process. When aggregate is placed over the strip drains, the material shall be placed so that it does not puncture, otherwise damage, or displace the strip drains. Field monitoring shall be performed during aggregate material placement over and around the strip drains.

Should the geotextile wrap or molded core be damaged during installation or subsequent fill placement, the damaged area along with 2 feet of undamaged strip drain on both sides of the damaged area shall be exposed and removed, and a new piece of strip drain shall be spliced into the undamaged strip drain in accordance with the manufacturer's recommendations at the Contractor's expense. Any strip drains displaced during fill placement shall be exposed and reinstalled at the proper location and grade. The Contractor at his own expense and with the approval of the Resident may elect to leave the displaced strip drain and install a new length of strip drain at the proper location and grade.

620.09 Basis of Payment

Modify Subsection 620.09 by adding the following:

Payment will be made under:

Pay Item		Pay Unit
Item 620.6011	Separation Geotextile, Special	Square Yard
Item 620.73	Strip Drains	Linear Foot

SPECIAL PROVISION
SECTION 621
LANDSCAPING
(Plant Species Specifications and Quantities List)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 621 – LANDSCAPING, with the following modifications:

621.01 Description

Add the following paragraphs:

The following list of items provides the estimated quantities for use on this project. The scientific name of the plant material is provided along with the common name in parenthesis.

The contractor shall follow MaineDOT Standard Specifications (Dec 2002) for landscape materials and installation procedures (Section 621).

In accordance with Section 104.5.9, a separate Performance Bond will not be required for the Landscape portion of this contract. A Maintenance Bond for a Two-Year Establishment period in the full value of the planting shall be included in this project.

The MaineDOT Landscape Architect or his designee will be available to inspect plant materials and stake the location of plant materials at the time of planting.

621.0038 Basis of Payment

Add the following Pay Item:

Payment will be made under the following Pay Items and in accordance with the following table (as shown on the following page):

Pay Item		Pay Unit
621.043	Evergreen Tree, 6ft to 8ft B&B, Croup A	Each
621.046	Evergreen Tree, 8ft to 10ft B&B, Group A	Each
621.261	Large Deciduous Tree, 10ft to 12ft B&B, Group A	Each
621.285	Large Deciduous Tree, 3”-3.5” cal., B&B, Group A	Each
621.401	Dwarf Evergreens, 2ft to 2.5ft, B&B, Group A	Each
621.525	Bayberry, 2ft to 3ft, B&B, Group A	Each
621.546	Deciduous Shrubs, 2ft to 3ft, Group A	Each
621.552	Deciduous Shrubs, 3ft to 4ft, B&B, Group A	Each
621.71	Herbaccous Perennials, 2 gal. container, Group A	Each
621.80	Establishment Period – Two Years	Lump Sum

Add the following table:

TABLE 1
Shrubs and Plants Quantities Listing

Pay Item Number	Description of Shrub or Plant	Unit	Species Qnty	Item Qnty
621.043	Evergreen Tree, 6ft to 8ft B&B, Group A	EA		9
	Juniperus virginiana 'Manhattan Blue' Manhattan Blue Eastern Red Cedar		9	
621.046	Evergreen Tree, 8ft to 10ft B&B, Group A	EA		5
	Picea Glauca - White Spruce		5	
621.261	Large Deciduous Tree, 10ft to 12ft B&B, Group A	EA		3
	Betula nigra – River Birch		3	
621.285	Large Deciduous Tree, 3"-3.5" cal., B&B, Group A	EA		19
	Acer rubrum 'Karpick – Karpick Red Maple		10	
	Quercus bicolor – Swamp White Oak		9	
621.401	Dwarf Evergreens, 2ft to 2.5ft, B&B, Group A	EA		3
	Juniperus virginiana 'Grey Owl' Grey Owl Juniper		3	
621.525	Bayberry, 2ft to 3ft, B&B, Group A	EA		5
	Myrica pensylvanica – Northern Bayberry		5	
621.546	Deciduous Shrubs, 2ft to 3ft, Group A	EA		6
	Physocarpus opulifolius 'Little Devil' Little Devil Ninebark		3	
	Rhus aromatic 'Gro-Low' Gro-Low Fragrant Sumac		3	
621.552	Deciduous Shrubs, 3ft to 4ft, B&B, Group A	EA		36
	Cornus sericea 'Farrow' – Arctic Fire Red Twig Dogwood		36	
621.71	Herbaccous Perennials, 2 gal. container, Group A	EA		16
	Panicum virgatum 'Northwind' Northwind Switch Grass		7	
	Schizachyrium scoparium ' Prairie Blues' Prairie Blues Little Bluestem		9	
621.80	Establishment Period – Two Year	LS		1

SPECIAL PROVISION
SECTION 626
FOUNDATIONS, CONDUITS, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS
(Precast Concrete Junction Box)
(Non-Metallic Conduit)
(Metallic Conduit)
(Supporting Devices)
(Secondary Wiring)
(Service Metering)
(Service Grounding)
(Network Boxes)
(Panelboards)
(Pedestal Reefer Outlet Assemblies)
(Fire Alarm Pull Stations)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 626 – FOUNDATIONS, CONDUITS, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS, with the following additions and modifications:

626.01 Description

This work shall consist of furnishing and installing the following in accordance with these specifications and plans.

Make all necessary arrangements with the *Central Maine Power Company*, *FairPoint*, and *Time-Warner* to modify the existing overhead utility line at Commercial Street as required, including the relocation of selected existing utility poles.

Make all necessary arrangements with the *Central Maine Power Company*, *Fairpoint*, and *Time-Warner* to provide new utility services as follows:

Primary electrical service by the *Central Maine Power Company* to serve an existing service transformer at the Unitil property.

Telephone service by *FairPoint* to serve the Unitil property.

Cable television service by *Time-Warner* to serve the NGL property.

Primary electrical service by the *Central Maine Power Company* to re-connect to an relocated utility pole for service to the *Unitil* property.

Secondary electrical service by the *Central Maine Power Company* to serve a new traffic signal box at the intersection of Commercial and Beach Streets.

Secondary electrical service by the *Central Maine Power Company* to serve a relocated bridge signal box at Commercial Street.

Primary electrical service by the *Central Maine Power Company* to serve a new service transformer for the International Marine Terminal site.

Exterior fire alarm manual pull stations to be connected to the existing fire alarm system in the adjacent Rubb Building.

Provide all underground conduits and in-ground precast junction boxes for new service utilities being provided by the *Central Maine Power Company*, *FairPoint*, and *Time-Warner*.

Provide an underground electrical 277/480 volt, 3-phase secondary service (conduit and wire) between the new International Marine Terminal service transformer and the service/distribution equipment being provided under this contract.

Provide new electrical service/distribution equipment for the International Marine Terminal site.

Provide new underground electrical 277 volt circuits (conduit and wire) to serve the new site lighting.

Provide new underground electrical 120 volt circuits (conduit and wire) to serve motor operated gates.

Provide new underground electrical 120 volt circuits (conduit and wire) to serve network switches (network switches to be provided by others).

Provide new underground conduit for surveillance security cameras (cameras and camera wiring to be provided by others).

Provide new underground conduit for gate control card readers (card readers and wiring to be provided by others).

Provide new underground conduit for telecommunications equipment wiring boxes (telecommunications wiring to be provided by others).

Provide new weatherproof boxes for network switching equipment (network switching to be provided by others)

Provide new pedestal-type reefer outlet assemblies.

Provide new underground electrical 480 volt feeders (conduit and wire) to serve pedestal-type refer outlet assemblies.

Upon completion of permanent electrical installations at New Yard LLC by others, remove the utility pole from the concrete slab area, the utility pole on the New Yard property, and the adjoining 3-phase service between the New Yard LLC property and the utility pole on Commercial Street. Coordinate with CMP and New Yard.

626.02 General

Installation of service conduit and wiring methods for the new underground electrical 277/480 volt, 3-phase utility service shall be approved by the *Central Maine Power Company*. Installation of service conduit and wiring methods for the new underground telephone service shall be approved by *FairPoint*. Installation of service conduit and wiring methods for the new underground cable television service shall be approved by *Time-Warner*.

626.021 Materials

Materials shall meet the requirements specified in the following Subsection of Division 700 - Materials:

Reinforcing Steel	709.01

Steel Conduit	715.02
Non-Metallic Conduit	715.03
Secondary Wiring	715.07

626.022 Equipment and Drawings

Provide scale drawings and details for anchor bolt installation methods.

626.03 Underground Construction Coordination

Coordinate excavation for new foundations, in-ground precast junction boxes, and underground conduits with existing underground utilities. Where conflicts are found with existing utilities, make all practical efforts to install new work to produce a minimum impact on existing conditions. Where relocation of existing utilities is deemed necessary, obtain approval from affected utility supplier in advance of commencing relocation work.

626.110 Exterior Precast Concrete Junction Boxes

Precast junction boxes shall be rated for H-20 loading and shall be manufactured with 5000 PSI reinforced concrete. Boxes shall include pulling eyes, duct openings and knock-outs as required and shall be provided with frame and cover as manufactured by *US Foundries* model 4044-B, or approved equal. Boxes shall be approved by the serving utility companies.

Electrical Precast Junction Boxes: 7’-0”W x 13’-0”L x 8’-0”D (outside)
Precast Concrete Products of Maine model # B-1202, or approved equal

626.210 Non-Metallic Conduit

Underground non-metallic electrical conduit shall be schedule 40 PVC.

626.211 Metallic Conduit

Rigid galvanized steel conduit shall be used for all exposed conduit above grade. Long-sweep RGS conduit shall be used for underground elbows of 2-inch diameter or greater. RGS conduit shall be used for electrical primary service conduit where they are installed under public streets, or paved areas subject to vehicular traffic.

626.213 Supporting Devices

The International Marine Terminal service and distribution equipment shall be supported by a stainless steel frame with components as manufactured by *Unistrut*, series P1001 SS, or approved equal. Prove all necessary fittings and hardware to make a complete support frame. Anchor the support frame with concrete foundations that extend a minimum of 60 inches below grade.

626.231 Secondary Wiring

Building wire in conduit shall be 600 volt class Type THWN-2 or Type XHHW-2, as manufactured by *Southwire* or approved equal. Conductors shall be rated 90º C with moisture and heat-resistant thermoset cross-linked polyethylene insulation.

Fire alarm cable shall be certified as appropriate for use with the manual pull stations being provided.

626.410 Electrical Service Metering

The International Marine Terminal utility service shall be 277/480 volt, 3 wire, as received from a new *Central Maine Power Company* service transformer. The new electrical service shall be separately metered by *CMP*.

626.420 Bonding and Grounding

A separate, continuous, green insulated ground conductor shall be provided to extend from the International Marine Terminal power distribution panelboards within the feeder to the Guard Shack; all refer feeders; and all branch circuits. Service grounding shall be made to 5/8 inch by 8 feet long copper-clad steel ground rods.

626.520 Network Boxes

Provide weatherproof, fiberglass network boxes for surveillance system wiring and for gate access control wiring. Boxes shall be rated NEMA 4X and shall be made from compression-molded fiberglass. Boxes shall have a hinged, solid cover with a locking handle. Provide Type 4X vent drains and an interior mounting panel. Boxes shall be 24”W x 24”H x 12”D (nominal). Boxes shall be as manufactured by *Pentair*, model # UU606030/A24P24/H20MIT, or approved equal.

626.740 Panelboards

The power service/distribution panelboard “DP” shall be *Square D* I-LINE – Class 2110, or approved equal. The panelboard shall be rated for 480/277 volt, 3-phase, 4-wire service, and shall be provided with a NEMA 4 stainless steel enclosure with a hinged, locking front cover. Locks shall be cylindrical tumbler type with larger enclosures requiring sliding vault locks with 3-point latching. All lock assemblies shall be keyed alike. One (1) key shall be provided with each lock. A clear plastic directory cardholder shall be mounted on the inside of the door. The UL listed short circuit current rating (SCCR) shall be equal to 35K or greater. The panelboard shall be suitable for use as Service Equipment.

Panelboard “DP” shall be furnished with five (5) 3-position, key operated switches for control of site lighting circuits DP-#2, DP-#3, DP-#4, DP-#5, DP-#6, and DP-#7. The switches shall be installed in a NEMA 4 stainless steel enclosures and shall be surface mounted on the side of Panelboard DP’s enclosure. Switches shall be configured to have contact closure on the right and left positions, and shall have an open contact in the center position. Switches shall be as manufactured by Square D, Class 9001, Type KS455. Switches shall be labeled:

Left: 100% Output Center: Off Right: 50% output.

The branch circuit panelboard “P2 shall be *Square D* NQOD – Class 1630, or approved equal. The panelboard shall be rated for 208/120 volt, 3-phase, 4-wire service. Panel P2 shall be provided with a NEMA 4 stainless steel enclosure with a hinged, locking front cover. Locks shall be cylindrical tumbler type with larger enclosures requiring sliding vault locks with 3-point latching. All lock assemblies shall be keyed alike. One (1) key shall be provided with each lock. A clear plastic directory cardholder shall be mounted on the inside of the door. The UL listed short circuit current rating (SCCR) shall be equal to 10K or greater. The panelboard shall be suitable for use as Service Equipment.

Molded case circuit breakers shall have an over center, trip free, toggle operating mechanism which will provide quick-make, quick-break contact action. The circuit breaker shall have common tripping of all poles. The circuit breaker handle shall reside in a tripped position between ON and OFF to provide local trip indication. Circuit breaker escutcheon shall be clearly marked ON and OFF in addition to providing International I/O markings.

Panelboard DP:
Location: Outside at Equipment Rack
277/480 Volts, 3-Phase, 4-Wire
400 Ampere Bus
AIC Rating: 35K
Surface Cabinet – NEMA 4X Stainless Steel
Main Circuit Breaker: 400A/3P
Distribution Circuit Breakers:

Ckt #	CB Size	Load
1	40A/2P	Transformer T1
2 thru 7	20A/1 P	Site Lighting
8 thru 10	80A/3P	Pedestal Refer Outlet Assembly

Panelboard P2:
Location: Outside at Equipment Rack
120/208 Volts, 1-Phase, 3-Wire
100 Ampere Bus
AIC Rating: 10K
Surface Cabinet – NEMA 4X Stainless Steel
Panelboard P1 (continued):
Main Circuit Breaker: 100A/2P
Branch Circuit Breakers:

Ckt #	CB Size	Load
1	20A/1P	Gate Operators
2	20A/1P	Network Switch
3	60A/2P	Guard Shack
4-7	20A/1P	Spares

Transformer T1 shall be *Square D* Class 7400, or approved equal. The transformer shall conform to NEMA Standard TP-1 and shall be provided with a NEMA 4X stainless steel enclosure.

Transformer T1:
Primary Rating: 480 volts, single phase
Secondary Rating: 120/240 volts, single phase
kVA Rating: 15

626.741 Pedestal Reefer Outlet Assemblies

Pedestal reefer outlet assemblies shall be as manufactured by *ESL Power Systems*, model E6-R32-480-30-22SSND-SP-22XX-XX. No substitutions will be allowed. Reefer outlet assemblies shall include six (6) R32-480-30-22SSND-SP safety interlock modules (all facing the front). The assembly enclosure shall be rated NEMA 4X , 14 gauge, 304 stainless steel, painted with powder-coat paint, RAL7038).

Voltage: 440/480VAC 3phase, 3-wire
Short Circuit Rating: 22K
Reefer Outlets: 32 -Amperes

626.742 Fire Alarm Pull Stations

Fire alarm pull stations shall be addressable type, single action, provided in a weatherproof enclosure. Pull stations shall be as manufactured by *Simplex-Grinnell*, series 4099-9001, and shall be certified as compatible for use with the existing fire alarm system located in the Rubb Building. No substitutions will be allowed.

626.04 Method of Measurement

Precast concrete junction boxes and pedestal reefer outlet assemblies will be measured by the single unit. Metallic conduit, non-metallic conduit, supporting devices, secondary wiring, service metering, service grounding, surveillance system wiring, and panelboards will each be measured by lump sum.

626.05 Basis of Payment

The accepted quantity of pre-cast concrete junction boxes will be paid for at the contract unit price for each box. Payment shall be full compensation for the complete installed box, including boxes, excavation, labor, equipment and incidentals necessary to complete the work.

Payment will be made for the total amount of non-metallic conduit actually furnished, installed and accepted at the contract lump sum price. This price shall include the cost of furnishing and installing the conduit; fittings; trenching; labor; equipment and incidentals necessary to complete the work. The price shall also include the disconnection and removal of the 3-phase service to New Yard, LLC and terminating this service to the satisfaction of the Resident and CMP at the utility pole located on Commercial Street.

Payment will be made for the total amount of metallic conduit actually furnished, installed and accepted at the contract lump sum price. This price shall include the cost of furnishing and installing the conduit; fittings; trenching; labor; equipment and incidentals necessary to complete the work.

Payment will be made for the total amount of supporting devices at the contract lump sum price. Payment shall be full compensation for the complete furnishing and installation of support framing including framing materials, labor and incidentals necessary to complete the work.

Payment will be made for the total amount of secondary wiring at the contract lump sum price. Payment shall be full compensation for the complete furnishing and installation of all secondary wiring including wiring conductors, fittings, labor, equipment and incidentals necessary to complete the work.

Payment will be made for the total amount of service metering at the contract lump sum price. Payment shall be full compensation for the complete furnishing and installation of service metering including meter sockets, labor, equipment and incidentals necessary to complete the work.

Payment will be made for the total amount of service grounding at the contract lump sum price. Payment shall be full compensation for the complete furnishing and installation of all grounding including ground conductors, fittings, ground rods, excavation, labor, equipment and incidentals necessary to complete the work.

Payment will be made for the total amount of network system boxes at the contract lump sum price. Payment shall be full compensation for the complete furnishing and installation of all weatherproof boxes, fittings, labor, equipment and incidentals necessary to complete the work.

Payment will be made for the total amount of panelboards at the contract lump sum price. Payment shall be full compensation for the complete furnishing and installation of panelboards, transformers, lighting control switches, fittings, labor, equipment and incidentals necessary to complete the work.

The accepted quantity of pedestal reefer outlet assemblies will be paid for at the contract unit price for each assembly. Payment shall be full compensation for the complete installed assembly, including labor, equipment and incidentals necessary to complete the work.

Payment will be made for the total amount of fire alarm pull stations at the contract lump sum price. Payment shall be full compensation for the complete furnishing and installation of pull stations, connections at the Rubb Building, system programming, and, labor and incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
626.11	Precast Concrete Junction Box	Each
626.213	Metallic Conduit	Lump Sum
626.214	Supporting Devices	Lump Sum
626.226	Non-Metallic Conduit	Lump Sum
626.233	Secondary Wiring	Lump Sum
626.324	Pedestal Reefer Outlet Assemblies	Each
626.386	Service Metering	Lump Sum
626.42	Service Grounding	Lump Sum
626.50	Network Boxes	Lump Sum
626.74	Panelboards	Lump Sum
626.742	Fire Alarm Pull Stations	Lump Sum

SPECIAL PROVISION
SECTION 626
FOUNDATIONS, CONDUITS, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS
(18-Inch Diameter Foundation)
(24-Inch Diameter Foundation - Light Standards - 11 ft)
(24-Inch Diameter Foundation - Card Reader and Pedestal Pole - 5 ft)
(30-Inch Diameter, 8-ft Long Foundation)
(30-Inch Diameter, Greater Than 8-ft Long, and All 36-Inch and 42-Inch Diameter Foundations)
(48-Inch Diameter, 54-Inch Diameter, and 60-Inch Diameter Foundations)
(Special Foundation)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 626 – FOUNDATIONS, CONDUITS, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS, with the following modifications:

626.021 Miscellaneous Material

Add the following:

Reinforcing Steel Section 503.02

626.034 Concrete Foundations

Replace in its entirety with the following:

If noted on the plans, the Department has completed an appropriate test boring program to evaluate subsurface conditions in the general vicinity of proposed foundations for traffic signal dual purpose and mast arm poles and highway sign bridge, cantilever, and butterfly support structures. The associated boring log(s), as well as foundation requirements and any foundation-specific information are provided on the plans. Unless another foundation type is specified on the plans, foundations shall consist of cast-in-place reinforced concrete drilled shafts. Supplier shall determine the bending moment, shear force, torsion and axial load at the top of each mast arm or dual purpose pole or sign support structure foundation. Foundation size (diameter and length) shall depend on the Bending Moment and Torsion at the top of the foundation and shall be taken off of Charts 1 and 2 that are provided below. The larger of the foundation sizes shown for Bending Moment or Torsion shall be the required foundation size. Length shall be added in accordance with the plans to account for embankment fill or sloping ground conditions. Lengths are depths below lowest adjacent (proposed) grade.

Chart 1 - Foundation Length (ft.) Based on Bending Moment (φ=28 deg)

BENDING MOMENT (kip-ft.)	FOUNDATION DIAMETER (inches)					
	30	36	42	48	54	60
10	10					
20	10					
30	10					
40	10	10				
50	11	10	10			
60	11	11	10	10		
70	12	11	11	10	10	
80	12	12	11	11	10	10
90	12	12	11	11	11	10
100	13	12	12	11	11	11
110	13	13	12	12	11	11
120	14	13	12	12	12	11
130	14	13	13	12	12	11
140	14	13	13	12	12	12
150	15	14	13	13	12	12
160	15	14	13	13	12	12
170	15	14	14	13	13	12
180	15	15	14	13	13	12
190	16	15	14	14	13	13
200	16	15	14	14	13	13

Chart 2 - Foundation Length (ft.) Based on Torsion (φ=28 deg)

TORSION (kip-ft.)	FOUNDATION DIAMETER (inches)					
	30	36	42	48	54	60
10	10	10				
20	11	10	10			
30	13	11	10	10		
40	16	13	11	10	10	
50	18	15	12	11	10	10
60	20	16	14	12	11	10
70		17	15	13	11	10
80		19	16	14	12	11
90		20	17	15	13	12
100			18	15	14	12
110			19	16	14	13
120			20	17	15	13
130				18	16	14
140				19	16	15
150				19	17	15
160				20	18	16
170					19	16
180					19	17
190					20	17
200					20	18

Reinforcing shall be as specified on Chart 3 provided below.

Chart 3 - Summary of Reinforcing Steel (φ=28 deg)
(for Charts 1 and 2)

Foundation Diameter (feet)	Torsion (kip-feet)	QTY Long. Bars	Long. Bar Size	Spiral Bar Size	Spiral Spacing (0 to 3 ft) (inches)	Spiral Spacing (3 ft to 2L/3 ft) (inches)	Spiral Spacing (2L/3 ft to tip) (inches)
2.5	$0 \le T \le 60$	12	#8	#5	4	12	12
3.0	$0 \le T \le 90$	15	#8	#5	4	12	12
3.5	$0 \le T \le 120$	18	#9	#5	4	12	12
4.0	$0 \le T \le 160$	21	#9	#5	4	12	12
4.5	$0 \le T \le 200$	24	#10	#5	4	12	12
5.0	$0 \le T \le 200$	27	#10	#5	4	12	12

Notes: Minimum clear cover to the reinforcing shall be 3 inches.
Spiral spacing shall be measured from the top of the foundation.

The Contractor is responsible for final design of the above-grade components of the mast arm or sign support structure. Design computations that are part of the Contractor's design submittal shall include the actual loads (bending moment, shear force, torsion and axial load) at the top of each foundation. These actual design loads at the top of each foundation that are provided by the Contractor as part of their submittal will be used by the Department to check the Contractor's proposed size of the drilled shafts. The Contractor shall not commence foundation construction prior to receiving approval from the Department's geotechnical group.

In the absence of design requirements being provided on the plans, the Contractor shall prepare and submit the foundation design(s) to the Department for approval. Likewise, the Contractor may propose an alternate shallow spread footing or drilled shaft configuration/ design than that set forth on the drawings. In either case, any Contractor-prepared foundation design shall meet the design criteria of Section 13 of the current edition of AASHTO "Standard Specifications for Structural Supports for Highway Sign, Luminaires and Traffic Signals", unless otherwise specified by the Department. Geotechnical design of the foundations shall be in accordance with Section 13 of the afore-mentioned AASHTO code and AASHTO Standard Specifications for Highway Bridges,17th Edition, as well as FHWA-IF-99-025, Drilled Shafts, Construction Procedures and Design Methods. In addition to other design requirements, foundation design shall account for Torsion for which a minimum Factor of Safety equal to 1.2 shall be achieved. In evaluating axial capacity and torsional resistance in cohesionless soils, load transfer coefficient or side resistance coefficient (beta, β) will be used in accordance with Subsection 13.3.5.1 of FHWA-NHI-10-016, with beta determined in accordance with Equations 13-13 and 13-11 for silty sands to sandy silts (with varying amounts of gravel). Reference is made to Illinois DOT for additional torsional design methodology. The design criteria for the resistance of drilled shaft and spread footing foundations against overturning, sliding and bearing capacity failure shall meet the requirements of Section 4 of AASHTO Standard Specifications, 17th Edition. The structural design of foundations shall meet the requirements of AASHTO Standard Specifications, 17th Edition. The Contractor shall submit to the Department for approval, three (3) copies of detailed plans and calculations, prepared by a State of Maine licensed Professional Engineer, of the proposed foundation. Construction of foundation(s) shall not commence until the Department has approved the foundation design

If a test boring program has not been completed by the Department, Contractor may use the assumed soil properties provided on the plans to develop foundation designs for the sole purpose of preparing a bid. Prior to construction, the Contractor shall engage a qualified geotechnical firm or person to complete test boring(s) in the vicinity of the foundations, including standard penetration tests and soil sampling, determine soil properties for use in the foundation design, and complete geotechnical analyses and geotechnical foundation design for review and approval by the Department. All costs associated with the work required to sample, classify and analyze the soil, design the foundation and prepare submittals shall be incidental to related Contract items. The Contractor shall submit 3 copies of all foundation design work, structural and geotechnical, together with computations and plans used for design purposes. The computations shall be sufficiently detailed to allow the Department to check and approve the computations. 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. Design submittals not meeting these criteria will be rejected.

Drilled shafts shall not be permanently cased, except for the top 3.0 feet; concrete shall be cast directly against the surrounding soil. Shallow spread footings shall be founded at least 5.0 feet below the lowest surrounding proposed grade for frost protection. If soil conditions differ materially from those described on the boring logs, the contractor shall stop work on that foundation and contact the Resident.

All unsuitable material (including but not limited to peat, organic material, and material that has been disturbed and/or dumped) within the limits of a foundation shall be removed to the limits directed by the Resident. Drilled shaft depths shall be increased as directed by the Department to account for the unsuitable material. Unsuitable material removed from below subgrade for spread footing foundations shall be replaced

with compacted material, as set forth below for foundation backfill. Drilled shaft foundation holes, except in ledge, shall be excavated by auger method to the neat line of the outside dimensions of the footing without disturbing the soil around or below the proposed footing. Drilled shafts shall not be permanently cased, except for the top 3 feet; concrete shall be cast directly against the surrounding soil. In areas where rock or ledge is encountered above the proposed bottom of foundation, the Contractor will have the option of removing rock and placing the foundation at the design depth shown on the plans, or constructing a grouted rock-anchored foundation system. Rock-anchored foundations shall be constructed according to Standard Detail 626(06) Foundations for Traffic Signals, Highway Signing and Lighting, or as approved by the Department for drilled shafts greater than 30 inches in diameter.

Concrete for drilled shafts shall be placed as soon after excavation as practicable to prevent debris from collecting in the excavated area. The Contractor shall provide temporary dewatering of excavations for foundations such that concrete is placed in the dry. Concrete for drilled shafts shall be placed by tremie methods as temporary casing is withdrawn to prevent debris from contaminating the foundation and to ensure concrete is cast against the surrounding soil. Concrete for drilled shafts and spread footings shall be Class A in accordance with Section 502 - Structural Concrete. Precast foundations will not be permitted. Back fill for spread footing foundations shall be Gravel Borrow meeting the requirements of Section 703.20 - Gravel Borrow. Gravel Borrow shall be placed in layers not exceeding 8 inches in depth before compaction. Each layer of back fill shall be thoroughly compacted by use of power tampers to at least 95% of the material's maximum dry density as measured in the field per AASHTO T191 or by an approved method using calibrated nuclear device. All back filling and compacting shall be in accordance with the applicable provisions of Section 206 – Structural Excavation.

Before placing concrete, the required elbows of entrance conduits, reinforcing steel and anchor bolts shall be carefully positioned. The anchor bolt size and the bolt circle diameter shall be determined from data furnished by the supplier of the poles or as shown on the plans. Anchor bolts for use with breakaway couplings, longitudinally grooved-type, shall be 1 inch diameter and shall project between 2½ and 3 inches above the top of the foundation. All other anchor bolts shall be a minimum of 1 inch diameter and shall project sufficiently to accommodate the thickness of the base plus all nuts and washers. The bolt length shall also be sufficient to allow clearances of approximately ½ inch below the leveling nut and ¼ inch above the top nut. At least two threads on each anchor bolt shall project beyond the outside of the nuts holding the plumbed pole.

All foundations shall be warranted 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.

The finished ground at each foundation shall be graded flush with the top of the foundation, except at locations where the foundation is protected by guardrail, by curb, or is outside the clear zone. If required, approved backfill material shall be added to grade the slopes as specified. There will be no additional compensation for furnishing, placing and compacting material flush around the foundation. In all cases, the surface area around the foundations shall be graded to drain away from the foundation and loamed and seeded in accordance with the requirements of Section 615 and Section 618.

Concrete foundations designated to be modified or removed shall be modified or removed as shown on the plans. Debris resulting from the modification or removal shall be removed from the project. Once removal has been completed, the area shall be brought to grade by addition of granular material and loam, or by loam only, depending on the extent of modification or removal. The area shall then be seeded in accordance with Section 618.

The concrete portion of the foundations exposed to view shall have a troweled finish. A drainage groove shall be formed in the horizontal surface of the foundation. The top of the concrete foundation shall be horizontal.

When the anchor bolt template is removed, the threads of the anchor bolts shall be greased and protected with a metal sleeve, held in position with nuts and washers to be furnished with the bolts. This thread protection shall remain in place until the pole or other equipment is installed.

A copper-clad steel ground rod shall be installed when shown on the plans.

626.04 Method of Measurement

Modify the first paragraph as follows:

Foundation items 626.31, 626.32, and 626.33 will be measured by each unit. The following drilled shaft foundations will be measured by the theoretical cubic yard volume of foundation based upon approved diameters and lengths: 30-inch-diameter in excess of 8 feet long, and all drilled shafts 36 inches or greater in diameter.

626.05 Basis of Payment

Modify the first paragraph of this subsection and Pay Items as follows:

The accepted quantity and/or volume of foundations will be paid for at the contract unit price for each type of foundation. This payment shall include: drilling/excavation, dewatering, structural concrete, reinforcing steel, anchor bolts, conduit within the foundation and extending 12 inches from the foundation, steel grounding rod if required, fine grading, loam, seeding, mulching and all incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit	Status
626.31	18 inch dia. foundation	Each	NIC
626.32	24-inch dia. foundation – Light Standards – 11 ft.	Each	
626.32	24-inch dia. foundation – Card Reader and Pedestal Pole – 5 ft.	Each	
626.33	30-inch dia., 8-foot long foundation	Each	NIC
626.332	30-inch dia., greater than 8-feet long, and all 36-inch and 42-inch dia. foundations	Cubic yard	
626.333	48-inch dia., 54-inch dia., 60-inch dia. foundations	Cubic yard	
626.37	Special Foundation	Each	NIC

NIC: Not In Contract

SPECIAL PROVISION
SECTION 626
FOUNDATIONS, CONDUITS, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS
(Pedestal Reefer Outlet Foundations)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 626 – FOUNDATIONS, CONDUITS, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS, with the following additions and modifications:

Section 626.01 Description

The following paragraph is added:

This work shall consist of furnishing and installing pedestal reefer outlet foundations of reinforced concrete construction in the size and at the locations as shown on the plans.

626.03 Materials

The following paragraphs are added:

All steel reinforcement shall be epoxy coated bars with a minimum yield strength of 60 ksi and shall conform to the requirements of Section 503 of the Standard Specifications.

All steel anchor devices shall be galvanized steel with a minimum yield strength of 36 ksi and shall conform to the requirements of Section 505 of the Standard Specifications.

All cast-in-place concrete shall be in accordance with Section 502 of the Standard Specification and MaineDOT Concrete Class LP. Concrete Class LP shall include Note 3: inclusion of Calcium Nitrite. Calcium Nitrite shall be added at a rate of 5.0 gallons per cubic yard.

Section 626.04 Method of Measurement

The following paragraph is added:

Pedestal Reefer Outlet Foundations shall be measured by the individual unit completed and installed in accordance with the Plans. Anchor devices installed to secure the reefer outlets will not be measured separately but rather will be incidental to this pay item.

Section 626.05 Basis of Payment

The following paragraph is added:

Payment for Structural Concrete – Transformer Foundation shall be paid for at the lump sum Contract price and shall include all excavation, subbase materials, backfilling, grading, and compacting, forming, concrete, steel reinforcement, finishing, anchor devices, and other incidentals necessary to complete the work in accordance with the Plans.

Payment will be made under the following Pay Item:

Pay Item		Pay Unit
626.323	Pedestal Reefer Outlet Foundations	Each

SPECIAL PROVISION
SECTION 627
PAVEMENT MARKINGS
(Grooving for Pavement Markings)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 627 – PAVING MARKINGS, with the following additions and modifications:

Section 627.01 Description

The following paragraph is added:

This work shall consist of furnishing and installing a groove in the pavement for placement of longitudinal pavement markings such as white and yellow travel lane lines, as well as for the colored portions of bike lanes, as shown on the plans or as directed by the Resident.

Section 627.031Construction

The following paragraphs are added:

The grooves shall be cut such that the surface of the groove is uniform with minimal variation in height. Grooves shall be installed using a mechanical grinder with diamond-head cutting blades. Carbide blades will not be allowed. The grooves shall be located where the final pavement marking will be placed according to the Plans or as directed by the Resident.

On bituminous pavements the width of the groove shall be 1 inch wider than the width of the painted lines indicated on the Plans or as directed by the Resident. Lengths of grooves shall be determined from contract documents.

The final depth of the groove for longitudinal lines shall be 80 mils, plus or minus 5 mils.

The final depth of the groove for bike lanes and longitudinal lines adjacent to bike lanes shall be 120 mils, plus or minus 5 mils.

The groove shall be clean and dry before the installation of the pavement marking can begin. All debris resulting from the installation of the grooves shall be removed and disposed of by the contractor.

Section 627.09 Method of Measurement

The following paragraph is added:

Grooves will be measured by the square foot. When used for sections of broken lines that include the gaps for acceleration/deceleration, auxiliary lanes, and passing zones the length measured for payment shall include only the grooved areas. Breaks will not be included in the length or area measured for payment.

Section 627.10 Basis of Payment

The following paragraph is added:

The accepted quantity of grooves will be paid for at the contract unit price per square foot, complete and accepted. Payment will be considered full compensation for all labor, equipment, and material necessary to complete the described work, including loading, hauling, stockpiling, and disposal of material.

Payment will be made under the following Pay Item:

Pay Item	Pay Unit
627.30 Grooving for Pavement Marking	Square Foot

SPECIAL PROVISION
SECTION 627
PAVEMENT MARKINGS
(Colored Glass Pavement Marking System – Bike Lanes)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 627 – PAVING MARKINGS, with the following additions and modifications:

Section 627.01 Description

The following paragraph is added:

This work shall consist of furnishing and applying colored glass pavement marking system for colored bike lanes as shown on the Plans. The extent of this application shall stem from the Commercial Street / Beach Street intersection and to specified distances leading up to the intersection.

Section 627.02 Materials

The following paragraphs are added:

The colored glass pavement marking system shall comprise a two-part product system of epoxy binder and colored glass beads of the following characteristics:

Colored Glass Beads:

Manufacturer: Ruby Lake Glass, LLC of Richfield Springs, NY (www.rubylakeglass.com) or approved equal.

Product: Color-coated, recycled glass material pulverized and tumbled to a textured (but not sharp) glass bead product of 2mm (+/- 1mm) size. Glass beads shall be broadcast spread into an epoxy resin binder (below).

Glass Color: Green

Epoxy Resin:

Manufacturer: Dayton Superior of Miamisburg, OH (www.daytonsuperior.com), or

Kwikbond Polymers of Benicia, CA (www.kwikbondpolymers.com) or approved equal.

Product: Polymer-based resin binder for high-friction surface treatment such as PPC HFST by Kwikbond Polymers or an approved equal with the following properties:

Physical Properties	
Viscosity	1,000 - 2,000 cps
Adhesive	Greater than 500 psi
Tensile Strength (ASTM D638, 1/4-inch specimen)	3,500 - 4,500 psi
Tensile Elongation (ASTM D638, 1/8-inch specimen)	Greater than 20%

Section 627.03 Installation

The following paragraphs are added:

Once grooves are installed and pavement has cured for 30 days, perform the following installation procedures per manufacturer's recommendations and with oversight from the Resident:

Road Preparation:

1. Tape-off bike lane to differentiate from the white adjacent lane lines.
2. Shot-blast the bike lane area per manufacturer's instructions. Vacuum clean the area.
3. Apply 180 psi high-pressure air to bike lane area. Hold pressure nozzle 12 inches away from pavement. Expose porous structure of the pavement.
4. Pre-mix the epoxy resin and apply with squeegee in one continuous operation to approximately 40 mils thickness or to the manufacturer's recommendations. Thickness of the final glass bead system shall be approximately 60 mils.
5. Broadcast glass beads in large quantities (piles) to sufficiently cover all epoxy areas.
6. Wait one hour prior to sweeping excess glass.
7. Pull tape and clean area.

Section 627.09 Method of Measurement

The following paragraphs are added:

Colored Glass Pavement Marking System – Bike Lane shall be measured by the square foot.

Section 627.10 Basis of Payment

The following paragraphs are added:

Colored Glass Pavement Marking System – Bike Lane shall be paid for at the Contract square foot price, and shall include all labor, material, and equipment necessary to complete the work.

Epoxy resin will not be paid for separately, but rather will be incidental to this pay item.

Grooving will not be paid for under this item, but rather will be paid for under Grooving for Pavement Marking.

Payment will be made under the following Pay Item:

Pay Item		Pay Unit
627.943	Colored Glass Pavement Marking System – Bike Lanes	Square Foot

SPECIAL PROVISION
SECTION 627
PAVEMENT MARKINGS
(Preformed Pavement Marking Tape Lines, Grooved Installation)
(Preformed Pavement Marking Tape Lines, Hot Inlay Installation)
(Preformed Pavement Marking Tape Symbols, Hot Inlay Installation)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 627 – PAVING MARKINGS, with the following additions and modifications:

Section 627.01 Description

The following paragraph is added:

This work shall consist of furnishing and applying pavement marking tape in either grooves after paving has occurred or as a hot inlay during rolling of the final pavement lift, at locations shown in the Plans.

Markings within the colored sections of the bike lanes shall be a MaineDOT standard paint as specified in Section 708.03 of the Standard Specifications and will be paid for as 627.75, White or Yellow Pavement and Curb Marking (SF). Other bike lane symbols placed outside of the colored section of the bike lanes shall be hot inlaid as per Pay Item 627.409.

Section 627.02 Materials

The following paragraphs are added:

The tape shall be Pre-Formed Pre-Patterned Pavement Marking Material with a high retroreflective surface and capable of withstanding wet, dry, and freezing conditions. The patterned surface shall provide a near vertical profile to the motorist to maximize retroreflectance and shall contain a pliant polymer layer for long term durability. Submit the material specifications to the Resident for review and approval.

Pavement Marking Tape:

Manufacturer: 3M of St. Paul, MN (www.3m.com) or approved equal.

Product: Stamark High Performance Tape Series 380IES or approved equal.

Color: White lines, yellow lines, and white symbols

Retroreflectance: No less 500 mcd/lux/m^2 for white tape; No less than 300 mcd/lux/m^2 for yellow tape.

Section 627.03 Installation

The following paragraphs are added:

Pavement markings shall be stored in a dry secured location prior to installation. The Contractor shall provide two layout-only persons dedicated to layout and to pre-mark the road. A separate crew of two persons shall be dedicated to symbols. Pavement markings shall be installed per the manufacturer's recommendations and in the presence of the Resident and the manufacturer's representative along with the following procedures:

Pavement Markings – In Grooves:

1. Inspect grooves for damage and debris.
2. Clean grooves as required using a high pressure compressed air blower.
3. Dry the pavement surface.
4. Premark the road.
5. Apply adhesive (Resident and manufacturer's representative will determine if adhesive is not required). Allow the adhesive to set.
6. Apply the tape per manufacturer's recommendations.
7. Tamp the tape thoroughly with a minimum 200-pound load. Do not twist or turn the tamper; make a minimum of six passes over each part of the tape; and make sure all edges are firmly adhered.
8. Inspect the installed product for delaminations and repair or replace as necessary.
9. Open the road to traffic.

Pavement Markings – Hot Inlay:

1. Prior to the installation of inlay pavement markings, the Contractor shall hold a pre-installation meeting in order to coordinate the hot mix asphalt pull width scheme to ensure that the pavement marking tape installation will be offset from asphalt seams by at least 4 inches. This pre-installation meeting will include the paving contractor, the striping contractor, the Resident, and may also include a tape manufacturer's representative
2. Install pavement. Pave lanes so that the tape will not be placed on the asphalt seams between lanes.
3. Compact the fresh asphalt.
4. Premark the road.
5. Test the asphalt surface. The pavement surface must be soft enough to allow the marking to be inlaid by the steel-drum finishing roller. The surface temperature of the asphalt should be between 130 degrees F and 160 degrees F. The tape shall be applied during the final compaction, and rolled slowly into the HMA by the finish roller with no vibration and minimal water use. The tape shall be inlaid while the surface temperature is within the manufacturer's recommended guidelines without disruption to the compaction process
6. Lubricate the tape applicator and thread the tape.
7. Apply the tape. Use the Manual Highway Tape Applicator.
8. Press the tape into the pavement. Using a tandem steel-drum finishing roller (no vibration), slowly roll over the tape to press (inlay) it into the warm pavement surface. The tape should always be rolled (first pass) in the same direction it was applied. The speed of the finishing roller should be kept to less than 3 mph when rolling over the tape during the first pass. Use a minimum amount of water to clean and lubricate the steel drums during the inlay operation. The target embedment depth is approximately 50 to 60 percent of the tape's thickness below the asphalt surface.
9. Inspect the installed product for delaminations and repair or replace as necessary.
10. Open the road to traffic.

Section 627.081 Warranty

The following paragraphs are added:

General Warranty Information:

The Contractor shall warranty for the first year that 95% of the installation will remain intact and serviceable. It shall show no fading, lifting, shrinking, tearing, rollback, distortion or chipping due to vehicular traffic or normal maintenance activities including snow plowing. Although some wear is expected, the marking shall not wear out prematurely. Determination of percentages of serviceability and minimum reflective values will be made jointly at the end of tone year by the Contractor's representative and the Resident. The decision of the Resident shall be final.

A visual night inspection must be made with a manufacturer's representative and a customer representative present to identify areas of the installation which appear to be below the minimum retained reflectance values of 150 millicandelas per lux per square meter. Areas which appear to be below the minimum retained reflectance value shall be identified and corrected to the satisfaction of the Resident.

Such failures must be solely the result of design or manufacturing defects in the pavement marking material and not of outside causes such as improper installation or substrate failure. Failure to follow recommended application procedures will void this warranty.

The Contractor shall replace, entirely at the Contractor's expense, such amount of markings, if any, required to meet the above stated percentage. The engineer will indicate the areas and lines to be replaced to meet the above stated percentages. The Contractor will also replace those markings that fail the minimum value for reflectance. Replacement under either situation shall include all materials, equipment, labor, and work incidental thereto.

The Contractor shall provide the state, at no extra cost, any manufacturer's warranties or guarantees that exceed the minimum requirements stated previously, that are normally provided by the manufacturer. These warranties shall be provided when the documentation of the product is provided. The warranties will be retained by the MaineDOT.

Grooved Application:

The manufacturer shall warrant that pavement marking material sold for longitudinal lines installed in Maine will remain effective for its intended use under normal traffic conditions for no less than four years and meet the minimum retained coefficient of retroreflection value of 150 millicandelas per lux per square meter (measured at 1.05 degrees observation and 88.76 degrees entrance angles). The entrance angle and observation angle simulate a driver viewing geometry at a 30-meter distance.

If the pavement markings are applied in accordance with the manufacturer's application recommendations and fail during the warranty period, fail to adhere to the roadway, or fail due to complete wear-through during the warranty period described above (from the date of installation), the manufacturer's sole responsibility and purchaser's and user's exclusive remedy shall be that the manufacturer will provide the replacement materials that will restore the pavement marking retroreflectivity values to warranty levels or greater.

Inlay Application:

The manufacturer shall warrant that pavement marking material sold for lines installed in Maine will remain effective for its intended use under normal traffic conditions for no less than four years, and that material sold for symbols remain effective for no less than two years, and shall meet the minimum retained coefficient of retroreflection value of 150 millicandelas per lux per square meter (measured at 1.05 degrees observation and 88.76 degrees entrance angles). The entrance angle and observation angle simulate a driver viewing geometry at a 30-meter distance.

If the pavement markings are applied in accordance with the manufacturer's application recommendations and fail during the warranty period, fail to adhere to the roadway, or fail due to complete wear-through during the warranty period described above (from the date of installation), the manufacturer's sole responsibility and purchaser's and user's exclusive remedy shall be that the manufacturer will provide the replacement materials that will restore the pavement marking retroreflectivity values to warranty levels or greater.

Section 627.09 Method of Measurement

The following paragraphs are added:

Preformed Pavement Marking Tape Lines, Grooved Installation shall be measured by the square foot.

Preformed Pavement Marking Tape Lines, Hot Inlay Installation shall be measured by the square foot.

Preformed Pavement Marking Tape Symbols, Hot Inlay Installation shall be measured by the square foot.

Section 627.10 Basis of Payment

The following paragraphs are added:

Preformed Pavement Marking Tape Lines, Grooved Installation shall be paid for at the Contract square foot price, and shall include all labor, material, and equipment necessary to complete the work. Grooving will not be paid for under this item, but rather will be paid for under Grooving for Pavement Marking.

Preformed Pavement Marking Tape Lines, Hot Inlay Installation shall be paid for at the Contract square foot price, and shall include all labor, material, and equipment necessary to complete the work.

Preformed Pavement Marking Tape Symbols, Hot Inlay Installation shall be paid for at the Contract square foot price, and shall include all labor, material, and equipment necessary to complete the work.

Payment will be made under the following Pay Item:

Pay Item		Pay Unit
627.4072	Preformed Pavement Marking Tape Lines, Grooved Installation	Square Foot
627.4073	Preformed Pavement Marking Tape Lines, Hot Inlay Installation	Square Foot
627.4074	Preformed Pavement Marking Tape Symbols, Hot Inlay Installation	Square Foot

SPECIAL PROVISION
SECTION 634
HIGHWAY LIGHTING
(Luminaires for High Mast Lighting)
(Conventional Light Standards)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 634 – HIGHWAY LIGHTING with the following additions and modifications:

634.01 Description

This work shall consist of furnishing and installing new lighting standards including poles, bracket arms, and luminaires.

634.02 General

Lighting poles and luminaires shall be in full accordance with the details shown on the Contract Drawings.

634.021 Materials

Materials shall meet the requirements specified in the following Subsection of Division 700 - Materials:

Luminaires, Lamps, and Ballasts	715.08
Photo-Electric Control	715.10
Anchor Bolts	720.07

634.024 Lighting Standards

Lighting standards shall meet all physical and construction standards and requirements listed in the *Maine Department of Transportation* Specification Standards, including the design weight and projected area of luminaires.

634.037 Breakaway Supports

Provide breakaway couplings as manufactured by *Transpo*, model 4125. Couplings shall conform to AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals", and shall have been tested in accordance with the requirements of NCHRP Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features". All couplings, nuts, bolts and washers shall be galvanized after fabrication in accordance with ASTM A153. All leveling shims shall be galvanized after fabrications in accordance with ASTM A653. Design calculations or test data of production samples to support certification shall be provided. Breakaway support components shall provide the same or greater structural strength than the support post or pole utilizing the breakaway device. Breakaway devices must include a reaction plate connecting all anchor bolts under the breakaway device. Poles must contain a fusible breakaway device disconnecting all ungrounded conductors simultaneously.

Ultimate Tensile Strength = 221.5kN (49.8 kips), minimum
Tensile Yield Strength = 192.0 kN (43.2 kips), minimum
Ultimate Restrained Shear Strength: 16.9 kN (3.8 kips), minimum
Ultimate Restrained Shear Strength: 24.4 kN (5.5 kips), maximum

634.04 Cable Installation

All cable servicing lighting poles shall be furnished and installed under this contract. The Contractor shall furnish and install cable, and shall make connections at the base of poles to underground service cables.

634.164 Luminaires for Lighting Standards

Luminaires Mounted on the Type 1 Light Standards (Types S1 and S1A as indicated on the Contract Drawings): Luminaires as furnished by *Holophane Lighting*, model # ATB2 80BLEDE10 MVOLT R4 HS PCLL ML RFD168825, or approved equal. The luminaire shall utilize a 4000K LED lamp array, and shall include an integral 277 volt dual LED driver operating at 1000mA, surge suppression device, house-side shield, and photocell controller. The luminaire shall provide an IES Type IV optical distribution pattern. The luminaires shall be programmed with 50 and 100 percent lighting levels and line voltage manual override.

Luminaires Mounted on the Type 2 Light Standards (Type S1B as indicated on the Contract Drawings): Luminaires as furnished by *Holophane Lighting*, model # ATB2 80BLEDE10 MVOLT R4 PCLL, or approved equal. The luminaire shall utilize a 4000K LED lamp array, and shall include an integral 277 volt dual LED driver operating at 1000mA, surge suppression device, and photocell controller. The luminaire shall provide an IES Type IV optical distribution pattern. The luminaires shall be programmed with 50 and 100 percent lighting levels and line voltage manual override.

Luminaires Mounted on the Type 3 Light Standards (Types S2 as indicated on the Contract Drawings): Luminaires as furnished by *Holophane Lighting*, model # ATB2 80BLEDE10 MVOLT R5 PCLL ML RFD168825, or approved equal. The luminaire shall utilize a 4000K LED lamp array, and shall include an integral 277 volt dual LED driver operating at 1000mA, surge suppression device, and photocell controller. The luminaire shall provide an IES Type V optical distribution pattern. The luminaires shall be programmed with 50 and 100 percent lighting levels and line voltage manual override.

Luminaires Mounted on the Existing Casco Bridge Pier Structure (Types S3 as indicated on the Contract Drawings): Luminaires as furnished by *Holophane Lighting*, model # ATB2 80BLEDE10 MVOLT R5 PCLL ML RFD168825, or approved equal. The luminaire shall utilize a 4000K LED lamp array, and shall include an integral 277 volt dual LED driver operating at 1000mA, surge suppression device, and photocell controller. The luminaire shall provide an IES Type V optical distribution pattern. The luminaire shall include a polyester powder coat paint finish (black). The luminaires shall be programmed with 50 and 100 percent lighting levels and line voltage manual override. Provide a horizontal mounting arm as manufactured by *Holophane Lighting*, model # HZ, or approved equal.

634.210 Conventional Light Standards

Type 1 Light Standards (Types S1 and S1A as indicated on the Contract Drawings): Lighting poles as furnished by *Holophane Lighting* model # RTS25MH12TRUSS-BWC-SKIRT-AB RFD168838, or approved equal. 25-foot tall, round tapered steel pole with 12-foot truss arm. Pole shall be 7-gauge with a galvanized finish. Provide breakaway base couplings with anchor bolt skirt.

Pole Shaft: ASTM A572/A595 Gr. A, 55 ksi, minimum yield
Pole Base: ASTM A36, 36 ksi, minimum yield
Pole Simplex: ASTM A27 Gr.65-35 or A36, 35 ksi, minimum yield
Arm Simplex: ASTM A36, 36 ksi, minimum yield
Luminaire Arm: 2” Schedule 40, 36 ksi, minimum yield

Type 2 Light Standards (Type S1B as indicated on the Contract Drawings): Lighting poles as furnished by *Holophane Lighting* model # RTS30MH12TRUSS-BWC-SKIRT-AB RFD168838, or

approved equal. 30-foot tall, round tapered steel pole with 12-foot truss arm. Pole shall be 7-gauge with a galvanized finish. Provide breakaway base couplings with anchor bolt skirt.

Pole Shaft: ASTM A572/A595 Gr. A, 55 ksi, minimum yield
Pole Base: ASTM A36, 36 ksi, minimum yield
Pole Simplex: ASTM A27 Gr.65-35 or A36, 35 ksi, minimum yield
Arm Simplex: ASTM A36, 36 ksi, minimum yield
Luminaire Arm: 2" Schedule 40, 36 ksi, minimum yield

Type 3 Light Standards (Type S2 as indicated on the Contract Drawings): Lighting poles as furnished by *Holophane Lighting* model # RTS35HG4@90-BWC-SKIRT-AB RFD168840, or approved equal. 35-foot tall, round tapered steel pole with 3-foot long bracket arms (4 @ 90 degrees). Pole shall be 7-gauge with a galvanized finish. Provide breakaway base couplings with anchor bolt skirt.

Pole Shaft: ASTM A572/A595 Gr. A, 55 ksi, minimum yield
Base Plate: ASTM A36, 36 ksi, minimum yield
Anchor Bolts: ASTM F1554 Gr.55, 55 ksi, minimum yield

634.092 Method of Measurement

The accepted quantity of luminaires will be paid for at the contract unit price for each luminaire. Payment shall be full compensation for the complete installed luminaire, labor, equipment and incidentals necessary to complete the work.

The accepted quantity of lighting standards will be paid for at the contract unit price for each lighting standard. Payment shall be full compensation for the complete installed luminaire, labor, equipment and incidentals necessary to complete the work.

634.093 Basis of Payment

This Section is amended by addition of the following:

The accepted quantity of Luminaires will be paid for at the contract unit price for each luminaire. Payment shall be full compensation for the luminaires, including all incidentals necessary to complete the work.

The accepted quantity of Type 1, Type 2, and Type 3 Light Standards will be paid for at the contract unit price each for the number of standards by each type. Payment shall be full compensation for the light standard, including pole, bracket arms, breakaway devices, and all incidentals necessary to complete the work.

Pay Item		Pay Unit
634.2041	Luminaires	Each
634.210	Conventional Light Standard - Type 1	Each
634.210	Conventional Light Standard - Type 2	Each
634.210	Conventional Light Standard - Type 3	Each

June 29, 2007

SPECIAL PROVISION
Section 634 and 643
Highway Lighting and Traffic Signals

Section 634.09 testing of highway lighting, the first sentence shall be amended as follows:

Before acceptance of the work, the contractor shall cause the following tests to be made on all lighting circuits, by a licensed electrician.

The tests do not need to be performed in the presence of the Resident, but the test results shall be recorded on the Highway Lighting Quality Control Check List and submitted to the Resident by the Contractor for acceptance. The form shall be signed by the licensed electrician certifying that the highway lighting meets the requirements of section 634.09.

Subsection 634.14, field testing of Traffic Signals, the first sentence shall be amended as follows:

Before acceptance of the work the contractor shall cause the following tests to be made on all traffic signal equipment and circuits, by a licensed electrician.

The tests do not need to be performed in the presence of the Resident, but the test results shall be recorded on the Traffic Signal Quality Control Check List and submitted to the Resident by the Contractor for acceptance. The form shall be signed by the licensed electrician certifying that the signal equipment and circuits meet the requirements of section 634.14.

Highway Lighting Quality Control Checklist

Subsection 634.09 Field Testing

Project Pin # _____

Location (if multiple services, please be specific)- _____

Grounding Electrode Resistance at service _____

Number of Circuits _____

Hand-Off-Auto Switch? _____

Circuit #1

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

Circuit #2

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

I, _____, certify that this work was done in accordance with subsection 643.14 and current NEC _____ guidelines, and when tested, was functioning as intended.
(YEAR)

Electrician's Signature _____

Electrician's License # _____

Highway Lighting Quality Control Checklist

Subsection 634.09 Field Testing

Project Pin # _____

Location (if multiple services, please be specific)- _____

Grounding Electrode Resistance at service _____

Number of Circuits _____

Hand-Off-Auto Switch? _____

Circuit #3

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

Circuit #4

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

I, _____, certify that this work was done in accordance with subsection 643.14 and current NEC _____ guidelines, and when tested, was functioning as intended.
(YEAR)

Electrician's Signature _____

Electrician's License # _____

Traffic Signal Quality Control Checklist

Subsection 643.14 Field Testing

Project Pin # _____

Grounding Electrode Resistance at service _____

ID tags on loop amps / detector cards? _____

Location

Street Approach _____

Loop #	_____	**Resistance**	_____
Phase #	_____	**Meg to ground**	_____
L,C, or R Lane	_____	**Amount of bondo covering loop**	_____
Pulse or Presence	_____		

Street Approach _____

Loop #	_____	**Resistance**	_____
Phase #	_____	**Meg to ground**	_____
L,C, or R Lane	_____	**Amount of bondo covering loop**	_____
Pulse or Presence	_____		

Street Approach _____

Loop #	_____	**Resistance**	_____
Phase #	_____	**Meg to ground**	_____
L,C, or R Lane	_____	**Amount of bondo covering loop**	_____
Pulse or Presence	_____		

I, _____, certify that this work was done in accordance with subsection 643.14 and current NEC _____ guidelines, and when tested, was functioning as intended.
(YEAR)

Electrician's Signature _____

Electricain's License # _____

SPECIAL PROVISION
SECTION 641
REST AREA FACILITIES
(Flat Bench)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, with the following additions:

ADDITIONS:

641.01 Description

The work covered by this section includes furnishing all labor, materials, equipment and incidentals for the installation of flat granite slab benches as shown on the Landscape Plans and Details.

641.02 Materials

The granite shall be obtained from an approved quarry and be free from materials which, by weathering, would cause discoloration or deterioration. The granite for the entire Project shall be uniform in color and free from seams, cracks and other structural defects.

Benches shall be standard Woodbury gray or approved equal in color and 4” long x 2” wide x 1’-10” total height. The bench seat shall have a thermal top with eased top edges, shallow rock faces on four sides, and a sawn bottom.

The finish on exposed surfaces of the stones shall be free from tool marks. Irregular projections shall be limited to a maximum of 2 inches for any one stone measured from the pitch line. Irregular depressions shall be limited to a maximum of 1 inch for any one stone measured from the pitch line. Stones shall have their edges pitched to a true line with tops and bottom parallel and cut to lie on their natural beds. The top and bottom beds shall be the full size of the stone, and hollow beds shall not be permitted.

641.03 Submittals

Submit shop drawing from manufacture for product dimensions, color, and finishes.

641.04 Construction

Granite bench shall be delivered and handled to prevent soiling and damage. Store bench off the ground until area is prepped and made ready for installation.

Set benches, level, true, and parallel to sidewalk / road, keyed 4” into ground on prepared subbase, as shown on Landscape Details or as directed by landscape architect. Maintain a minimum 12” depth of compacted type ‘D’ gravel aggregate base, modified to a max. 4” size, under bench; compact in 4” lifts.

Perform cleaning during installation of work and upon completion of work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from installation operations.

641.05 Method of Measurement

Flat Bench will be measured by the individual unit, complete and accepted in place.

641.06 Basis of Payment

Flat Benches will be paid for at the Contract unit price for each which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Payment will be made under:

Pay Item		Pay Unit
641.13	Flat Bench	Each

SPECAIL PROVISION
SECTION 643
TRAFFIC SIGNALS

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 643 – TRAFFIC SIGNALS, with the following modifications:

Add the following Subsection:

643.041 Foundations

If noted on the plans, the Department has completed an appropriate test boring program to evaluate subsurface conditions in the general vicinity of proposed foundations for traffic signal dual purpose and mast arm poles. The associated boring log(s), as well as foundation requirements and any foundation-specific information are provided on the plans. Unless another foundation type is specified on the plans, foundations shall consist of cast-in-place reinforced concrete drilled shafts. Drilled shafts shall not be permanently cased, except for the top 3.0 feet; concrete shall be cast directly against the surrounding soil. Supplier shall determine the Bending Moment, Shear Force, Torsion and Axial Load at the top of each mast arm or dual purpose pole foundation. Foundation size (diameter and length) shall be based on Bending Moment and Torsion at the top of the foundation and determined by Supplier in accordance with Section 626.034 – Concrete Foundations. In the absence of design requirements being provided on the plans, the Contractor shall prepare and submit the foundation design(s) to the Department for approval. Likewise, the Contractor may propose an alternate shallow spread footing or drilled shaft design than that set forth on the drawings. In either case, any Contractor-prepared foundation design shall meet the requirements set forth in Section 626.034 – Concrete Foundations.

SPECIAL PROVISION
SECTION 643
TRAFFIC SIGNALS
(Traffic Signals)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 643 – TRAFFIC SIGNALS, with the following modifications:

643.01 Description

The following paragraphs are added:

This work will result in the provision of the following traffic signal installations:

1 – New TS2 Type 1 Ethernet equipped traffic signal controller in a new TS2 Type 1 cabinet (Commercial Street and Beach Street) on a new foundation.

The new signal control cabinets shall be Naztec Model P44 TS2 Type 1 Series.

Per City of Portland Technical Manual dated 7/21/11 and a pending update in March of 2014, the equipment shall be Naztec V 61 NTCIP and shall use the existing Naztec Streetwise ATMS version of software through existing equipment at the Portland Traffic Operations Facilities Management Building at 65 Hanover Street.

New vehicle signal heads shall be provided and installed at locations identified on the plan sheets. The signal heads are to conform to the specifications within the City of Portland Technical Manual dated 7/21/11. Signal indications shall be energy efficient light emitting diodes (LED's).

All conduits shall be 4" Schedule 80 to accommodate new wiring from the junction box to the new signal control cabinet. Additional new wiring shall be provided as needed in association with the video detection, pedestrian heads, and signal heads.

643.0211 Additional Materials

The following paragraphs are added:

Material shall also meet the requirements in the following Special Provision to Section of Division 700 - Materials:

Traffic Signal Control System	718.12
Pedestrian Crossing System	718.14
Pedestal Poles (One-Piece)	720.03
Mast Arms	720.04

643.12 Painting

The following paragraphs are added:

All exterior parts of the following equipment shall be delivered to the project finished with flat black enamel:

Controller Cabinet
Pedestrian Signal Heads
Vehicle Signal Heads
Pedestal Poles
Mast Arms

Mast arms and pedestal poles are paid for under items 643.94 and 643.92 respectively.

643.18 Method of Measurement

The following paragraphs are added:

Traffic Signals will be measured by the lump sum.

643.19 Basis of Payment

The following paragraphs are added:

Traffic signal installation will be paid for at the contract lump sum price, which payment will be full compensation for furnishing and installing all materials, including, but not limited to: Controller cabinet, controller, vehicle signal heads, pedestrian signal heads with countdown timers, pedestrian push buttons, modems, wiring, signal cable, LED lamps, signs, and all appurtenances and incidentals required for complete functioning installations and for furnishing all tools and labor necessary for completing the installations.

Payment for traffic signal modifications will be made under:

Pay Item		Unit
643.80	Traffic Signals at Commercial and Beach Streets	LS

SPECIAL PROVISION
SECTION 643
TRAFFIC SIGNALS
(Video/Thermal Image Detection System)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 643 – TRAFFIC SIGNALS, with the following modifications:

643.01 Description

The following paragraphs are added:

Under this item, the Contractor shall furnish and install a system that detects vehicles on a roadway by processing thermal images sent from a sensor to an interface board with detector outputs that can be received by traffic signal controller within a traffic signal control cabinet in accordance with these specifications and orders of the City of Portland. These thermal traffic sensors shall be installed at the following intersections:

- Commercial Street and Beach Street

643.0211 Additional Materials

The following paragraphs are added:

Materials shall also meet the requirements in the following Special Provision to Section of Division 700 - Materials:

- Traffic Signal Control System 718.12

Video detection equipment is to conform to the specifications within the City of Portland Technical Manual pending in March of 2014, consisting of FLIR TrafiSense video detection systems, and meet the following requirements:

Video Detection Equipment

1. The detection system must be non-intrusive (i.e. above ground) and shall consist of:

    a. Mounting bracket
    b. Thermal traffic sensor and detection module
    c. Communications cable
    d. Interface board

2. The thermal traffic sensor and detection module must be integrated in one housing without the need for any additional detection software outside of this housing. By using one or more predefined detection zones, the detection software will have the ability to detect vehicles and bicycles on multiple lanes. Bicycle detection zones will be separate from vehicle detection zones and will utilize a different set of detection algorithms.

3. The detection software will have the ability to differentiate between vehicles and bicycles with a high level of accuracy and allow for separate outputs to be used for vehicle presence and bicycle presence.

4. The detection system shall generate separate vehicle and bicycle presence events and counting data. The generated vehicle and bicycle presence events will be sent to a traffic light controller.

5. In one or more predefined virtual detection zones, the detection software will detect both moving and stopped vehicles on multiple lanes when mounted 13-40 ft. above the street's surface, taking into account optical occlusion constraints.

6. In total, it must be possible to put 24 virtual detection zones in the image. Logical functions (AND, OR) shall be used to link multiple virtual detection zones to a single output. Detection must be in any direction through the image and in more than 1 direction.

7. Vehicle count and zone occupancy data generation shall be possible.

8. In one or more predefined virtual detection zones, the detection software will detect both moving and stopped bicycles on multiple lanes when mounted 13-40 ft. above the street's surface, taking into account optical occlusion constraints. The software shall differentiate bikes from other vehicles.

9. In total, it must be possible to put 4 virtual detection zones in the image.

10. Storage of bicycle count information shall be possible.

11. The total mass of the bracket, housing, sensor and detection module (excluding cabling) shall be less than 2.3 lb.

12. The operator shall be able to view the streaming video images of the detection system using a web browser.

<u>Mounting Bracket:</u>

1. The mounting bracket allows horizontal and vertical mounting and is made of fiber reinforced polyamide (with an aluminum tube). To attach the housing on existing or new infrastructure, it is sufficient to use 2 bolts or 2 stainless steel bands.
2.
3. The mounting bracket shall have a total size with thermal sensor attached of :

    a. Vertically mounted 17.71" x 6.29" x 4.72".
    b. Horizontally mounted 16.14" x 7.08" x 4.72".

<u>Thermal Traffic Sensor and Detection Module:</u>

1. The housing of the sensor and detection module must be compact, esthetical as previously approved by the City, have an integrated rain/sun shield and be made of aluminum.

2. A red detection LED, clearly visible from the ground, allows both the vehicle drivers and maintenance personnel to see the status of the detection module (i.e. detection, boot mode, safe status) shall be included in the system.

3. The thermal traffic sensor shall not depend on any visible or invisible (infrared) illumination or image intensifier to "see" i.e. produce images.

4. The thermal traffic sensor shall be totally passive and not produce any energy or emit light in any bandwidth. The thermal traffic sensor shall allow the user to clearly identify images in the total absence of light.

5. The thermal traffic sensor shall utilize a Vanadium Oxide (VOx) uncooled micro bolometer responding in the LWIR (Long Wave Infrared) spectral range of 7.5 – 13.5 µm.

6. The thermal traffic sensor shall be based on Vanadium Oxide (VOx) micro bolometer detector technology, and shall not be susceptible to permanent damage after imaging the sun.

7. The thermal traffic sensor shall not utilize dynamic apertures to protect the image sensor.

8. The thermal traffic sensor shall provide a thermal optics that automatically adjusts to background thermal changes, and therefore does not require re-adjustment and/or thermal refocusing.

9. The thermal traffic sensor shall not be susceptible to "image blooming" caused by bright lights.

10. The thermal traffic sensor shall be factory configured with an anti-reflection hard carbon coated Germanium lens.

11. The thermal traffic sensor shall have a focal distance range option of 7.5mm to 13mm.

12. The thermal traffic sensor image sensor shall provide a Noise Equivalent Temperature Difference (NETD) of < 75mk, <50mK f/1.0 or lower.

13. The thermal traffic sensor shall include Auto Digital Detail Enhancement (Auto DDE) which is an advanced non-linear image processing algorithm. The Auto DDE function shall be fully automatic and requires no input or adjustment from the user. The Auto DDE shall enhance the image detail to match the total dynamic range of the original image allowing details to be visible to the user even in scenes with low or high thermal contrast. Auto DDE will increase the probability of detection of low contrast images. These settings shall be optimized for performance with Traffic Thermal Detection.

14. The thermal traffic sensor shall utilize Non-Uniformity Correction (NUC) which is a set of compensation factors for each pixel. NUC shall enable the following features and benefits:

    a. Eliminate the need for FPA (Focal Plane Array) temperature stabilization.
    b. Allow for near instantaneous sensor turn-on.
    c. Reduced system complexity and power consumption.
    d. Allow for a wider operating temperature range.

15. The thermal traffic sensor shall include Automatic Gain Control (AGC) circuitry to compensate for scene variations, improve image quality by avoiding saturation and distortion, and to balance signal levels prior to display to maximize image quality.

16. The thermal traffic sensor shall feature a White-Hot operating mode. In the White-Hot mode warmer objects will be displayed in white or lighter shades than cooler or background areas.

17. The thermal traffic sensor shall provide IP video stream.

18. The thermal traffic sensor shall have a total diameter of 4.72".

19. The detection system shall support streaming video in MJPEG, MPEG-4 and H.264 format. The bit rate and frame rate of the video stream must be user-configurable.

20. To store the gathered count data, the detection module must have an on-board memory of at least 2 weeks under the following configuration parameters: 2 detection zones, differentiated counts for bicycles and vehicles, 5 minute integration intervals.

21. For data collection, the detection module is able to work as a stand-alone system, in which case it is possible to connect a portable PC directly to the detection module interface board using the TCP/IP connection. In this setup, the detection module will store the gathered traffic data and traffic events in its internal memory. Data is downloaded by connecting a portable PC to the detection module interface TCP/IP port.

22. The detector shall will support the following stand-alone functionalities:

    a. Integrated Data Collection for vehicle presence, with user selectable data interval:

        1. Date and time.
        2. Zone number.
        3. Number of vehicles per vehicle presence zone.
        4. Zone occupancy per vehicle presence zone.

    b. Integrated Data Collection for bicycle presence, with user selectable data interval:

        1. Date and time.
        2. Zone number.
        3. Number of bicycles per bicycle presence zone.

23. For data collection, the detection module can also be used in combination with a fixed link that provides the captured data to a remote traffic management system for immediate interpretation. In this setup the detector shall be connected directly to a network using the TCP/IP connection on the interface board.

24. The detector shall support the following network-based functionalities by (monitoring of data and events over TCP/IP):

    a. Integrated Data Collection for vehicle presence, with user selectable data interval:
        1. Date and time.
        2. Zone number.
        3. Number of vehicles per vehicle presence zone.
        4. Zone occupancy per vehicle presence zone.

    b. Integrated Data Collection for bicycle presence, with user selectable data interval:
        1. Date and time.
        2. Zone number.
        3. Number of bicycles per bicycle presence zone.

25. The detection module shall be capable of operating at 24VDC, provided to the sensor via the interface board. Its power consumption shall not exceed 5W (or 210mA at 24V) during regular operations.

26. The detection module shall be compatible with NEMA TS2 (Traffic controller assemblies' product standard).

27. The detection module shall comply with FCC Title 47 Part 15 Subpart B.

28. The detection module shall comply with applicable CE directives.

    a. Electromagnetic Compatibility directive 2004/108/EG.
    b. Safety – Low voltage directive 2006/95/EC.
    c. Reduction of hazardous substances directive 2011/65/EU.

29. The detection module shall be capable of operating between -40°F and +165°F.

30. The detection module shall be UV resistant.

31. The detection module shall be mechanical protected according to IP67 and IK07.

Communications Cable:

1. The communications cable shall be 20 AWG (7/28) stranded tinned copper insulated with semi-rigid PVC and paired. Each pair shall be isolated shielded with aluminum/polyester tape and 22 AWG stranded tinned copper drain wire. Pairs shall be cabled on common axis, reducing diameter, and jacketed with chrome gray PVC.

2. The communications cable shall have the following requirements:

    a. Numbered of paired wires 2.
    b. Insulation thickness of .010".
    c. Jacket thickness of .032".
    d. Nominal diameter of .225".
    e. Color coded wires shall be Black and Red, Green and White.

Interface Board:

1. The interface board shall be used for system configuration, detection verification, detection output generation and error output generation. It shall be an EDGE card for NEMA TS-1 & TS2, 170 and 2070 cabinets. It shall allow connection to up to 8 detection modules and shall have an Ethernet connection to communicate with a PC. The interface board shall provide 4 contact closures (detection outputs) – 1 per detection module – for the traffic light controller.

2. If more than 4 detection outputs are necessary, one or more EDGE expansion boards, each with 4 contact closures, shall be available and connected to the interface.

3. Communication between the interface board and the different sensors shall be established over BPL (Broadband over Power Lines), limiting the number of wires per sensor to maximum 3 (BPL+, BPL-, Ground).

4. The interface board shall provide for NEMA TS2 SDLC communications via an optional Port 1 Interface Edge Card. The interface board shall communicate to the optional Port 1 Interface Edge Card via a RS485 serial communication path.

Warranty:

1. The thermal traffic sensor engine shall be warranted by its supplier for a minimum of ten (10) years.

2. The thermal traffic sensor system shall be warranted by its supplier for a minimum of two (2) years.

643.18 Method of Measurement

The following paragraphs are added:

The video detection system will be measured for payment by the Lump Sum in installed and accepted.

643.19 Basis of Payment

The following paragraphs are added:

Video/Thermal Image Detection System will be paid for at the contract Unit price per location, which payment will be full compensation for furnishing and installing all materials, including, but not limited to: cameras, controllers, wiring, cable, pole risers, and temporary vehicle detection as required to maintain traffic flow through the intersection during construction and all appurtenances and incidentals required for a complete functioning installation and for furnishing all tools and labor necessary for completing the installation.

Payment for Video/Thermal Image Detection System will be made under:

Pay Item		Unit
643.83	Video/Thermal Image Detection System	LS

SPECIAL PROVISION
SECTION 643
TRAFFIC SIGNALS
(Traffic Signal Blank-Out Sign)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 643 – TRAFFIC SIGNALS, with the following modifications:

643.01 Description

The following paragraphs are added:

Under this item, the Contractor shall furnish and install two (2) Light Emitting Diode (LED) Blank-Out Signs (Single Faced). The signs shall face one direction, the westbound approach, and shall display one diagrammatic message: NO RIGHT TURN. The blank-out signs shall be installed at the following intersection:

- Commercial Street (westbound) at Beach Street

643.0211 Additional Materials

The following paragraphs are added:

Materials shall also meet the requirements in the following Special Provision to Section of Division 700 - Materials:

- Vehicular Signal Indications718.01

Materials shall conform to the applicable requirements of the National Electrical Code (NEC) and shall be a type currently recommended and approved by Underwriters' Laboratories, Inc.

All Materials furnished, assembled, fabricated or installed shall be new, corrosion resistant and in strict accordance with the details shown in the plans, the Specifications, and the NEC.

The blank-out signs shall be able to function as a signal head to be activated only with signal phase 9 (Nova Seafood approach) as shown in the plan set, displaying the diagrammatic "NO RIGHT TURN". The Contractor shall provide final message layouts to the Engineer for review and approval prior to fabrication of the blank-out sign. When turned on, the blank-out sign shall show the appropriate message and when turned off the sign shall be completely blank when not energized. No phantom words or legends shall be seen under any ambient light conditions when turned off.

The blank-out signs shall be capable of dimming at night or during other low ambient light conditions.

The blank-out sign shall be fully functional while operating over an ambient temperature range of –30 to +165 degrees Fahrenheit including a relative humidity of 0% to 100%, condensing; and it shall be capable of withstanding wind speeds up to 120 mph in accordance with AASHTO Standard Specifications for Structural Supports for Highway Signs Luminaires and Traffic Signals.

(a) Certifications: Prior to start of the installation of the LED Blank-Out Signs the Contractor shall provide the following documentation to the Engineer:

(1) Working drawings showing the sign housing and mounting brackets. Working drawings shall be submitted to the Resident Engineer for review and approval.
(2) Documentation and information on sign hardware.

(b) Sign Housing: All component parts shall be easily and readily accessible by a single person for inspection and maintenance. Access shall be from the front by lifting the face of the sign. The housing shall be weather tight, and compliant to the NEMA 3R Standard. The sign housing shall be capable of withstanding a wind loading of 120 mph without permanent deformation or other damage. The performance of the sign, including the visibility and legibility of the display, shall not be impaired due to continuous vibration caused by wind, traffic or other factors. The housing shall be designed to accommodate mounting on the rear vertical plane and shall be structurally sufficient to be mounted to the mast arm or pedestrian pole. The sign housing and structural components for the tilting system including bolts and welds, shall be structurally sufficient to perform under all applicable loading conditions including gravity, wind, traffic, weather, roadway deicers, maintenance, and other environmental factors. Certified shop drawings supporting the design of the sign housing and mounting system shall be for review and approval.

All parts shall be made of corrosion resistant materials, such as plastic, stainless steel or aluminum. Painted steel is not acceptable. Self-tapping screws shall not be used. The exterior front face surfaces shall be finish coated by a system that meets or exceeds the AAMA Specification No. 2605. The finish shall be matte black.

The housing shall be constructed of aluminum (minimum thickness of 0.100 inches) with a natural mill finish. All exterior seams shall be continuously welded by an inert gas process, except for the coated fascia material. The glazing shall be constructed of 0.236 inch to 0.25 inch thick clear polycarbonate sheets with surfaces that resist hazing from UV light, abrasion, and graffiti.

The glazing shall be protected by a coated aluminum mask with apertures punched directly in front of each pixel. The coating shall meet or exceed the requirements of AAMA Specification No. 2605.

The external front face panels shall be thermally insulated from the rest of the sign housing. The glazing, aluminum mask, and the external front face panels shall be easily replaceable from within the sign housing.

The bottom panel of the housing shall have a minimum of four drain holes, with snap-in, drain filter plug inserts. The housing shall be rated for NEMA 3R with the door internally gasketed to provide the necessary seal. All corners shall be welded for stability and water tightness. Silicone or other sealant shall not be used to seal joints.

The sign housing shall come equipped with slotted aluminum extrusions mounted horizontally across the back of the sign. Each extrusion shall accept manufacturer supplied ½ inch stainless steel mounting hardware with bolts that slide within the extrusion for complete adjustability in the horizontal direction. This configuration shall allow the sign to be mounted to one round vertical steel post members.

The angular alignment of the sign housing shall be adjustable in the vertical direction to optimize the viewing angle for approach vehicles.

The ventilation system shall be natural convection or forced air. The system shall be designed to adequately cool the LED pixels along with the front and rear of the display module and all other internal components.

(c) Equipment: The equipment shall be modular in design such that major portions may be readily replaced in the field. Modules of unlike functions shall be mechanically keyed to prevent insertion into the wrong socket or connector.

All modules and assemblies shall be clearly identified with name, model number, serial number, and any other pertinent information required to facilitate equipment maintenance and replacement.

All external connections shall be made by means of connectors. The connectors shall be keyed to preclude improper hookups. All wires to and from the connectors shall be color-coded or appropriately marked.

(d) Electronics: All electronic components, except printed circuit boards, shall be commercially available, easily accessible, replaceable and individually removable using conventional electronics repair methods.

All Printed Circuit Boards (PCBs) shall be completely conformal coated with a silicone resin conformal coat. The exception for this coating shall be the pixels on the front of the PCB of the LED motherboards and any components in sockets.

All discrete components, such as resistors, capacitors, diodes, transistors, and integrated circuits shall be individually replaceable. Components shall be arranged such that they are easily accessible for testing and replacement. A transformer shall be installed inside the casing if required to step down 110V service to 12V for the LED lighting and radar detection. All circuit designs shall utilize high quality electronic components and shall provide a meantime before failure of at least 4 years.

The color of the pixels shall be red and white, and shall be 40 candelas at 20 mA. The brightness and color of each pixel shall be uniform over the entire face of the sign within the 15-degree cone of vision from 1,100 feet to 200 feet in all lighting conditions. Each pixel shall contain two strings of LEDs. The pixel strings shall be powered from a regulated DC power source and the LED current shall be maintained at 25 ± 3 mA per string to maximize life of the pixel. The failure of an LED in one string within a pixel shall not affect the operation of any other string or pixel. The LEDs shall be constructed of aluminum, indium, gallium, or phosphide.

Pixel power drawn from the DC supplies shall not exceed 1.5 watts per pixel, including the driving circuitry.

A photocell shall be installed on the sign. This device shall permit automatic light intensity measurement of light conditions at the sign location. The photocell shall be mounted in a manner to measure ambient light conditions.

Provisions shall be made to prevent perceivable brightening of the sign due to stray light from headlights shining upon the photo sensors at night.

The power supplies shall be paralleled in a diode OR configuration such that one supply may completely fail and the sign will still be supplied with enough power to run 40 percent of all pixels.

All cables shall be securely clamped or tied in the sign housing. Adhesive attachments shall not be used.

The Contractor shall locate the electrical power, as directed, and connect the source to the appropriate termination within the Blank-out Sign. A manufacturer's representative shall be on site for the final inspection for up to 3 hours and to establish manufacturer's approval of the installation.

(e) Warranty: The Contractor shall ensure that the manufacturer will warranty the product for a minimum of one year from the date of shipment. During the warranty period, the supplier or manufacturer shall repair with new or refurbished materials, or replace at no charge, any product containing a warranty defect. Product repaired or replaced under warranty by the manufacturer or supplier shall be returned with transportation prepaid.

During the warranty period, technical support shall be available from the manufacturer via telephone within 8 hours of the time a call is made by the City, and this support shall be available from a factory-certified personnel or factory-certified installer at no additional charge to the City.

(f) Maintenance and Support: The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the blank-out signs. These parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale for said parts.

The supplier shall maintain an ongoing program of technical support for the blank-out signs. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale for on-site technical support services.

Installation or training support up to 3 hours shall be provided by a factory authorized representative. All product documentation shall be written in the English language.

Four complete sets of operation and maintenance manuals shall be provided. The manuals shall include the following:

(1) Complete and accurate schematic diagrams

(2) Complete installation procedures

(3) Complete performance specifications (functional, electrical, mechanical and environmental) on the unit

(4) Complete parts list including names of vendors for parts not identified by universal part numbers such as JEDEC, RETMA or EIA

(5) Pictorial of component layout on circuit board.

(6) Pin-out and pin-in of connectors.

(7) Complete maintenance and troubleshooting procedures.

(8) Complete stage-by-stage explanation of circuit theory and operation.

(9) In-cabinet wiring diagram of the blank-out sign shall be provided in each sign enclosure.

643.18 Method of Measurement

The following paragraphs are added:

The Traffic Signal Blank-Out Sign will be measured by unit furnished, installed and accepted, and shall include all labor, materials, and equipment necessary to complete the work, including the sign housing, electronics, communications, and standard warranty.

643.19 Basis of Payment

The following paragraphs are added:

The Traffic Signal Blank-Out Sign will be paid for at the Contract unit price, which payment will be full compensation for furnishing and installing all materials, including, but not limited to: the sign housing, electronics, communications, and standard warranty and all appurtenances and incidentals required for a complete functioning installation and for furnishing all tools and labor necessary for completing the installation.

Payment for traffic signal modifications will be made under:

Pay Item		Unit
643.88	Traffic Signal Blank-Out Sign	EA

SPECIAL PROVISION
SECTION 643
TRAFFIC SIGNALS

Under 643.023 Design and Fabrication, add the following to the end of the first paragraph:

Cantilevered signal support structures with mast arms shall be classified as Fatigue Category III with Fatigue Importance Factors (I_f) of 0.59 for Natural Wind Gusts and 0.68 for Truck-Induced Gusts unless specified otherwise on the contract plans.

If Category II is specified on the contract plans, the Fatigue Importance Factors (I_f) shall be 0.80 for Natural Wind Gusts and 0.84 for Truck-Induced Gusts. If Category I is specified on the contract plans, the Fatigue Importance Factors (I_f) shall be 1.0 for Natural Wind Gusts and 1.0 for Truck-Induced Gusts.

Designing for fatigue induced by Galloping or Vortex Shedding is not required for traffic signal structures with mast or bracket arms.

643.09 Service Connection, add the following after the last paragraph:

"All meter mounting devices shall be installed so that the meters will be upright (plumb). They shall be installed with the top of the meter not less than 1.2 M [48 in] nor more than 1.5 M [60 in] from the floor to the final grade. Exceptions to this height requirement will be made where special permission has been given to install group or modular metering, overall metering enclosures, or pole-mounted meters. Level grade shall be maintained for a minimum of 1.0 M [3 ft] in front of the meter enclosure to provide a safe working space. In order to meet this requirement on uneven terrain, as an option, the Contractor may install a pressure-treated wood platform.

For any non-residential (industrial or commercial) self-contained meter socket the by-pass requirements are single phase, 100 or 150 amp, single handle lever operated.

The Contractor shall meet all requirements and regulations of Utility Companies when installing equipment on their poles and for the service connection. It is the responsibility of the Contractor to contact the appropriate Utility to determine their specific requirements."

SPECIAL PROVISION
SECTION 645
HIGHWAY SIGNING
(Retroflective Horizontal Delineator)

645.01 Description

Add the following paragraph:

The work shall consist of providing and installing a Retroflective Horizontal Delineator at the traffic island in front of the Nova Seafood building as shown on the plans.

645.02 General

The Retroflective Horizontal Delineator shall be a preformed, high-performance, flexible, and highly reflective curb delineator. The product shall be the "Median Alert" device manufactured by Professional Pavement Products, Inc. of Jacksonville, FL (www.medianalert.com). Products of equal or superior quality to the specified product will be considered for review and approval and must satisfy the following technical specifications:

Base Material:	Flexible polyvinyl chloride, black in color.
Size:	Height: 1.25 inches (min.) to 3 inches (max.). Length: 48 inches (min.) to 60 inches (max.). Width: 2.5 inches (min.) to 4 inches (max.).
Markings:	16 discontinuous 1-inch wide Type V retroflective, abrasion, and impact resistant strips, yellow in color.
Temp. Resistance:	In-service ambient and surface temperature range of -15 ^{o}F to +150 ^{o}F.
Anchorage:	Adhesive strip on bottom for primary initial setting of device. Mechanical anchors shall be corrosion-resistant concrete screws for permanent installation in granite curbing as recommended by the manufacturer.

645.03 Method of Measurement

Retroflective Horizontal Delineator will be measured by the individual unit installed and accepted.

645.04 Basis of Payment

Retroflective Horizontal Delineator will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident. Anchor devices and installation shall be incidental to the Retroflective Horizontal Delineator unit price.

Payment will be made under:

Pay Item		Pay Unit
645.308	Retroflective Horizontal Delineator	Each

SPECIAL PROVISION
SECTION 648
RAILROAD TRACK CONSTRUCTION
(115 RE Timber & Ballasted Track Construction)
(Remove and Dispose of Existing Track - At Grade)
(Remove and Dispose of Existing Turnouts)
(Bumping Post)

648.01 Description. This work shall consist of the construction of new timber cross tie and ballasted track using rail, ballast, ties and OTM in accordance with these specifications and referenced sections of the current "Manual for Railway Engineering" of the American Railway Engineering and Maintenance Association, hereinafter referred to as AREMA.

Related work is specified in other Sections as follows:

Special Track Work Construction is specified in Section 651.
Workers & Equipment is specified in SP 104.3.4

New timber cross tie and ballasted track construction for the proposed track shall consist of 115 RE rail (new or No. 1 relay) in 80 foot lengths, bolted with six hole joint bars, laid on tie plates, cut spike fastened to new 6" x 8" x 8' – 6" pressure treated ties restrained with rail anchors. A minimum of 12 inches of new ballast shall be placed under the ties on top of 8 inches of sub-ballast material as shown on the Contract Drawings. For new track connections to existing tracks adjacent to the NGL Supply, LLC facility, 5 inches of ballast shall be placed under the ties on top of compacted subgrade as shown on the contract drawings. The Contractor will perform all track surfacing operations to bring track to required horizontal and vertical tolerances.

Required Submittals:

1. Submit manufacturer's catalogue cut sheets and product data for review. Submit manufacturer's certification that material furnished meets the requirements of the current AREMA manual and these specifications.

All submittals will be reviewed for general conformance with the intent of the contract documents. This review will not relieve the Contractor of final responsibility for the means, methods, procedures and sequences to be utilized. Above submittals shall be made available to the Resident at least four weeks before the work is to begin.

648.013 New 115 RE Ballasted Track Construction. A general description of proposed track components is as follows:

(a) New or No.1 Relay 115 RE standard, control cooled rail in lengths of 80 feet, with (3) bolt holes present at each end.

(b) New or Relay Tie Plate Assemblies consisting of 14 inch double shoulder steel tie plates with at least six spike holes per plate.

(c) New or Relay six hole, 36 inch joint bars with six complete bolt assemblies per joint.

(d) New or relay rail anchors for 115 RE rail sufficient for anchor pattern shown on the Contract Drawings.

(e) New, crushed stone ballast sufficient to provide a minimum depth of new ballast under the

ties and to form shoulders and walkways as indicated on the Contract Drawings.

(f) New, pressure treated, hardwood timber cross ties, 6" x 8" x 8'- 6", end plated on each end.

(g) New compromise joint bars between 115 RE rail and 85 lb rail with allowances for head wear.

(h) New or Relay, Western Cullen Hayes WG type, Bumping Post, with middle rails and shock free head.

(i) New or Relay, hinged type derails.

Also included are removal and disposition of existing track material replaced or damaged during track re-alignment and surfacing and aligning the new track. Contractor will surface and align track to the section, profile and alignment indicated on the plans.

MATERIALS

648.02 Materials. Materials shall meet the requirements specified in this section as follows:

648.021 Geotextile Fabric. Geotextile fabric to be used under track bed (if required by the Geotechnical Engineer due to soft subgrade soils) shall conform to the requirements of Special Separation Geotextile as specified in Section 620 of the Special Provisions.

648.022 Stone Ballast. Ballast within track bed, at ballasted walkways, and between track bed sections shall conform to MaineDOT Division 700, Section 703.33.

648.023 Joint Bars and Associated Hardware.

A. Standard joint bar assembly to consist of two short toe, headfree bars of the rail section and length indicated, track bolts, nuts and washers in quantity as dictated by the specified joint bar length. All material and processes shall be in accordance with the current AREMA manual for Railway Engineering, Chapter 4, Part 3 – Specifications for Quenched Carbon Steel Joint Bars.

B. Track bolts and nuts material and manufacture shall be in accordance with the current AREMA Manual, Chapter 4, Part 3 – Specifications for Heat-Treated Carbon Steel Track Bolts and Carbon Steel Nuts.

a. Prior to shipment, entire bolt thread shall be coated with an appropriate oil or grease to protect the threads during shipment and storage.

b. Bolt and nut shall be assembled for shipment by turning the nut onto the bolt at least two threads.

C. Lockwasher material and manufacturer shall be in accordance with the current AREMA Manual, Chapter 4, Part 3 – Specifications for Spring Washers. Lock washer diameter shall be appropriately sized for rail bolts and washer configuration shall conform to requirements of ANSI, B27.1, for Extra Heavy Duty Helical Spring Lock Washers.

D. Compromise joint bars shall be of the size, shape, and punching pattern to fit the rail sections being joined. All material and processes shall be in accordance with the current

AREMA Manual Chapter 4, Part 3 – Specifications for Quenched Carbon-Steel Joint Bars and Forged Compromise Joint Bars.

E. Track bolts shall be rolled, button-head, elliptic neck bolts with wrench fit thread and shall be provided with standard square nuts all per the current AREMA Manual Chapter 4, Part 3. Bolt diameter and length shall be sized to fit joint bars and rail bolt holes.

648.024 Cut Spikes. Cut spikes used for the track fastening system shall be 5 ½" length, 5/8" reinforced throat design in accordance with the current AREMA Manual Chapter 5, Part 2 – Specifications for Soft-Steel Track Spikes and Design of Cut Track Spikes.

648.025 Rail Anchors. Rail anchors shall be one piece, heavy duty spring type anchors in accordance with the current AREMA Manual Chapter 5, Part 7 – Rail Anchors.

648.026 Tie Plates. Tie plates shall be in accordance with the AREMA Manual Chapter 5, Part 1 – Specification for Low-Carbon Steel Tie Plates for 5 ½" rail base. Tie Plate punching shall be AREMA B-6.

648.027 Tie Plugs. Tie plugs shall be in accordance with the AREMA Manual Chapter 30, Article 3.1.5 – Specification for Tie Plugs.

648.028 Rail.

A. Rail shall be 115RE, control cooled, and shall be in accordance with the AREMA Manual Chapter 4, Part 1 – Design and Part 2 – Specifications.

B. Holes for joining rail shall conform to dimensions for standard 36 inch six hole joint bars.

648.029 Treated Timber Cross Ties

A. W ood Species

Crossties shall be new, creosote treated with a minimum of 80% oak and the balance shall be hardwoods of the following species:

Ashes	Hickories
Beech	Locusts
Birches	Hard Maples
Cherries	Mulberries
Elms	Sassafras
Gums	Walnuts
Hackberries	

B. Anti Splitting End Plates

Anti-Splitting End Plates shall be manufactured from a minimum of 18 gage galvanized steel plate, hot dipped. End plates shall have nail teeth not less than 3/8 inch in length and of sufficient sharpness to fully penetrate oak ties. Plate shall be fabricated so that teeth twist vertically to provide better grip in tie. Plates shall be 5 inches by 6 inches and shall be machine applied so that nail teeth side of plate is flush with each end surface of tie.

C. General Quality:

Ties shall be manufactured from sound, live timber and must be free from any defects that may impair their strength or durability as cross ties as further described in this section. Every effort should be made to get the felled timber to mill and milled timber to treatment facility for seasoning as quickly as possible, to avoid wood fiber infection.

All ties shall be straight, well sawn on four sides, cut square at the ends, have top and bottom parallel and have bark completely removed. A tie will be considered straight when a straight line along the top, from the middle of one end to the middle of the other end, is entirely within the tie and when a straight line along a side, from the middle of one end to the middle of the other end, is everywhere more than 2 inches from the top and bottom of the tie. The top and bottom will be considered parallel when any difference in the thickness at the sides and ends is less than or equal to 1/2 inch. Ties shall be free from the following defects:

1. Decay - Ties that show decay of any nature and ties that show strain from being left in the log too long will be rejected. "Blue stain" is not decay and is permissible in any wood.

2. Holes - Ties will be rejected if a large hole, or numerous holes with the net effect of a large hole, is present. A large hole is one exceeding 1/2 inch in diameter and 3 inches deep within the Rail Bearing Area (RBA)*, or more than one-fourth the width of the surface on which it appears and 3 inches deep outside the RBA.

3. Knots - Ties with a large knot, or numerous knots with the net effect of a large knot within the RBA will be rejected. A large knot is one whose average diameter is greater than one-fourth the width of the surface on which it appears.

4. Shake - Shake greater than one-third the width of the tie will be cause for rejection of the tie.

5. Split - A tie will be rejected if a split exceeds 5 inches long or 1/2 inch wide.

6. Slanting Grain - A tie will be rejected if a slant in grain in excess of 1:15 is present, except in the case of woods with interlocking grain.

7. Wane - Excessive wane will be cause for rejection of the tie.

*RBA - Rail Bearing Area - the area of the tie between 20 inches and 40 inches from its middle.

Anti-Splitting End Plates shall be applied to both ends of the ties prior to seasoning.

End plates shall be applied by mechanical device capable of squeezing the splits together, bringing the cross tie back to its original dimensions, prior to application.

D. Dimensions

Crossties shall be AREMA Grade 6 and shall be 6 inches by 8 inches in cross section with a maximum of 1 inch of wane in the RBA. A maximum of 20 percent of the order may be 6 inches by 7 inches in cross section with no wane in the RBA.

The lengths and thickness specified are minimum dimensions. Ties over one inch wider or thicker or over three inches longer, at any point, than the specified dimensions will be rejected.

E. Inspection, Seasoning, and Treatment:

Inspection

1. Green ties will be inspected at the time of delivery to seasoning area. Dry ties will be subject to inspection after seasoning and before treatment.

2. Inspector will make a close examination of the top, bottom, sides and ends of each tie. Each tie will be graded independently without regard for the grading of the others in the same lot. Ties covered with ice, or too muddied for ready examination, will be rejected. The responsibility and expense for the inspection described above will be borne by the manufacturer.

3. Ties are subject to inspection at delivery.

4. Anti-splitting plates that are found to be loose or not firmly against the end of the tie will be cause for rejection of the tie.

Seasoning

1. Cross ties shall be air seasoned prior to treatment. Ties shall be stacked for seasoning in accordance with AREMA Manual, Chapter 30. Seasoning shall continue for at least 12 months and no more than 18 months.

2. In the absence of air seasoned cross ties, the Boulton drying process may be used. If the Boulton process is used, conditioning should continue until moisture removal rate indicates a percent moisture retained equal to a 12 month air dried cross tie, but not less than 45 percent by weight.

3. A minimum of 20 borer cores per treatment charge shall be taken of seasoned ties to determined that adequate drying has taken place.

4. The borer cores shall be taken mid-way between the ends and mid-way between the top and bottom faces of the tie. Three 3-inch borer cores shall be taken to determined moisture content.

Treatment

1. Prior to treatment, anti-splitting plates must be checked by the treating facility to ensure that plates are firmly imbedded in the tie. If plates are found to be loose or not flush against the end of the tie, plate shall be firmly pressed against the tie before treatment begins.

2. Cross tie treatment shall be to retention of seven pounds or to refusal of 60/40 creosote coal tar solution per cubic foot of timber in accordance with the AREMA Manual, Chapter 3.

3. A minimum of 20 borings shall be taken per charge after treatment to determined proper penetration.

F. Delivery

1. Handle ties during all phases of processing and loading so as not to cause damage to the material.

2. Load crossties either loose or banded in bundles in standard, low side rail gondolas parallel to ends of the gondola if transported by rail or banded in secure bundles if transported by flatbed truck.

CONSTRUCTION REQUIREMENTS

648.03 General. The Contractor shall be required to conduct and phase all track construction within existing track in a manner that will allow operation of freight rail service as required by the Railroad and its customers. Anticipated work windows and other conditions relating to this requirement are indicated in Special Provisions 104.4.8.

648.04 Track Removal. Contractor shall dismantle and remove only those sections of track required to construct proposed facilities in sequences approved by the Railroad or otherwise noted on the plans. No track shall be removed without prior permission of the Railroad or MaineDOT, contingent on confirming that track is out of service as defined in the Special Provisions 104.4.8 and that sufficient time is available to return track to service when required by the Railroad.

648.041 Designation of Removed Track Material. Track materials removed shall become the property of Pan Am Railways. The contractor shall coordinate with Pan Am Railways to determine an acceptable location on Pan Am's property where removed track materials shall be stockpiled.

648.05 Placement of Initial Ballast Layer. Ballast will be placed on compacted subballast layer or compacted subgrade as noted on the contract drawings. Prior to placement of ballast, Contractor shall confirm that sub-ballast or subgrade layer has been thoroughly compacted and accepted by MaineDOT. In addition, Contractor shall survey surface of sub-ballast or subgrade to determine that it is within 1 inch of design profile minus the depth of rail, tie plate, tie and designated ballast depth. Contractor shall re-grade and compact subballast or subgrade where necessary to meet this requirement.

Prior to distributing ties, Contractor shall place and compact an initial four inch layer of ballast on prepared subballast. Deliver ballast at a rate no faster than can be satisfactorily incorporated into the work, maintaining a proper interval of operations, and at such times as to permit proper inspection by MaineDOT. To the extent possible, unload ballast in position for use with a minimum of redistribution and dressing.

Thoroughly compact each ballast lift until stones are firmly interlocked and surface is true and unyielding. Compact each lift with not less than four passes of a roller or a vibratory compactor subject to the following requirements:

(a) Compact by rolling using either a self-propelled, three wheel, two axle roller of such weight that will provide compression under the rear wheels of not less than 350 pounds per linear inch of tread: or using a two or three-wheel tandem roller having a weight per inch of drive roll of not less than 350 pounds, and every part of the surface receiving compression from the drive wheels.

(b) Compact by vibration using vibration compactors of either the roller or pad type. Dynamic force for either type shall be not less than 20,000 pounds and the frequency range shall be 1100 to 1500 vpm. Use machines equipped with a governor which can be set and locked to control rate of impulse. Provide a tachometer or other suitable device for accurately checking the frequency of vibration during compaction operation.

Contractor shall distribute ties, construct track, place and compact additional ballast as necessary to bring track to finished grade.

648.06 Cross Tie Installation. Carefully place and distribute ties on compacted ballast section. Place timber ties so that heartwood is down. Handle ties in a manner to avoid breaking and bruising. Do not throw ties from cars or trucks onto rails or rocks. Place ties normal to center line of track. In placing or spacing treated

ties, handle only with tongs or suitable devices. Do not use bars, chisels, forks, mauls, picks, punches, shovels, or sledges for moving ties or placing them in position beneath the rails. Avoid unnecessary handling, redistribution, and reloading of ties. To extent practical, distribute ties in proper position for use without further handling. Remove ties damaged as a result of improper handling by the Contractor and rejected by the Resident and replace with undamaged ties at no additional cost to MaineDOT.

The ends of standard 8 foot 6 inch cross ties shall be brought to a uniform line, 18 1/2 inches from the edge of base of rail on the line side. The line side shall be the northerly side unless otherwise directed by the Resident.

Ties shall be spaced at 20 inches on center, unless otherwise noted.

648.061 Machining Crossties:

Boring:

1. Boring for spike holes shall conform in size and location to plans for the rail fasteners with plus or minus 1/16 inch permitted in each distance between holes. The spike holes shall be centered across the width of the tie in such a way that the fasteners will center on the tie when the spikes are driven. A tolerance 1/8 inch in the centering of the holes across the width of the tie is permissible.

2. Spike holes shall be bored no deeper than the embedded length of the spike.

3. When the head diameter of the drill bits has been reduced 1/16 inch by wear, bits shall be replaced. Cutting heads of bits shall be sharpened at regular intervals to insure clean boring.

4. Any unused holes will be completely filled with treated plugs.

648.07 Tie Plates. All ties installed shall be plated. Tie plates shall be applied and placed so the shoulder is in contact with the rail base or a joint bar for the full length of the shoulder. The tie plate shall be centered on the tie and the shoulder shall not be under the rail base. Canted tie plates must be placed to cant the rail inward toward centerline of track

648.071 Cut Spike Fastening. Ties shall be pre-bored 9/16 inch diameter to a depth equal to the embedded length prior to spiking. The only exception will be if an automatic, hydraulic type spiker is used. Number of spikes per plate to be as indicated on the plans. Track spikes shall be started and driven vertically and square with the rail and must not be bent against the rail. Spikes shall have full bearing against the rail base and driven so as to allow 1/8 inch to 3/16 inch gap between the under side of the spike head and the top of the rail base. Spikes shall not be over-driven or driven against the end of a joint bars or in a joint bar slot. The removal of spikes once driven, shall be avoided whenever possible. If spikes are pulled, the holes shall be plugged with new creosote-treated tie plugs.

648.08 Jointed Rail Installation. Jointed rail, either new or relay shall be installed following the proper spacing of new cross ties, on tie plates, properly secured with cut spikes. Rail shall be laid one at a time, the rail ends brought squarely together against expansion shims and bolted. Rail joints in track shall be staggered. The joints of one line of rails shall be opposite the middle of the rails in the other line, with a permissible variance of 18 inches either side of center. No rails less than 19 and 1/2 feet long shall be laid in track without the permission of MaineDOT, except in between the points of switch of the back to back turnouts connecting the loading track to the runaround track.

Rails shall be cut squarely and cleanly by means of a rail saw. Cutting rails or burning holes in rails by means of a heat dependent device is prohibited. Holes for bolting cut rails shall be drilled by an approved

type of rail drill and with use of a template. Under no circumstances shall new holes be drilled between two existing holes.

648.081 Expansion Shims. Standard expansion shims must be provided and care used in placing them so that the proper opening will be left between the rails. A standard rail thermometer shall be used to determine the temperature of the rail. Determine temperature of rail by placing rail thermometer on shaded side of rail base next to web and leaving it there for not less than five minutes and until no change in its reading is detected. For the temperature then shown, the thickness of shim required for the proper expansion opening between the rails shall be used, as provided in the following table:

80 Foot Rail

Rail Temperature (Deg. F)	Rail End Gap (inches)
Below 6	5/8
6 to 25	1/2
26 to 45	3/8
46 to 65	1/4
66 to 85	1/8
over 85	None

648.082 Joint Bar Installation. Prior to joint bar application, the Contractor shall clean and coat the rail ends within the joint bar area, including webs, fishing surfaces, bolt holes and inside surfaces with an approved oil or grease as specified in AREMA Specification, Chapter 5, Part 5. The joint bars shall be positioned on the rail, bolts inserted and washers and nuts applied by hand. The bars shall be in a vertical (uncocked) position as one of the center bolts is tightened. All bolts shall be completely tightened when the rail is laid to a tension range of 20,000 to 25,000 pounds per bolt and in the proper sequence to properly seat the rail joint, beginning at the center and working in both directions toward the end. To assure that the joint bars maintain their vertical position, the toes of the bars should be tapped with a maul as the bolts are tightened. After the rail has been laid all bolts shall be tightened again.

648.083 Allowable Compromise Joints and Installation. No rail compromise joints in excess of 30 lbs per yard shall be allowed. Where two rail sections in excess of that difference meet, a transition rail of not less than 19 and 1/2 feet of intermediate weight shall be required with a second set of compromise joints at the opposite end. Compromise joint locations shall be staggered at least 20 inches. Contractor shall be responsible for placing joint bars based on relay rail section and existing rail sections being joined with allowance for head wear in the relay rail section.

648.084 Rail Anchor Installation. Track shall be fully anchored to the pattern indicated on the Contract Plans. Place anchors to achieve full bearing against the ties and fully drive or attach anchors following manufacturer's instructions.

648.09 Initial Surface and Alignment. The Contractor shall surface and line all track and turnouts constructed sufficiently to provide a running surface for on-track maintenance equipment and within 1 inch of final elevation and horizontal alignment. Also included will be making proper runoffs into existing side tracks and at the ends of track construction.

648.091 Final Track Surfacing and Alignment Tolerances. Final track alignment and surfacing will be accomplished by the Contractor only after all track work has been completed up to and including Initial Surface and Alignment as noted above. The tolerances for completed track work shall be as follows:

TRACK SURFACE & ALIGNMENT	TOLERANCES
Deviation from uniform profile on either rail at the mid-ordinate of a 62-foot chord may not exceed --	1/2 inch
Deviation from zero cross level at any point on tangent or designated elevation on curves may not exceed --	1/4 inch
The difference in cross level between any two points less than 62 feet apart on tangents or curves may not exceed --	1/4 inch
Deviation from uniform alignment between any two points less than 62 feet apart on tangent and curved track may not exceed --	1/2 inch

Negative superelevation will not be allowed.

648.092 Allowable Track Raises/Runoff. Any track raise in excess of 5 inches in one surfacing pass will not be allowed. Track shall be fully tamped after each track raise prior to performing additional raises. The final surfacing and lining operation to place the track to the tolerances indicated above will be limited to 1 inch. The runoff at the end of an incomplete raise, into existing sidings, or at the ends of the project track work, shall not exceed 1/2 inch in 31 feet of track unless otherwise approved by the Resident.

648.093 Tamping. Tamping operations during track construction shall be performed with an approved 16 tool power tamper of the vibratory squeeze type. The power tamper shall have tamping tools with a tamping end of sufficient area to tamp each tie to the satisfaction of MaineDOT. Tamping ends shall be repaired or replaced after 30% wear of the working surface. Final surfacing shall be accomplished with a fully automatic model as specified in Subsection 648.094.

Cross ties and switch timber shall be tamped from a point approximately 15 inches but not less than 13 inches inside each rail on both sides of the tie to the tie end. Tamping shall not be permitted at the center of tie between these limits. The center area shall be filled with ballast. Both ends of the tie shall be tamped simultaneously and tamping inside and outside of the rail shall be done at the same time.

All cross ties and switch timber shall be tamped tightly to provide good bearing against the base of rail after the track and turnout is raised to true surface. All "down" ties and switch timber shall be brought up to the base of rail and machine tamped by the Contractor. The resultant surface and alignment shall be of uniform and smooth quality. Surfacing of turnouts shall include all four rails.

Tamping of track in snow and frozen ballast conditions will not be permitted.

648.094 Final Surfacing and Alignment. Track raise during final surfacing and alignment will be limited to one inch or less. All track work constructed shall be final surfaced and lined using a 16 tool minimum, fully automatic machine. This machine shall be supported by a ballast regulator with a mechanical broom capable of removing all ballast from the surface of the ties and forming a smooth ballast shoulder and slope as indicated on the plans.

Upon completion of surfacing and lining operation, the track shall have been fully tamped, lined,

ballasted and dressed to adequately support and restrain the track under load. The Contractor shall ensure that all rail anchors are properly seated so as to exert anti-rail creepage force against the edge of the tie. Rail anchors not meeting this requirement shall be adjusted into the proper position or replaced as necessary.

648.095 Handling Ballast During Surfacing. Ballast shall be unloaded only in the amount required for the track raise and for ballast section restoration which shall include shoulder restoration.

The Contractor shall use a ballast regulator machine to distribute the stone ballast in sufficient quantity for tamping the track and turnouts and for restoring the ballast section which shall conform to the typical sections.

Ballast shall be unloaded from railroad cars or hi-rail equipped vehicles. Tractor or rubber tired vehicles are not permitted to operate over the track structure.

The Contractor shall avoid pulling sod, vegetation and other foreign matter onto the track structure or shoulders for the purpose of tamping or dressing the ballast section.

648.096 Walkway Ballast Where indicated on the Contract Drawings, place, shape and grade ballast on shoulders and around turnout operating mechanisms and between new siding and existing Main track.

METHOD OF MEASUREMENT

648.10 Method of Measurement. Track construction will be measured by the linear foot along the centerline of track complete in place and accepted. Where different track construction meets with staggered joints, the linear measurement will be to mid point of the stagger. Where track construction meets a special trackwork unit, the linear measurement will be to the centerline of the first long timber of the special trackwork unit.

Ballast, both within track construction and walkway ballast will not be separately measured, but considered incidental to track and turnout items.

Compromise joint bars shall not be separately measured but shall be considered incidental to the various items of trackwork construction.

Surfacing and lining of track as required during track construction will not be separately measured, but will be considered incidental to the various items of track construction including turnouts. All surfacing and aligning passes as defined herein, will be by the Contractor.

Existing track removed and stockpiled will be measured by the linear foot along the centerline of track removed. Where end of rails removed are staggered, the linear measurement will be to the mid-point of the stagger.

BASIS OF PAYMENT

648.11 Basis of Payment. The accepted quantities of track will be paid for at the contract unit price per track foot for each kind and type of track construction specified, complete in place. Included in each type of construction are the following:

Payment for new Timber and Ballasted Track Construction shall include material and complete installation of track structure indicated on the Contract Drawings from the subballast up. Also included are installing compromise joints and all labor and equipment to surface and line track with specified equipment. All surfacing to achieve the profile and alignment on the plans and to shape the ballast shoulder to the typical cross sections is also included. Placing and setting rail anchors and placement, grading and shaping of

walkway ballast shall be by Contractor and be considered incidental to track and turnout construction. Placing and setting of derails shall be by contractor and considered incidental to track construction. All timber and ballasted track construction will be paid for at the contract unit price per track foot. 115 RE Track Construction will be paid under Item 648.103.

Payment for Remove and Dispose of Existing Track – At grade will be paid for at the contract unit price per track foot. Payment includes saw cutting rails, and carefully loading, transporting, unloading rails and OTM at the designated storage area and neatly stacking rail and OTM. This will be paid under Item 648.53.

Payment for Remove and Dispose of Existing Turnouts will be paid for at the contract unit price per turnout unit. Payment includes saw cutting rails, and carefully loading, transporting, unloading rails, frogs, switch stands, and OTM at the designated storage area and neatly stacking all components. This will be paid under Item 648.54.

Payment for Bumping Post will be paid at the contract unit price per each bumping post installed. Included is the complete installation of the track structure associated with the bumping post as indicated on the Contract Drawings from the subballast up. Also include purchase and delivery of bumping post unit. This will be paid for under Item 648.63.

Payment will be made under:

Pay Item		Pay Unit
648.103	115 RE Timber & Ballasted Track Construction	Track Foot
648.53	Remove and Dispose of Existing Track – At Grade	Track Foot
648.54	Remove and Dispose of Existing Turnouts	Each
648.61	Bumping Post	Each

SPECIAL PROVISION
SECTION 648
RAILROAD TRACK CONSTRUCTION
(Subballast)

648.01 Description This specification covers the furnishing, placing, and compacting subballast as a track subgrade in all areas of new track construction.

Required Submittals:

1. Submit name and location of proposed supplier for approval.

2. Submit gradation reports of representative samples of the material furnished together with certification that the material meets the requirements of these specifications.

Above submittals shall be made available to the Resident at least four weeks before the work is to begin.

MATERIAL

648.02 Material The material shall have a minimum degradation value of 15 as determined by the Washington State Degradation Test of 1967, except the test will be run on the portion of a sample that passes the ½ inch sieve and is retained on the No. 10 sieve. Subballast shall be composed of clean, hard uncoated particles free from lumps of clay, shale and other objectionable materials.

648.021 Gradation Aggregate for suballast shall be sand or gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The material shall meet the grading requirements of the following table. Gradation shall be as follows:

Sieve Size	Percent Passing by Weight
1 1/2 inch	100
1/4 inch	25 to 70
No. 40	0 to 30
No. 200	0 to 7

Aggregate for subballast shall not contain particles of rock which will not pass the 1 ½" inch mesh sieve.

648. 022 Other required characteristics:

Crushing of subballast shall not be required except the supplier may, at their option, elect to crush any oversize particles present in the deposit as an alternative to screening.

Calcium chloride conforming to requirements of ASTM D98 may be used as an additive for dust control.

Use only one approved material to complete order. Do not change source of material or supplier until required documentation as noted under Required Submittals above is submitted and is approved in writing by the Resident.

To satisfy the requirements of this Specification, subballast may be screened, crushed, washed or otherwise processed to produce a uniform, acceptable product.

Blending of different materials from different sources to improve the quality will not be permitted.

648.023 Processing, Handling and Storage Subballast shall be handled during all stages of production and supply in a manner that will provide a uniform product and will avoid contamination and segregation.

Uniformity of subballast will be a measure of the adequacy of processing, handling, and storage methods.

When necessary, to satisfy requirements of type of materials specified, subballast shall be screened, crushed, washed, and otherwise processed with approved equipment that is of adequate capacity and capable of consistently yielding a uniform and acceptable product.

Subballast shall be washed only in properly designed and constructed washing plants. Truck or mixer washing of aggregates and washing methods of like intent will not be permitted.

Subballast that has been washed shall be stored for a sufficient time to allow all free water to drain therefrom and for materials to attain a uniform water content. Washed materials shall be stored for at least 24 hours after washing or for such periods as determined by the Resident.

Blending of qualitatively acceptable subballast from the same source may be permitted to satisfy grading requirements specified, provided that blending is performed in a satisfactory manner and with equipment approved by the Resident, so as to consistently produce a uniformly well graded and acceptable product. Blending to improve quality will not be permitted.

Subballast shall be handled and transported at all times in a manner and with equipment that will avoid undue segregation and contamination by mud or any other deleterious material.

Subballast shall not be allowed to fall from a height in a manner that larger particles are thrown beyond smaller particles or that sizes will be separated by wind. Subballast being placed in a bin shall be dropped vertically over center of bin.

648.024 Stockpiling: Stockpiling sites shall be level, well draining, free of all foreign materials, and of adequate bearing capacity to support weight of materials to be placed thereon.

Except where stockpiled on concrete foundations or on otherwise acceptably stabilized area, a compacted sand stockpile base not less than 1-foot deep shall be provided to prevent contamination of piled material.

Stockpiles shall be built in layers not to exceed 3 feet in depth and each layer shall be completed over entire area of stockpile before beginning the next layer. Subballast delivered to the stockpile in trucks shall be uniformly spot-dumped and stockpile built as specified. Coning of piles or spilling of material over edges of pile will not be permitted.

Prevent material from freezing if installed during cold weather.

648.025 Defective Materials: Unless otherwise permitted by the Resident, rejected materials shall be removed from site of the work within 48 hours of each rejection.

CONSTRUCTION REQUIREMENTS

650.03 Placement, Fine Grading and Compacting: Material shall not be placed on subgrade that is muddy, rutted, snow covered, or frozen.

Resident's inspection and acceptance of subgrade is required prior to placement of subballast strata

on containment cap.

Before placement of subballast, subgrade shall be proof-rolled using heavily loaded pneumatic-tired equipment or, by vibratory roller on granular subgrades. Where soft places are located they shall be undercut to a suitable depth, not less than 6 inches, and backfilled with granular aggregate. Reinforcement geotextile may be placed on top of subgrade in areas of poor subgrade where directed by the Resident.

Subballast shall be compacted and bladed sufficiently to produce a uniform subgrade support to a surface tolerance of plus or minus 1 inch of designated top of subballast.

Subballast shall be hauled and placed by trucks or earthmoving equipment in such a way that rutting or disturbing of completed subgrade is avoided. Disturbed or rutted subgrade shall be removed from the fill, disposed of and replaced, at the instruction of and to the satisfaction of the Resident, at no additional cost to MaineDOT.

Subballast shall be placed to a compacted depth of 8 inches along all proposed tracks, and applied in layers that when compacted shall not exceed 6 inches. Water may be uniformly added to facilitate compaction. Compaction shall be by pneumatic-tired equipment heavily loaded or, by vibratory roller or other equipment approved by the Resident. Small vibrators or pneumatic tampers may be used at places of work where heavy compactors cannot work. All compaction effort shall be uniformly distributed so that all layers are evenly compacted to a density not less than 98 percent of the maximum dry density determined by ASTM D698, when tested in accordance with ASTM D1556, ASTM D2167, or ASTM D2922.

Under no circumstances shall frozen material be installed.

648.031 Admixture: Calcium chloride may be used for control of moisture.

648.04 Basis of Acceptance**.** Acceptance shall be based on inspection upon delivery by the Resident for compliance with the material requirements.

METHOD OF MEASUREMENT

648.10 Method of Measurement Subballast will be measured by the Ton based on weight slips of material accepted, placed in the trackbed area and graded and compacted as specified herein. No measurement will be made for material rejected and removed from the job site or for material not incorporated into the track bed.

BASIS OF PAYMENT

648.11 Basis of Payment The accepted quantities of subballast will paid for at the contract unit price per Ton complete in place. This price includes furnishing the specified material, delivering to the job site, proof rolling of the subgrade, placement, grading and compacting the subballast as specified.

Payment for corrections of the subgrade found during proof rolling shall be paid under appropriate earthwork items.

Payment will be made under:

Pay Item	Pay Unit
648.313 Subballast	Ton

SPECIAL PROVISION
SECTION 648
RAILROAD TRACK CONSTRUCTION
(Timber Grade Crossing)

648.01 Description. This work shall consist of the construction of new private grade crossings as shown on the contract drawings. A general description of the crossings is as follows:

1. 50 foot crossing – ballast and timber crossing with HMA underlayment as shown on the contract drawing plans and details.
2. 24 foot crossing – ballast and timber crossing as shown on the contract drawing plans and details.

MATERIALS

648.02 Materials. Materials shall meet the requirements specified in this section as follows:

648.021 Timber Cross Ties. Cross ties shall conform to the requirements of Special Provision Section 648- Railroad Track Construction, except as modified herein:

A. Crossties within grade crossings shall be 9 feet in length.

648.022 Crossing Timbers. Crossing timbers supporting vehicular traffic shall conform to the following requirements in addition to those shown on the contract drawings.

A. Timbers shall be hardwood treated with creosote.
B. Timbers shall be fastened to cross ties with countersunk drive spikes.
C. Manufacture timbers to fit over rail fasteners or place timbers on shims to clear fasteners.

648.023 HMA Underlayment. Underlayment material shall meet the requirements of Division 400 – Pavements, Sections 401 and 403- Hot Mix Asphalt Pavement.

648.024 Ballast. Ballast for the grade crossing surface shall meet the requirements of Special Provision Section 648- Railroad Track Construction.

CONSTRUCTION REQUIREMENTS

648.03 General.

A. HMA shall be placed only after the subgrade is prepared in accordance with the requirements of Special Provision Section 647- Railroad Track Construction.
B. HMA mix shall be laid in one course depositing sufficient materials to provide a finished compacted mat 5 inches thick.
C. The mixture shall be placed upon only approved surfaces that are clean and dry and only when weather conditions are suitable.
D. The mixture shall be placed and compacted only at such times that allow for proper inspection and checking by the Resident.
E. Bolted rail joints shall not be located within crossing limits.

648.031 Execution.

A. HMA shall be constructed in accordance with the requirements and procedures of Division 400 – Pavements, Sections 401 and 403- Hot Mix Asphalt Pavement, with the following additions:

1. No loads shall be permitted on the newly completed pavement until adequate stability has been attained and the material has cooled sufficiently to prevent distortion or loss of fines.
2. After laying HMA, refer to Special Provision Section 647- Railroad Track Construction for the requirements of placing ballast.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

648.04 Method of Measurement

A. Timber grade crossings including all hardware and related materials shall be measured on lump sum basis.

BASIS OF PAYMENT

648.05 Basis of Payment

A. Payment for Timber Grade Crossings shall include all material and labor for complete installation of HMA underlayment, crossing timbers, and ballast for crossing surface as indicated on the contract drawings. Rail, OTM, timber cross ties and ballast below the top of cross ties are not included. Timber grade crossings will be paid for at the lump sum contract price under Item 648.57.

Payment will be made under:

Pay Item	Pay Unit
648.57 Railroad Timber Grade Crossing	Lump Sum

SPECIAL PROVISION
SECTION 651
SPECIAL TRACK WORK CONSTRUCTION
(New 115 RE Number 10 Turnout)

651.01 Description. This work shall consist of procuring and installing of (3) new No. 10 -115 RE jointed, manually operated turnouts. These turnouts shall be installed into the proposed track in accordance with these specifications and referenced sections of the current "Manual for Railway Engineering" of the American Railway Engineering and Maintenance Association, hereinafter referred to as AREMA.

Turnout rail joints shall be bolted together in all cases. No welding will be performed within turnouts.

Related work is specified in other Sections as follows:

Railroad Track Construction is specified in Section 647

The new 115 RE, insulated, No. 10 turnout units shall be a complete unit from end to end of long timbers, be of jointed construction except as noted and have self guarded manganese frogs. All rails, timbers, switch rods, joint bars, anchors, special and standard plates, cut spikes, and manual switch operating mechanism for a complete installation shall be furnished as a complete package. The distance from Point of Switch to Point of Intersection of Turnout shall be 31'-5". Turnout heel blocks are to be jointed.

Required Submittals:
1. Submit material and layout shop drawings for approval prior to ordering materials.

Above submittals shall be made available to the Resident at least four weeks before the work is to begin.

MATERIAL

651.01 Switch Timber. Furnish complete sets of new, treated hardwood switch timbers in lengths and schedule indicated on approved fabricated Shop Drawings, including two 15'-0" headblocks per turnout installation.

651.02 Stone Ballast. Ballast within special track work units the requirements of MaineDOT Division 700, Section 703.33 for the turnout, track and for walkway ballast as indicated on the Contract Drawings.

651.03 Turnout Material Furnish a fabricated Shop Drawing layout of all turnout materials for a complete installation from end to end of long timber.

The basis for the No.10 turnout will include but not be limited to the following components.

a.) Tie layout and turnout data shall be per AREMA Plan No. 920-12.
b.) Switch – 19" – 6" curved split switch with uniform risers per AREMA Plan No. 123-08. Furnished with adjustable rail braces, insulated gage plate and switch rods. Stock rails shall be undercut and switch points per Detail 5100 on AREMA Plan No. 221-08.
c.) Frog – No. 10 115 RE self guarded manganese steel frog per AREMA Plan No. 641-03.
d.) Plates behind heel block – Milled plates.
e.) Frog Plates – Milled plates.
f.) Joint Bars – Six hole, 36" standard joint bars

g.) Switch Stand – New Racor 22-EH with switch position target and an ergonomic handle.
h.) All standard double shoulder tie plates, joint bars for fastening, cut spikes, and rail anchors that may be required to allow complete installation of turnouts.

Material shall be delivered to the Resident designated storage area within the Project Site.

CONSTRUCTION REQUIREMENTS

651.04 Turnout Installation. Install turnouts where indicated on the Contract Drawings. Turnouts shall have a complete set of new switch timber per the approved fabricated Shop Drawings. Turnouts shall be installed per approved fabricated Shop Drawing, AREMA Standards and these Specifications. Install headblock timbers so that switch stand is on diverging side of turnout, unless otherwise directed.

651.041 Fastening Turnouts. Switch plates, gauge plates, frog plates, and all normal plates within special track work units shall be fully fastened to timbers using cut spikes. Turnout plates shall be fastened to timbers using the number of cut spikes per plate as shown on Contract Drawings. Gage plates shall have additional cut spikes installed.

Field bore switch timber before installing cut spikes. Bore holes in accordance with AREMA Manual for Railway Engineering, Chapter 3, Article 1.5.4, except as modified herein. Location and number of holes shall conform to location and number of spikes. Boring of holes in excess of number required will not be permitted. Excess bore holes shall be plugged. Do not bore holes entirely through timbers. After drilling, brush drill chips from top surface of tie.

Prior to locating position of holes to be bored for second rail of a pair to be placed on any timber, position plate laterally so that field side base of first rail is in contact with shoulder of plate and tolerance between rail base width and plate seat width is on gauge side of rail. Position other plate similarly to ensure retention of gauge established. Start spikes vertically square with plate.

651.042 Turnout Assembly. At the Contractor's or Resident's option, turnouts may be either assembled in track (without interruption to railroad operations) or built adjacent to installation site and moved into track as a unit. After removal of existing rail and ties, smooth and compact existing ballast to allow installation of new turnout at same elevation as existing track. Furnish new ballast as required and place in accordance with Subsection 647.05 of these Specifications. Place switch timbers so that heartwood side is down. Install turnout rails, switch points, frog, closure rails and all rail to past the end of long timbers complete with joint bars furnished. Bolt joint, leaving end holes blank, using power wrench to between 20,000 and 25,000 lbs tension. Tighten bolts in joints starting at the center bolts and working to the outside.

Install switch stand and connecting rod and adjust for proper operation. Fasten switch stand using 5 3/4 inch by 15/16 inch screw spikes. Drill 3/4 inch by 5 inch holes for screw spikes and install screw spike by turning with a power wrench. Also install mast and switch target provided.

651.043 Surfacing Turnouts. After turnout is completely assembled and fastened, place additional ballast and surface as specified in Subsection 647.09 of these Specifications.

651.044 Lubrication and Adjustment. Each turnout unit shall be adjusted to provide proper throw of the switch points in both the normal and reverse positions. All sliding surfaces and moving parts shall be wire brushed to remove rust and foreign matter before applying graphite lubricant. Apply graphite lubricant in accordance with manufacturer's recommendations. Prior to final acceptance, make necessary adjustments of moveable parts of switch assembly to assure that turnouts are in acceptable operating condition.

METHOD OF MEASUREMENT

651.10 Method of Measurement. Turnout units as herein described will be measured by each unit of a complete installation from center line to centerline of first and last long timbers, that is the first 9' 0" timber on the single track side of the headblocks, through both legs of the turnout to the last switch timber prior to where the two diverging tracks start with standard 8' -6" ties: Switch operating mechanism will not be separately measured, but shall be included in the turnout measurement.

BASIS OF PAYMENT

651.11 Basis of Payment. The accepted quantity of new 115 RE No. 10 turnout will be paid for by the unit price each, which price shall include purchase of turnout material, installing designated switch timber, installing all turnout metals and miscellaneous material needed for completion, excavation and grading required to place turnout at design elevation, installing ballast within limits of special track work unit, surfacing and aligning to profile and alignment shown on the plans and placing, grading and shaping walkway ballast as shown on the Contract Drawings. Payment limit for turnout unit shall be from center to center of first and last long timbers as defined above.

Payment will be made under:

Pay Item	Pay Unit
651.01 New 115 RE Number 10 Turnout	Each

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 652
MAINTENANCE OF TRAFFIC
(Traffic Control)

Failure by the contractor to follow the Contracts 652 Special Provisions and Standard Specification and/or The Manual on Uniform Traffic Control Devices (MUTCD) and/or The Contractors own Traffic Control Plan will result in a violation letter and result in a reduction in payment as shown in the schedule below. 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. Any reduction in payment under this Special Provision will be in addition to forfeiting payment of maintenance of traffic control devices for that day.

ORIGINAL CONTRACT AMOUNT				
From	**Up to and**	**Amount of Penalty Damages per Violation**		
More Than	**Including**	**1st**	**2nd**	**3rd & Subsequent**
$0	$1,000,000	$250	$500	$1,250
$1,000,000	$2,000,000	$500	$1,000	$2,500
$2,000,000	$4,000,000	$1,000	$2,000	$5,000
$4,000,000	and more	$2,000	$4,000	$10,000

February 4, 2011
Supersedes February 27, 2003

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC

Approaches Approach signing shall include the following signs as a minimum. Field conditions may warrant the use of additional signs as determined by the Resident.

Road work Next x Miles
Road work 500 Feet
End Road Work

Work Area At each work site, signs and channelizing devices shall be used as directed by the Resident. Signs include:

Road Work xxxx [1]
One Lane Road Ahead
Flagger Sign

Other typical signs include:

Be Prepared to Stop
Low Shoulder
Bump
Pavement Ends

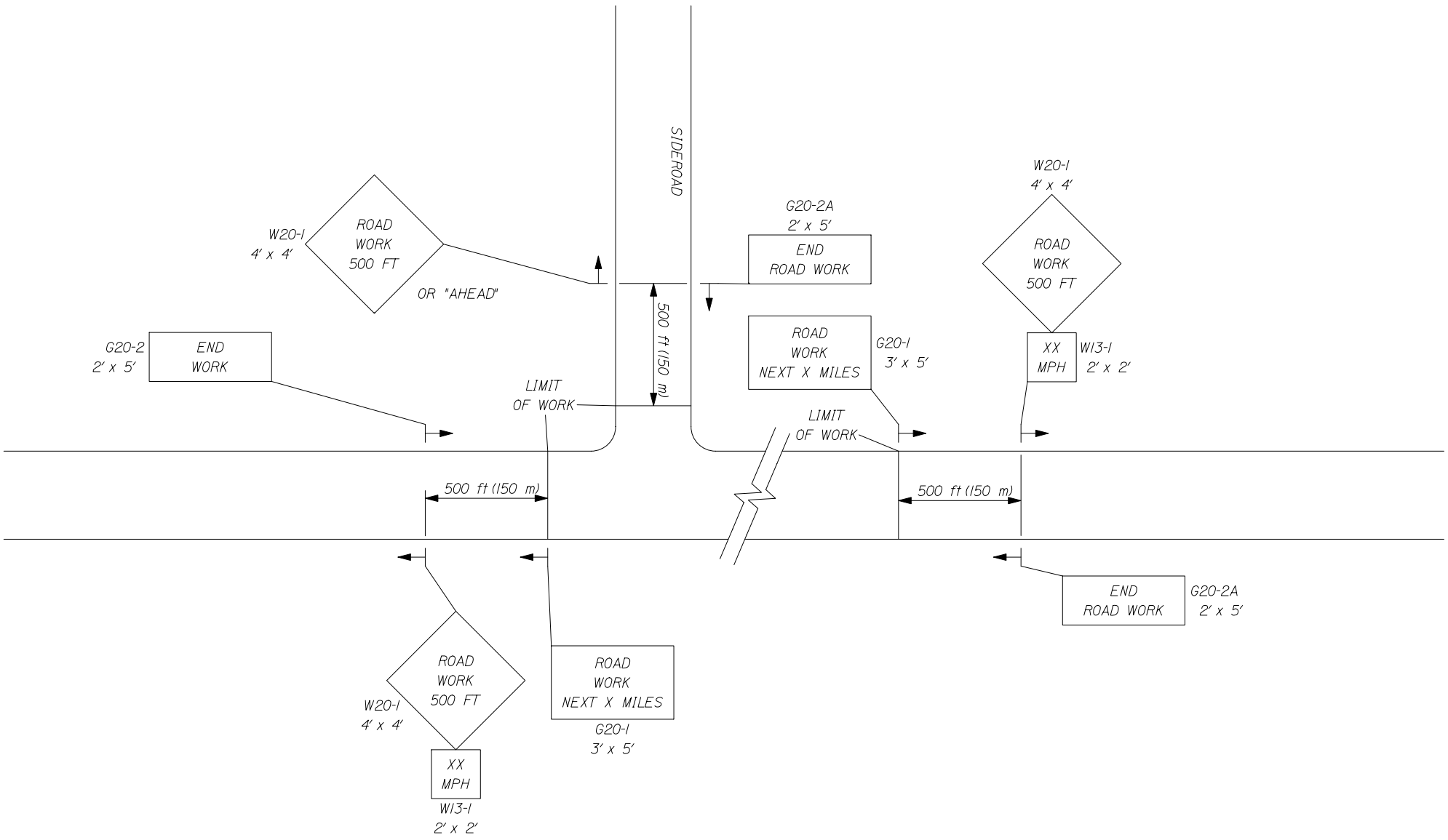
The above lists of Approach signs and Work Area signs are representative of the contract Requirements. Other sign legends may be required.

The Contractor shall conduct their operations in such a manner that the roadway will not be restricted to one lane for more than 800 m [2,500 ft] at each work area. To encourage quality paving in warm-weather conditions, the length can be extended to 4,000 ft depending on the traffic impacts. Where more than one work area restricts traffic to one lane operation, these work areas shall be separated by at least 1.6 km [1 mile] of two way operation.

Temporary Centerline A temporary centerline shall be placed each day on all new pavement to be used by traffic. The temporary centerline, when specified of reflectorized traffic paint, shall conform to the standard marking patterns used for permanent markings.

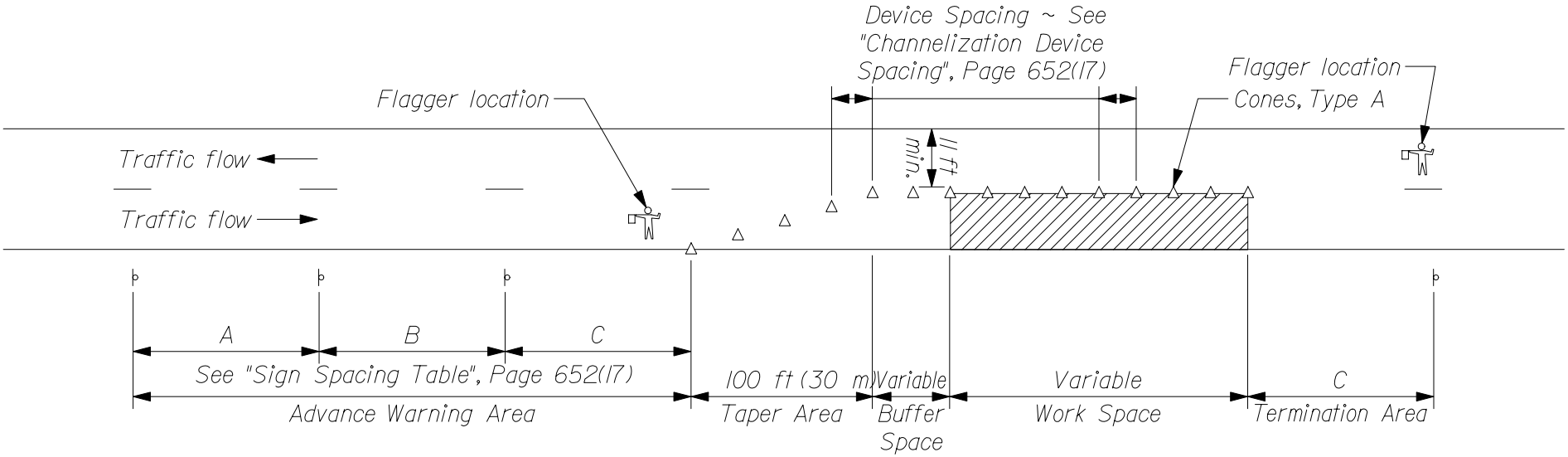
Failure to apply a temporary centerline daily will result in a Traffic Control Violation and suspension of paving operations until temporary markers are applied to all previously placed pavement.

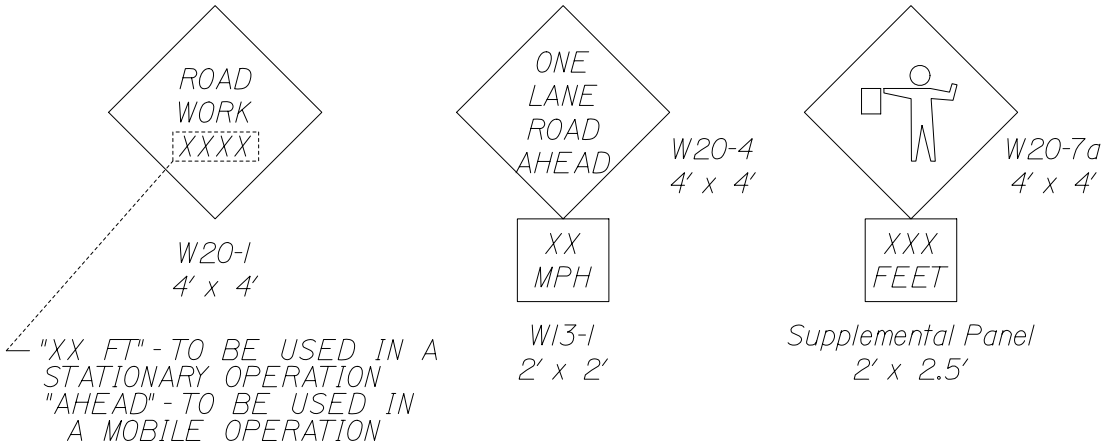
[1] "Road Work Ahead" to be used in mobile operations and "Road Work xx ft" to be used in stationary operations as directed by the Resident.



1 of 3

-- PROJECT APPROACH SIGNING --
TWO WAY TRAFFIC





TYPICAL APPLICATION: TWO - WAY, TWO LANE ROADWAY, CLOSING ONE LANE USING FLAGGERS

TYPE OF TAPER	TAPER LENGTH (L)*
Merging Taper	at least L
Shifting Taper	at least 0.5L
Shoulder Taper	at least 0.33L
One-Lane, Two-Way Traffic Taper	100 ft (30 m) maximum
Downstream Taper	100 ft (30 m) per lane

* Formulas for L are as follows:

For speed limits of 40 mph (60 km/h) or less:

$L = \frac{WS^2}{60}$ $\quad (L = \frac{WS^2}{155})$

For speed limits of 45 mph (70 km/h) or greater:

$L = WS$ $\quad (L = \frac{WS}{1.6})$

* Formulas for L are as follows:

A minimum of 5 channelization devices shall be used in the taper.

CHANNELIZATION DEVICE SPACING

The spacing of channelization devices shall not exceed a distance equal to 1.0 times the speed limit in mph when used for taper channelization, and a distance in feet of 2.0 times the speed limit in mph when used for tangent channelization.

SIGN SPACING TABLE			
Road Type	Distance Between Signs**		
	A	B	C
Urban 30 mph (50 km/h) or less	100 (30)	100 (30)	100 (30)
Urban 35 mph (55 km/h) and greater	350 (100)	350 (100)	350 (100)
Rural	500 (150)	500 (150)	500 (150)
Expressway / Urban Parkway	2,640 (800)	1,500 (450)	1000 (300)

**Distances are shown in feet (meters).

GENERAL NOTES;

1. Final placement of signs and devices may be changed to fit field conditions as approved by the Resident.

SUGGESTED BUFFER ZONE LENGTHS

Speed (mph)	Length (feet)	Speed (mph)	Length (feet)
20	115	40	325
25	155	45	360
30	200	50	425
35	250	55	495

SPECIAL PROVISION
SECTION 655
ELECTRICAL WORK
(Cathodic Protection by Sacrificial Anode)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, SECTION 655 – ELECTRICAL WORK, with the following modifications:

655.01 Description

This work consists of the installation of sacrificial anodes to the back sides of the proposed steel fender panels. The Contractor shall comply with the cathodic protection requirements listed herein and in accordance with the drawings. Sacrificial anodes are not required on the existing fender panels.

655.02 References

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM A 36 (1992)	Carbon Structural Steel
ASTM A 563 (2007)	Carbons and Alloy Steel Nuts
ASTM F 436 (2010)	Hardened Steel Washers

AMERICAN WELDING SOCIETY (AWS)

AWS D3.6M (1999)	Specifications for Underwater Welding

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2005)	National Electrical Code

The Cathodic Protection System installation shall conform to the applicable rules of NFPA 70 and all applicable Federal, State, and local codes. The Cathodic Protection System shall be constructed in accordance with the design requirements set forth in the referenced NACE International and ASTM documents. All materials shall be installed and used in accordance with the recommendations of the manufacturer and safety procedures.

All materials shall conform to the requirements set forth herein or as designated on the drawings, unless otherwise specified. All materials must be new, free from defects and shall be of the best commercial quality for the purpose specified. All necessary items and accessories not shown on the Drawings or specified herein, but which are required to fully carry out the specified intent of the work, shall be furnished without additional cost to the Government

655.03 Submittals

Submit the following in accordance with Section 105.7, Working Drawings, of the State of Maine Department of Transportation Standard Specifications, Revision December 2002:

Anode Data. Submit the following components as part of this submittal package:

Product Data: Manufacturer's data, catalog cuts, and other descriptive data shall be submitted for

approval, which shall include the following:

(a) Anode dimensions and weight, including core details, illustrated in a shop drawing
(b) Anode chemical composition

655.04 Materials

Anodes shall be Type III Aluminum anodes. Aluminum anodes shall not contain any mercury. The location of the anodes is illustrated in the Plans.

A. Anode Dimensions and Weight

Anode Weight: 34 lbs (min.) to 60 lbs (max.)
Anode Length: 3 ft (max.)
Anode Width: 4 in. (max., either direction)

B. Anode Chemical Composition

1) The aluminum alloy shall have the following composition (% by weight)

Zinc	2.80% to 3.50%
Indium	0.01% to 0.02%
Silicon	0.08% to 0.20% (max)
Aluminum	Remainder

2) Test efficiency of the aluminum alloy in seawater shall not be less than 85% on a 100% efficiency of 1150 ampere-hours per pound. The aluminum alloy shall have an open circuit potential in seawater of not less than -1.15 volts versus a copper-copper sulfate reference electrode.

C. Anode Core

1) The anodes shall have a continuous 1/4-inch flat-bar core with 90 degree bends as shown on the plans. The core member shall be dimensioned to allow a minimum stand-off from the pile 3 in. after its installation. The steel shall comply with ASTM A 36

2) The core of the anode shall be located in the center of the anode casting along the anode longitudinal axis.

3) To facilitate proper bonding of the aluminum alloy to the steel core during casting, the surface of the steel shall be prepared by a dry blast cleaning process. Rust discoloration and/or visible surface contamination shall not be permitted. Surface preparation shall be SSPC SP6 (commercial blast) or better.

D. Anode Surface Irregularities

1) Shrinkage depressions on the anode surface shall not exceed 10 percent of the nominal height of the anode as measured from the uppermost corner to the bottom of the depression.

2) Not more than 1 percent of the total surface of the anode casting shall be contaminated with nonmetallic inclusions visible to the naked eye.

3) The straightness of the anode shall not deviate more than 2 percent of the anode nominal length from the longitudinal axis of the anode.

4) Within the aluminum section transverse cracks of unlimited length and depth are permitted if width does not exceed 5 mm and there are not more than 10 cracks per anode. Small dense cracks

shall be considered one crack and cracks of 0.5 mm width or less shall be ignored. Longitudinal cracks are not permitted in any length except in the final "topping-up" metal at shrinkage depressions.

Steel hardware used to affix the anode to the steel fender panel shall be hot-dipped galvanized and specified as follows:

A. Nuts: Shall be ASTM A563, to match threaded rod

B. Washers: Shall be ASTM F 436

655.05 Installation

Unless otherwise indicated, all materials shall be installed in accordance with the manufacturer's recommendations, safety procedures and as directed by the Resident. Installation shall conform to NFPA 70.

A. Anode Connections

1) The anodes shall be installed vertically via bolted connections, at the depths and locations indicated on the drawing set. The threaded studs shall be welded to the flange of the pile per AWS D3.6M.

2) The area on each pile where the anode is to be welded shall be cleaned to bare metal just prior to welding the anode. The weld for each anode shall be capable of fully supporting the anode weight.

3) The anode shall be maintained free of oils, chemicals, paint, petroleum products and other foreign chemicals or coatings. All coatings, wrapping and protective shipping material shall be removed from the anode prior to installation.

4) The State may perform a visual underwater inspection of the anode installations. A written report will be submitted indicating which anodes were inspected and the approval of the workmanship. Unacceptable workmanship shall be reworked to the approval of the Resident at no additional cost to the Government before final payment shall be made.

B. Anode Attachment

1) Anodes shall be attached to the fender panels via bolted connections. A system of double-nutted connections shall be used to attach the anodes to the panels.

655.06 Quality Control

Field tests shall be witnessed by the Resident. Advise the Resident five days prior to performing each field test.

655.07 Method of Measurement

Cathodic Protection by Sacrificial Anodes will be measured by the unit, and shall include all labor, materials, incidentals, and equipment necessary to satisfactorily complete the work in accordance with the Plans and Specifications. Measurement shall include furnishing and installing the anodes including the hardware.

655.08 Basis of Payment

Cathodic Protection by Sacrificial Anodes will be paid for at the Contract unit price for the respective Contract items which shall be full compensation for all labor, materials, incidentals, and equipment necessary to satisfactorily complete the work in accordance with the Plans and Specifications.

Payment will be made under:

Pay Item		Pay Unit
655.501	Cathodic Protection by Sacrificial Anode	Each

SPECIAL PROVISION 700 - MATERIALS

SECTION 702 - BITUMINOUS MATERIAL

702.01 Asphalt Cement Performance Graded Asphalt Binder shall conform to the requirements of AASHTO M 320 or AASHTO MP 19, whichever is indicated in the contract documents. For Performance-Graded Asphalt Binder (PGAB), the Contractor shall arrange for the Supplier to furnish the following items to the Department's Materials Testing Engineer.

a. A Quality-Control Plan for PGAB that conforms to the requirements of AASHTO R 26 "Certifying Suppliers of Performance-Graded Asphalt Binders" and

b. A CERTIFICATE OF ANALYSIS for all asphalt materials furnished for use on the project. The Certificate shall include the actual test results of the material in storage from which the shipments are being made. Certificates shall be supplied for each lot, batch, or blend of each type and grade of material. A new certificate shall be issued at least every 30 days or upon receiving or manufacture of a new material. The original of each Certificate of Analysis shall be mailed to the Departments Materials Testing Engineer.

The Contractor shall give the supplier sufficient advance notice of orders to permit testing. Material not represented by tests will not be accepted for use on the work.

Deliveries of asphalt materials shall be accompanied by a loading invoice, delivery ticket, or slip, as required under Section l08.1.3 f. The Loading Invoice shall include the applicable certificate number and shall include a printed or stamped statement such as the following:

> "THIS IS TO CERTIFY THAT THE ASPHALT MATERIAL REPRESENTED BY THIS LOADING INVOICE CONFORMS TO THE SPECIFICATIONS OF THE PURCHASER FOR THE MATERIAL TYPE AND GRADE STATED THEREON."

In the event an intermediate hauler of the asphalt material is involved, a copy of their own delivery slip shall be furnished, as well as a copy of the supplier's loading invoice. The hauler's delivery slip and the supplier's loading invoice shall be cross-referenced by use of their respective serial numbers.

702.04 Emulsified Asphalt Emulsified Asphalt shall conform to the requirements of AASHTO M 140. Cationic emulsified asphalt shall conform to the requirements of AASHTO M 208.

Use of all emulsified asphalt shall comply with all Department of Environmental Protection (DEP) regulations regarding maximum amount of oil distillate, seasonal limitations, etc.

For emulsified asphalts, the Contractor shall arrange for the Supplier to furnish the following item to the Department's Materials Testing Engineer.

A CERTIFICATE OF ANALYSIS for all asphalt emulsion materials furnished for use on the project. The Certificate shall include the actual test results of the material in storage from which the shipments are being made. Certificates shall be supplied for each lot or batch for each

grade/type of emulsion. A new certificate shall be issued at least every 30 days or upon receiving or manufacture of a new material. The original of each Certificate of Analysis shall be mailed to the Department's Materials Testing Engineer.

Deliveries of emulsion materials shall be accompanied by a loading invoice, delivery ticket, or slip, as required under Section l08.1.3 f. The Loading Invoice shall include the applicable certificate number and shall include a printed or stamped statement such as the following:

> "THIS IS TO CERTIFY THAT THE ASPHALT MATERIAL REPRESENTED BY THIS LOADING INVOICE CONFORMS TO THE SPECIFICATIONS OF THE PURCHASER FOR THE MATERIAL TYPE AND GRADE STATED THEREON."

In the event an intermediate hauler of the asphalt material is involved, a copy of their own delivery slip shall be furnished, as well as a copy of the supplier's loading invoice. The hauler's delivery slip and the supplier's loading invoice shall be cross-referenced by use of their respective serial numbers.

SECTION 703 - AGGREGATES

703.07 Aggregates for HMA Pavements Coarse aggregate and fine aggregate for hot mix asphalt pavements shall be of such gradation that when combined in the proper proportions, including filler, if required, the resultant blend will meet the composition of mixture for the type of pavement specified.

Coarse aggregate, that material retained on the No. 4 sieve, shall be crushed stone or crushed gravel and, unless otherwise stipulated, shall consist of clean, tough, durable fragments free from an excess of soft or disintegrated pieces and free from stone coated with dirt or other objectionable matter. Coarse aggregate, shall not exceed an absorption of 2.0 percent by weight as determined by AASHTO T 85.

Fine aggregate, material that passes the No. 4 sieve, shall consist of natural sand, manufactured sand, or a combination of these. It shall consist of hard, tough grains, free from injurious amounts of clay, loam, or other deleterious substances. Fine aggregate, shall not exceed an absorption of 2.3 percent by weight as determined by AASHTO T 84.

The composite blend, minus any recycled asphalt pavement used (RAP), shall have a Micro-Deval value of 18.0 percent 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 (January 2009 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 ½ inch sieve and is retained on the No. 10 sieve, minus any reclaimed asphalt pavement used.

Aggregates shall also meet the following consensus properties, except that aggregates extracted from RAP will not be included in the sand equivalent test. The Department reserves the right to sample and test the composite aggregate for any of the following properties at any time:

TABLE 3: Aggregate Consensus Properties Criteria

Estimated Traffic, Million 18 kip ESALs	AASHTO T 335 Coarse Aggregate Angularity (minimum)	AASHTO T 304 Method A Uncompacted Void Content of Fine Aggregate (min)	ASTM D 4791 (8.4) Flat and Elongated Particles (maximum)	AASHTO T 176 Clay Content/ Sand Equivalent (minimum)
< 0.3	60/60	40	10	45
0.3 to < 3.0	75/60			
3.0 to < 10	85/80	45		
10 to < 30	95/90			
≥ 30	100/100			50

ASTM D 5821 - "85/80 denotes that 85 percent of the coarse aggregate has one fractured face and 80 percent has two fractured faces.

AASHTO T 304 - Criteria are presented as percent air voids in loosely compacted fine aggregate, (U).

ASTM D 4791 - Criteria are presented as maximum percent by weight of flat and elongated particles (5:1 ratio).

The entire HMA wearing course shall come from the same source of material and the same job mix formula, except when permission is obtained from the Department to change sources.

703.08 Recycled Asphalt Pavement Recycled asphalt pavement shall consist of salvaged asphalt materials from milled pavements or production waste that has been processed before use to meet the requirements of the job mix formula. It shall be free of winter sand, granular fill, construction debris, or other materials not generally considered asphalt pavement.

703.081 RAP for Asphalt Pavement Recycled Asphalt Pavement (RAP) may be introduced into hot-mix asphalt pavement at percentages approved by the Department according to the MaineDOT Policies and Procedures for HMA Sampling and Testing. 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.

The maximum allowable percent of RAP shall be determined by the asphalt content, the percent passing the 0.075 mm sieve, and Coarse Micro-Deval loss values as tested by the Department. The numerical average of the percent passing the 0.075 mm sieve values will be used for the approval. The maximum percentage of RAP allowable shall be the lowest percentage as determined according to Table 4 below:

TABLE 4: Maximum Percent RAP According to Test Results

Classification	Maximum RAP Percentage Allowed	Asphalt content standard deviation	Percent passing 0.075 mm sieve	Residual aggregate M-D loss value
Class III	10%	N/A	> 11.0	≤ 18
Class II	20%	≤ 0.5	≤ 11.0	
Class I	30%	≤ 0.3	≤ 8.0	

The Department will monitor RAP asphalt content and gradation during production by testing samples from the stockpile at approximately 15,000 T intervals (in terms of mix production). The allowable variance limits (from the numerical average values used for mix designs) for this testing are determined based upon the maximum allowable RAP percentage, and are shown below in Table 5.

TABLE 5: RAP Verification Limits

Classification	Maximum RAP Percentage Allowed	Asphalt content (compared to aim)	Percent passing 0.075 mm sieve (compared to aim)	Percent passing 0.075 mm sieve
Class III	10%	± 1.5	± 2.0	N/A
Class II	20%	± 1.0	± 1.5	≤ 11.0
Class I	30%	± 0.5	± 1.0	≤ 8.0

For specification purposes, RAP will be categorized as follows:

Class III – A maximum of 10.0 percent of Class III RAP may be used in any base, intermediate base, surface, or shim mixture. A maximum of 20.0 percent of Class III RAP may be used in hand-placed mixes for item 403.209.

Class II – A maximum of 20.0 percent Class II RAP in any base, binder, surface, or shim course.

Class I – A maximum of 20.0 percent Class I RAP may be used in any base, intermediate base, surface, or shim mixture without requiring a change to the specified asphalt binder. A maximum of 30.0 percent Class I RAP may be used in in any base or intermediate base mixture provided that a PG 58-28 asphalt binder is used. A maximum of 30.0 percent Class I RAP may be used in any surface or shim mixture provided that PG 58-34 or 52-34 asphalt binder is used. Mixtures exceeding 20.0 percent Class I RAP must be evaluated and approved by the Department.

The Contractor may use up to three different RAP sources in any one mix design. The total RAP percentage of the mix shall not exceed the maximum allowed for the highest classification RAP source used (i.e. if a Class I & Class III used, total RAP must not exceed 30.0%). The blended RAP material must meet all the requirements of the classification for which the RAP is entered (i.e. 10% Class III with 20% Class I, blend must meet Class I criteria). The Department may take belt cuts of the blended RAP to verify the material meets these requirements. If the

Contractor elects to use more than one RAP source in a design, the Contractor shall provide an acceptable point of sampling blended RAP material from the feed belt.

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.

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, including RAP aggregate will meet the grading requirements of the following table:

Aggregate Gradation Control Points

Sieve Designation	Nominal Maximum Aggregate Size---Control Points (Percent Passing)					
	Type 25 mm	Type 19 mm	Type 12.5 mm	Type 9.5 mm	Type 9.5 mm Thin Lift Mixture (TLM)	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	100
9.5 mm		-	-90	90-100	95-100	95-100
4.75 mm		-	-	-90	60-95	80-100
2.36 mm	19-45	23-49	28-58	32-67	40-65	40 - 80
1.18 mm		-	-	-	-	-
600 µm		-	-	-	-	-
300 µm		-	-	-	-	-
75 µm	2.0-6.0	2.0-6.0	2.0-6.0	2.0-7.0*	2.0-7.0*	2.0-7.0

* For 9.5 mm nominal maximum aggregate size mixtures, the maximum design aim for the percent passing the 75 µm sieve is 6.5%.

SUPPLEMENTAL SPECIFICATIONS
DIVISION 700
MATERIAL DETAILS

The following are revisions and additions to the Material Details Division of the Standard Specifications, Highways and Bridges, Revision of December 2002. Provisions contained herein shall be considered to supplement or supersede those portions of the Standard Specifications as they apply to the Contract.

The GENERAL STATEMENT of this Division is hereby revised to read as follows:

All materials which are to be used in the work for which there is no prescribed testing by the project inspectors or other certified laboratories, the Contractor shall, prior to final acceptance as specified in subsection 105.17(b), submit a Materials Certification Letter similar to:

Company Letterhead

Mr. _____ Resident Date _____

Address _____ Project No. _____

_____ Town _____

"This is to certify that the below listed materials, which are incorporated into the above designated project, comply with the pertinent specified material requirements of the contract. Processing, project testing and inspection control of raw materials are in conformity with the applicable drawings and/or standards of all articles furnished.

Electrical Conduit
Electrical Wiring
Service Grounding
Pre-Cast Concrete Junction Boxes
Concrete Pedestal Foundations
Power and Distribution Panelboards and Circuit Breakers

All records and documents pertinent to this letter and not submitted herewith shall be maintained available by the undersigned for a period of not less than three (3) years from the date of completion of the project.

The Materials Certification letter shall be signed by a person having legal authority to bind the Contractor.

Materials for which the above Certificate is acceptable may be subject to random sampling and testing by the City. Certified materials which fail to meet specification requirements may not be accepted.

SPECIAL PROVISION
SECTION 703
AGGREGATES
(Thermal Sand)

This Section is added as follows:

703.011 Description

The work specified in this section consists of installing a special thermal sand around the 115 KV line at locations along Commercial Street. Thermal sand provides protection for the 115 KV line through its special gradation and must be installed to the extent shown on the plans. Care shall be taken when installing thermal sand so as not to disrupt or damage the 115 KV line.

703.012 References

The following sand property data was provided by Central Maine Power for use as thermal sand within the limits shown on the plans.

703.013 Material

Thermal Sand shall have the following properties:

Minimum Dry Density: 105 lb/cu. ft.

Sieve Size	Retained	Passing
No. 4	0-5%	95-100%
No. 8	10-20%	80-90%
No. 16	20-40%	60-80%
No. 30	40-70%	30-60%
No. 50	70-85%	15-30%
No. 100	92-96%	4-8%

SPECIAL PROVISION
SECTION 703
AGGREGATES
(Stone Ballast)

703.33 Stone Ballast Aggregate for stone ballast shall be clean and graded crushed stone aggregate with a hard, dense angular particle structure providing sharp corners and cubicle fragments with prime consideration for drainage efficiency.

The material retained on the ⅜ inch sieve shall contain not more than 5 percent, by weight of flat and elongated particles when performed in accordance with test method ASTM D 4791, Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate, using a dimensional ratio of 1:5.

The material shall have an absorption no greater than 1.5 percent by weight and a bulk specific gravity of less than 2.60 as determined in accordance with AASHTO T 85 modified for weight of sample.

The material shall not exceed 30 percent loss on ASTM C535 Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

The material shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type 4	Type 4A
2 ½ inch		100
2 inch	100	90-100
1 ½ inch	90-100	60-90
1 inch	20-55	10-35
¾ inch	0-15	0-10
3/8 inch	0-5	0-3
No. 200	1.0 max.	1.0 max.

SPECIAL PROVISIONS
SECTION 718
TRAFFIC SIGNALS MATERIAL

The provisions of Section 718 of the Standard Specifications shall apply with the following additions and modifications:

718.13 Traffic Signal Control System

The traffic signal control system shall meet the following minimum performance standards:

a. General The system must satisfy the following basic requirements:

1. The control system must be able to communicate with Naztec 980 series traffic controllers and provide multiple signal group operation. Individual intersections within a group must be able to be reassigned to a different operational group by manual, time-of day, or traffic responsive command.

2. All communications between the master system and the local controllers shall comply with NTCIP protocol consistent with other similar MaineDOT projects (Augusta-13013.00; Maine Mall-10825.00; Presque Isle-15989.00; Portland-17730.00, 17856.00 and 17857.00). Compatibility is required for all currently approved mandatory NTCIP standards and with the optional NTCIP consistent with the similar MaineDOT projects.

3. The system shall be configured to communicate directly to NEMA TS-2 Type 1 and TS-2 Type 2 controllers. Remote interface units are unacceptable. The system shall provide a continuous once per second or less monitoring of all controllers.

4. The system software shall communicate over a LAN connected within the City of Portland Traffic Operations Facilities Management building. Additionally, remote system capabilities shall be available for any personnel assigned to operate the system on behalf of the City of Portland. As such, the system must be capable of remote access through a secure internet connection via web interface hardware and/or software.

5. The system shall have various access levels settable on a per user/remote PC basis; for example read only, read and edit, and Administrator. The system shall serve on a regional basis and each jurisdiction shall have access to their portion of the controller database but not that of others.

6. If determined feasible over the number of available copper (interconnect) conductors, video detectors identified in the plans shall provide feedback of the video images for display at the Streetwise-based system computer at the City of Portland Traffic Operations Facilities Management building or the remote workstations.

7. The system shall be configured to allow for remote contact of and individual or a group of users via email/texts/pages of user-defined alarms.

b. System Programming The Contractor shall install all isolated controller data including timing parameters into the existing and new controllers. System timing data, as currently programmed into the existing Multisonics controllers, shall be installed by the Contractor. The Contractor shall then produce a computer graphic representation of all intersections and a system map for the purposes of monitoring system status and load them into the existing computer station as applicable. When instructed by the computer operator, the computer graphic maps shall be linked to the local controller

units, and allow for a dynamic representation of system status for the operator. Project plans can be used as the paper base for the maps.

At a minimum, the maps shall contain the following information:

Intersection Maps:

- Graphical representation of the intersection (scaled maps are not required)
- Municipality (City of Portland)
- Street Names
- System Name
- North Arrow
- Lane Configuration
- Real Time Signal Display Status; Vehicle and Pedestrian
- Detector Call Status
- System Parameters Status (Cycle, Split, Offset, Force-offs, etc…)
- Intersection Operational Status (Flash, Coordinated, Free, On-line, Preemption)
- Time/Date.

System Map:

- Graphical representation of the system showing all intersections within the Subsystem (scaled maps are not required)
- Municipality (City of Portland)
- Street Names
- Subsystem Number
- North Arrow
- Coordinated Phase Green at Each Location
- System Parameters Status (Cycle, Split, Offset, Force-offs, etc…)
- System Detector Status
- Intersection Operational Status (Flash, Coordinated, Free, On-line, Preemption).

The following section describes the system report requirements along with their uploading assignments. Legend as follows:

(F) Failure Report uploaded to the remote computer station immediately.

(N) Non-failure Report uploaded daily at midnight to remote computer station.

(O) Operator initiated reports. These reports can be accessed at any time from the remote computer station.

If applicable, an on-street master shall be programmed to report the following:

a. System/free operation (N)
b. Master power on/off (F)
c. System detector failure (F)
d. Communication failure, master to local (N)
e. Coordination failures (F)
f. Master keyboard access (F)
g. System detector logging (volume, occupancy) (N)
h. System speed logging (O)
i. Local controller failure (F)
j. System coordination parameter changes (N).

The local controllers shall be programmed to report the following:

a. Local detector failure (F)
b. Local controller keyboard access (F)
c. Pre-empt operation (N)
d. Local detector logging (volume, occupancy (N)
e. Intersection flash (F)
f. Local control cabinet accessed (F)

c. Technical Support Telephone technical support shall be provided free for the life of the system. Support must be available Monday through Friday, during normal business hours of the manufacturer. Local technical support must be available for a period of three months after the "System Startup" project phase is completed. The presence of existing local support will be a factor which shall be considered in system selection.

d. Start-up and System Loading The system supplier shall initiate complete system operation from the controller and system timing schedules shown on the plans or data supplied by the City of Portland and shall initiate detectors and system detector logging operation at the direction of the Engineer. After the supplier has initiated system operation and detector logging, the system shall be run for a continuous 7-day initial operational testing period. If any major functions of the system fail to operate during this testing period, as determined by the Engineer, the supplier shall correct or repair the system and the continuous 7-day testing period shall be restarted. At the completion of a successful 7-day testing period, the supplier shall advise the Engineer that the system is ready for the Start-up Phase. Within 7 days from completion of the initial testing period the Supplier's engineer/contractor will begin loading the system for full operations. After the coordination has been initiated and run for approximately two weeks, the Engineer shall evaluate system operation and make adjustments as necessary. The Supplier's engineer does not need to be on-site during this period, but must be available by telephone or by demand on-site as needed. Any major system malfunctions encountered during this testing period shall be corrected by the supplier, and the test restarted. During this period the Engineer may make modifications to the system timing parameters, but this will not cause restarting of the testing period. At the completion of the coordinated testing period the system will be deemed ready for final acceptance testing as described in Section f. Acceptance Testing.

e. Manuals / Documentation Operating manuals shall be supplied for components of the system. Hard copies of all training handouts and operational manuals shall also be supplied. Each set of operating manuals shall provide all necessary instructions for day-to-day use of the system by the end user. The manuals shall contain, as a minimum, the following information:

- Table of Contents
- System Overview (to include operation of all system features).
- Complete step-by-step instructions for performing each available function with sample screens, sample reports, and examples.
- Quick Start Guide with instructions for performing the basic and common functions.
- Updated manuals and system documentation must be provided as part of any system upgrade received by the City of Portland.

A print of the as-built intersection plan shall be provided in each controller cabinet. The cabinet shall additionally be provided with operating manuals.

f. Acceptance Testing Upon completion of the 14 day coordination testing period, the Engineer shall evaluate system operation. It is expected that the complete system shall operate fully functional at

central control and at the remote locations for a period of 30 consecutive days without malfunction. Minor malfunctions of inoperability not the fault of the Supplier, as judged by the Engineer, are not included in the 30-day period. If the system fails to operate as intended by this specification or the Supplier's claims, the malfunction shall be corrected by the Supplier at its cost and a new 30- day testing period shall begin. This process shall continue until a completely operable system is demonstrated for a consecutive 30-day period.

Acceptance testing must demonstrate to the Engineer's reasonable satisfaction that the hardware and licensed software function in accordance with the specifications, requirements, through-puts, functionalities, performance criteria or other benefits stated in documentation, promotional materials, proposals, and/or demonstrations given to the MaineDOT and City of Portland.

g. System Maintenance The system must come with a minimum five (5) year software maintenance agreement to become effective when the proposed system has been accepted, in writing, by the City of Portland.

Software updates shall be provided free of charge for five (5) years from date of system acceptance. Software corrections or required modifications for proper system operation per these specifications shall be furnished to the City of Portland at no additional cost during the warranty period.

Hardware equipment shall be warranted for three years, effective when the installed and functional system has been accepted in writing by the City of Portland.

Third party hardware and software licenses and warranties shall be passed to the City of Portland.

718.14 Pedestrian Crossing System

Pedestrian crossings must have 16-inch by 18-inch countdown pedestrian signals that count down during the pedestrian clearance interval. The pedestrian countdown modules shall be GE Lumination GT1 Series in 16 inch – McCain Model 1000 Series (black finish) housings.

Push buttons shall be two-inch Pelco brand mushroom type push buttons with R10-3e signs.

All controllers must have "Stop in Walk" set "On."

SPECIAL PROVISION
SECTION 722
Geotextiles

Add the following subsections:

Subsection 722.021 – Strip Drains

Strip drains to be placed over the special separation geotextile where depicted on the project drawings shall be prefabricated soil drains that consist of a high flow capacity drainage core fully wrapped in a nonwoven geotextile filter fabric to provide a three dimensional structure to collect water through the filter fabric surface and for water flow along the length of the composite assembly.

The geotextile filter fabric shall fully wrap the molded core and shall be bonded to the core; and shall be nonwoven polypropylene and have an Equivalent Opening Size of 70 to 80 U.S. Standard Sieve as determined by ASTM D4751.

The core shall be continuous and perforated and consist of high strength molded polystyrene that has a compressive strength of not less than 9,000 psf and a flow rate of not less than 21 gallons per minute per foot width when tested in accordance with ASTM D4716 under a gradient of 0.1 and a confining pressure of 10 psi.

The strip drain composite assembly shall have a minimum width of 36 inches and an average cross-section thickness of 1.0 inch.

Acceptable products include the following, or equivalent as approved by the geotechnical engineer:

- SITEDRAIN Strip 9000, by American Wick Drain Corporation.
- Drain Away (one-sided, high-flow, high strength), by Drainage Products Inc.

Strip drains shall be free of holes, tears, and defects. Drains shall be wrapped in heavy-duty covering for protection during shipment and storage. Drain shall be protected from sunlight, dirt, mud, dust, debris, and detrimental materials during storage. If, in the opinion of the Resident, any of the drain is delivered or becomes inferior prior to installation, the Contractor shall replace the inferior drain at no additional expense to the Owner.

Subsection 722.041 – Special Separation Geotextile

The special separation geotextile to be placed over prepared subgrade where depicted on the project drawings shall be Geotex 801 manufactured by Propex geosynthetics or Mirafi 180N manufactured by TenCate geosynthetics, or equal that is submitted in writing by the Contractor and approved by the geotechnical engineer prior to use. The geotextile used shall meet the requirements for Separation Geotextile Section 722.04 with the following changes:

Mechanical Property	**Test Method**	**Requirements (MARV)**
Permittivity	D4491	1.4/sec
Apparent Opening Size (AOS)[1]	D4751	0.18mm (#80 U.S. Std.Sieve)
Thickness	D5199	60 mils (0.060 inches)

(1) Maximum Average Roll Value

SPECIAL PROVISION
SECTION 801
UTILITY PROVISIONS AND OTHER MISCELLANEOUS CONSTRUCTION
(Bypass Pumping System - Sanitary Sewer)

801.01 Description

The work shall consist of providing and installing bypass pumping for the 48-inch sanitary sewer pipe prior to the installation of proposed lining.

801.02 General

The following flow information has been provided by the Portland Water District for the 48-Inch Sewer Pipe.

Dry Weather Peak Flow:	4,000 GPM
Wet Weather Peak Flow:	16,000 GPM

801.03 Submittals

The Contractor shall submit a general by-pass plan for review and approval.

801.04 Installation

The Installation Contractor shall provide for the flow of sewage and/or storm water around the section or sections of pipe designated for repair. When possible, the by-pass shall be made by plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system. The pump and by-pass lines shall be of adequate capacity and size to handle the flow. The Contractor shall furnish all necessary pumping equipment, conduit, etc. to adequately, safely, and environmentally divert sewage and/or stormwater flow around the work.

801.03 Method of Measurement

Bypass Pumping System - Sanitary Sewer will be measured by the linear foot installed and accepted.

801.04 Basis of Payment

Bypass Pumping System - Sanitary Sewer will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident.

Payment will be made under:

Pay Item		Pay Unit
801.011	Bypass Pumping System - Sanitary Sewer	Linear Foot

SPECIAL PROVISION
SECTION 801
UTILITY PROVISIONS AND OTHER MISCELLANEOUS CONSTRUCTION
(6-Inch Diameter PVC Scupper Connection)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, and the MaineDOT Supplemental Specifications dated July 2010, with the following additions:

Section 801.04 Basis of Payment

The Subsection is amended to include the following:

Payment will be made under the following Pay Item:

Pay Item		Pay Unit
801.162	6-Inch Diameter PVC Scupper Connection	Linear Feet

SPECIAL PROVISION
SECTION 802
UTILITY PROVISIONS AND OTHER MISCELLANEOUS CONSTRUCTION
(Reline Existing Sewer)

802.01 Description

For details on Pay Item 802.211, Reline Existing Sewer, please see Special Provision 603.

SPECIAL PROVISION
SECTION 803
FIELD PROVISIONS
(Test Pit)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, with the following additions and modifications:

803.01 Description

This work shall consist of excavating test pits for buried site features. At least 8 cubic yards of material must be excavated to qualify as a Test Pit. Only one test pit payment per specific site will be made.

Test pits may be shown on the plans or may be directed by the Resident.

803.02 Method of Measurement

Test pit shall be measured by the unit fully excavated to the quantity described herein, and subsequently backfilled and compacted back to the original grade.

Pavement removals and/or restoration shall not be measured herein but rather will be measured separately under its respective pay items.

803.03 Method of Payment

Payment for Test Pit shall be paid at the Contract unit price and shall include all clearing, excavation, dewatering, backfilling, and compaction of the removed materials such that the original grade is restored.

Payment for pavement sawcutting, removals, and restoration will not be paid for under the Test Pit item, but rather will be paid for under their respective pay items.

Item	Description	Unit
803.01	Test Pit	EA

SPECIAL PROVISION
SECTION 815
BUILDINGS
(Modular Building - Security)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, with the following additions and modifications:

815.01 Description

Add the following paragraph:

The work shall consist of providing and installing a small modular security building at location shown on the plans.

815.02 General

Add the following paragraphs:

The Contractor shall take note that the size of the modular security building shall be coordinated with the plan dimensions of the 2-inch raised concrete base atop the concrete security slab. The base of the modular security building shall fit atop the raised concrete base so as to prevent water from entering the enclosed area.

The modular security building shall be a prefabricated structure erected atop the concrete security slab as shown on the plans. The modular security building shall be designed by a professional engineer licensed in the State of Maine, and shall be designed to the wind and snow loads prevalent in the Portland, Maine region in accordance with the latest edition of the International Building Code. The Contractor shall submit the plans for the modular security prior to the installation of the electrical provisions and raised concrete slab, so as to coordinate the locations and dimensions, accordingly. The product shall be as noted below or an approved equal with the following specific features:

Manufacturer:	Twin Modular Services, Inc. of Blackwood, NJ (www.guardhousesonline.com), or an approved equal.
Model:	8 ft x 12 ft Guardhouse Plan B (812GHB)
Frame:	Main wall beams and floor cross members shall be comprised of 6-inch steel C-channel at 8.5 lbs/ft (min.) around the perimeter of the building. Lift points and anchor points shall be provided. At least six steel angle anchor points shall be provided with a 3/4-inch hole for fastening to the concrete slab.
Floor:	Steel cross members as noted above with R-19 rigid aluminum foil-faced insulation with thermasheath type decking; 3/4-inch plywood fastened to steel members and topped with 1/8-inch aluminum tread plate flooring. Provide cove base modeling, 2-inch min., along perimeter of floor.
Ext. Walls:	Steel tube corner columns no less than HSS 3x3x1/4-inch welded to base frame and top supports comprised of similar HSS members. Studs shall be 2x4 timber framing at 16-inches on center with single 2x4 top and bottom plates. The bottom plate shall be pressure treated. Sheathing shall be 7/16-inch OSB fastened to studs on outside, with 1/8-inch vinyl covered paneling on inside. Insulation shall be 3.5-inch R-13 F/G Kraft-Faced batts. Provide cove base modeling, 2-inch min., along perimeter of floor.

Exterior siding shall be 0.019 vertical aluminum, light gray in color with stainless steel exterior fasteners. Trim shall be 0.019 aluminum, dark gray in color.

Roof: Rafters shall be timber 2x8 members at 16-inches on center. There shall be a minimum of 3-inch overhang on all sides, and sheathing shall be 1/2-inch CDS plywood. Roof insulation shall be R-30 unfaced. The ceiling shall be timber 2x4 T-Grid drop-type, 92-inches from the floor.

The roof material shall be EPDM rubber, black in color, with venting on each wall. A J-rail aluminum gutter shall be installed.

Doors: Exterior door shall be 36 x 80 inch steel insulated with 22 x 22 inch vision area.

Hardware shall include three stainless steel ball bearing hinges, a heavy duty closer, and an entrance lockset-ball knob.

Windows: Seven standard sized windows of 36 x 39 inch *fixed* picture style with white vinyl and thermal-insulated double-glazed materials.

One standard sized window of 36 x 39 inch *horizontal sliding* style with white vinyl and thermal-insulated double-glazed materials. The horizontal sliding window shall be placed adjacent to the door.

Exterior trim shall be 2 x 2 0.019 aluminum, light gray in color.

Interior trim shall be 1 x 1 steel corner white.

All windows, including the vision area of the door shall be tinted.

Electrical: Load Center surface mount exterior 120/240V single phase 100-amp service with 12 breaker spaces.

Two interior overhead drop-in fluorescent lights 2 ft x 4 ft; one 150-watt exterior halogen security light at doorway.

Two 110V, 15-amp grounded toggle switches; Four 110V 15-amp grounded duplex type receptacles; One 220V 20-amp dedicated outlet; and 14/2 and 12/2 raceways with grounded copper BX - metal jacket.

HVAC: Heat: 4,000-watt electrical wall heater with fan on 240V dedicated circuit.

Cool: 11,600-BTU wall mount A/C unit on dedicated circuit

Thermostat: On A/C and base heat.

Furnishings: Laminated counter of 2 ft x 7.5 ft with under counter storage drawer and with file cabinet. Add two file cabinets and two swivel chairs on rollers.

815.03 Method of Measurement

Modular Building - Security will be measured by the individual unit installed and accepted.

815.04 Basis of Payment

Modular Building - Security will be paid for at the Contract lump sum price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident. Anchor bolts, stamped drawings by a professional engineer, and off-loading/positioning of the building shall be incidental.

Pay Item	Description	Pay Unit
815.32	Modular Building - Security	Lump Sum

SPECIAL PROVISION
SECTION 815
BUILDINGS
(Contractor Allowance - CMP)
(Contractor Allowance - Unitil)
(Contractor Allowance - Fairpoint)
(Contractor Allowance - PWD)
(Contractor Allowance - City Building Permits, Fees, and Inspections)

815.01 Description

Add the following paragraphs:

Miscellaneous Construction shall include allowances for cost of Central Maine Power, Unitil, Portland Water District (PWD), and Fairpoint to provide utility connections and other miscellaneous work throughout the facility. Allowance is also made for the City of Portland Permits, Fees, and Inspections. The allowances are shown in the Schedule of Bid Prices.

815.02 Basis of Payment

Add the following paragraphs:

Contractor Allowances will be paid for at the Contract unit price for the respective contract items. Allowances shall be cost incurred by the Contractor for work or materials which was accomplished by others to satisfy or procure the pay item. Contractor Allowance for City Building Permits, Fees, and Inspections shall also include testing of Office Building and Site Systems not already covered by the pay items for specifications sections listed in Special Provision 102.

Payment will be made under the following Pay Item:

Pay Item		Pay Unit
815.28	Contractor Allowance - CMP	ALLOW
815.28	Contractor Allowance - Unitil	ALLOW
815.28	Contractor Allowance - Fairpoint	ALLOW
815.28	Contractor Allowance - PWD	ALLOW
815.28	Contractor Allowance - City Building Permits, Fees, and Inspections	ALLOW

SPECIAL PROVISION
SECTIONS 822, 823, and 824
UTILITY PROVISIONS AND OTHER MISCELLANEOUS CONSTRUCTION

(4-Inch PVC Water Main)
(6-Inch PVC Water Main)
(4-Inch Gate Valve with Service Box)
(6-Inch Gate Valve with Service Box)
(Tapping Sleeve, Valve, and Service Box)
(Fire Hydrant)
(Standpipe)
(Post Indicator Valve)
(8-Inch Reducer)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, and the MaineDOT Supplemental Specifications dated July 2010, with the following additions:

822.01 Water Utility Distribution

Add the following paragraphs:

822.011 Description

A. Description of Work: Provide labor, materials, equipment, and services necessary for proper and complete installation of the water distribution system as indicated on the drawings and as herein specified including the following items:

1. Pipe, fittings, and appurtenances for site water line including domestic water line, and fire water line.
2. Anchors.
3. Thrust restraints.
4. Valves and valve boxes.
5. Positive displacement meters.
6. Underground pipe markers.
7. Bedding and cover materials.
8. Disinfecting and testing the system.
9. Required accessories.
10. Connection to existing water system.

B. The Contractor shall attain all permits and pay all fees associated with connection to the existing utilities and inspections by the City of Portland and the Portland Water District.

C. Related Sections:

1. Section 31 20 00 – Earthworks
2. Section 31 25 13 – Erosion Control

822.012 References

A. Portland Water District latest Standards and Specifications.

822.013 Submittals

A. Submittals shall be prepared and submitted in accordance with MaineDOT Standard Specifications Section 105.7, Working Drawings.

B. Product Data: Submit manufacturer's technical product data on all material to be furnished showing dimensions, joints, and other details.

C. Submit Product Data to the Portland Water District and the Engineer. Approval from the Engineer is required prior to ordering materials.

D. Supply the Owner with all testing submittal requirements of the Portland Water District.

822.014 Close-Out Submittals

A. Comply with the requirements of MaineDOT Division 100, General Conditions.

B. Project Record Documents (As-Built Drawings):

1. Accurately record actual constructed locations and depth of piping mains, stubs, valves, connections, thrust restraints, and appurtenances. Submit scaled drawings to the Engineer.

2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

822.015 Quality Assurance

A. Comply with the requirements of MaineDOT Division 100, General Conditions.

B. Documents affecting Work of this Section include, but are not necessarily limited to; the Conditions of the Contract, General Conditions, Supplementary Conditions, Addenda, and all Sections of Division 1 are hereby made a part of this Section.

C. Coordinate Work with that of other trades affecting or affected by Work of this Section. Cooperate with such trades to assure the steady progress of the Work.

D. All Work shall comply with the requirements of the Maine Department of Environmental Protection, the Cumberland County Soil and Water Conservation District Standards, and U.S. Environmental Protection Agency NPDES Permit requirements, to minimize adverse environmental impacts. Reference is made to the Erosion and Sedimentation Control Report and Plan included in the Plan set for this project. Strict adherence to the Specifications and Plans is required in order to prevent adverse downstream impacts

E. All Work shall comply with the conditions of the Maine DEP stormwater permit by rule and the Maine General Construction Permit.

F. Perform all Work in accordance with the Portland Water District waterline/water system standards and specifications.

G. Installation will be observed by the Resident and the Portland Water District.

H. The Contractor shall bear all cost associated with correcting any Work that does not meet the requirements of this Section or any damages to property outside the limits of Work.

I. Comply with requirements outlined in NFPA 24 with regards to flushing and hydrostatic testing (200 lb. pressure test) for hydrants and standpipe lines.

822.016 Delivery, Storage, and Handling

A. Comply with the requirements of MaineDOT Division 100, General Conditions.

B. Deliver and store valves in shipping containers with labeling in place.

C. Any damage to pipe and fitting coatings shall be repaired or replaced as directed by the Engineer.

D. Pipe, and all water system appurtenances that are damaged or disturbed through any cause prior to acceptance of the work shall be repaired, realigned or replaced as required by the Engineer.

822.021 Water Piping Materials

A. All water service materials shall be in conformance with the Portland Water District latest Standards and Specifications.

B. The water services shall be as listed below.

C. PVC Water Pipe: (review PWD requirements and replace with 4” and 6” ductile iron and whatever 3” must be)

1. For all water main installations that are less than 4" I.D. (4" and larger use ductile iron), the District will require use of 2" I.D. PVC plastic water pipe meeting the following: Under special site conditions the District does require the use of C-900 PVC in sizes larger than 4".

2. Pipe Specifications (2"):

a. Diameter:
1) The I.D. shall be a minimum of 2"
2) The O.D. shall be a maximum of 2.38"
3) The minimum wall thickness shall be 0.113"

b. Pressure Rating
1) The minimum working pressure rating shall be 200 PSI (SDR-21).
2) The pipe shall conform to standard ASTM 2241.

c. Pipe Length
1) The pipe shall be provided in 20' lengths. Shorter lengths may be allowed and/or field cut following manufacturer's recommended procedures.

d. Gaskets
1) The gasket or O-Ring material shall be rubber meeting ASTM F 477 and of the "permanent use" type.

3. Fittings:
a. Standard AWWA C900 fittings are not available in the 2" I.D. and therefore "steel pipe" class fittings, or Certa-Lok Yelomine couplings and fittings meeting ASTM D 3139 shall be used.
b. The normal nomenclature for "steel fittings" is Schedule 40 or Schedule 80, with the respective pressure ratings of 280 PSI and 400 PSI. Both of these fitting classes are acceptable for use.

4. Service Connections:
a. All service connections shall be made with tapping saddles* per Portland Water District specifications or by use of tees meeting the above noted fitting specifications.

5. Installation:
   a. Follow manufacturer's instructions.
   b. An eight gauge bare copper wire shall be fastened to the buried PVC pipe to facilitate electronic pipe locating. The wire shall be fastened at two locations per length and not at any joint.
6. The District requires 200 PSI (SDR-14) PVC pipe for other sizes such as 4”, 6”, 8”, and 12”. Pipe shall conform to AWWA C900.:
7. Approved Manufactures are:
   a. J-M Manufacturing – Blue Brute
   b. Certainteed – Yelomine
   c. Victaulic – Aquamine
   d. IPEX – Blue Brute

D. Pipe Joint Restrainer.

1. Use in conjunction with mechanical joint fittings.
2. The joint restraint ring and its wedging components shall be made of ductile iron conforming to ASTM A536-80.
3. Dimensions of the restrainer must allow use with standard M.J. bell conforming to AWWA C111 and AWWA C153.
4. Restrainer must restrain up to 350 psi of working pressure in 3” to 16” sizes and 250 psi of working pressure in 18” to 48” sizes with a 2:1 safety factor.
5. Torque limiting twist off nuts shall be used to ensure proper actuation of the restraining wedges (used on a, b, and c below), from the Approved Manufacturers:
   a. Sigma Super Lug
   b. Ford Uni Flange Series 1400
   c. Ebba Mega Lug
   d. Romac Grip Ring
   e. Star Grip Series 300
   f. Romac Romagrip
   g. MJ Field Lok Gasket

E. Restrained Joint Gasket:

1. All accepted restrained joint gaskets in the Portland Water District distribution system shall be rated in accordance with the performance requirements of ANSI/AWWA C111/A21.11.
2. Required Applications:
   a. any hydrant branch or service with a distance greater than 18 ft shall have an approved restrained joint gasket in the bell ends.
   b. Where a casing is required, all joints within the casing shall have an approved restrained joint gasket unless restrained joint pipe is used.
   c. At any time as required by a PWD Engineer.
   d. Any live service tap where there is a joint between the connection and the end of the service.
3. Approved Manufacturers:
   a. American Fast-Grip Gasket – American Pipe
   b. Field Lok 350 Gasket – US Pipe

822.022 Fire Hydrant Materials

A. Barrel length(s) shall be:
   a. 6 ft. cover, 6-1/2 ft. bury; or
   b. 5-1/2 ft. cover, 6 ft. bury, or
   c. 5 ft. cover, 5'-6" bury

B. Bolts:
   a. all buried mechanical joint bolts and nuts (T-head, etc.) shall be Cor-Ten or equal;
   b. all buried flange joint bolts shall be stainless steel (Type 304) or silicone bronze.

C. Flow Indicator Collars: PWD personnel shall install flow indicator collars on all new hydrants.

D. Field Test of Installed Hydrant.

1. Hydrant flow shall completely stop with no more than 200 ft. lb. of torque applied to the operating nut.

2. Failure to shut completely at no more than 200 ft. lb. of torque will be cause for rejection of that hydrant.

822.023 Standpipe and Post Indicator Valve Materials

A. Barrel length(s) shall be:
   d. 6 ft. cover, 6-1/2 ft. bury; or
   e. 5-1/2 ft. cover, 6 ft. bury, or
   f. 5 ft. cover, 5'-6" bury

B. Bolts:
   c. all buried mechanical joint bolts and nuts (T-head, etc.) shall be Cor-Ten or equal;
   d. all buried flange joint bolts shall be stainless steel (Type 304) or silicone bronze.

C. Flow Indicator Collars: PWD personnel shall install flow indicator collars on all new hydrants.

D. Field Test of Installed Hydrant.

1. Hydrant flow shall completely stop with no more than 200 ft. lb. of torque applied to the operating nut.

2. Failure to shut completely at no more than 200 ft. lb. of torque will be cause for rejection of that hydrant.

822.024 Resilient Seated Gate Valve

A. Valve shall meet the latest revision of the AWWA C-509 Standard.

B. Valve shall have a smooth unobstructed water way which shall be a minimum diameter of the valve.

C. Valve ends to be specified and shall be furnished with Cor-ten (or equal) bolts and nuts.

D. Valve shall be rated for zero leak rate at 200 psi differential working pressure and have a 400 psi hydrostatic test for structural integrity.

E. Sealing - Valve shall have a minimum of 2 "O" rings situated such that the "O" rings above the thrust collar can be replaced with the valve under pressure and in the open position.

F. Stem – Valve stem shall:

1. Open right with a stem nut made of grade D, E manganese bronze;

2. Be non-rising

3. Be designed with a thrust collar integrally cast to the stem;
4. Be designed with two (2) thrust washers, placed one above and one below the stem thrust collar;
5. Be constructed of grade D, E manganese bronze;
6. Be such that the thrust washers are made of a synthetic polymer with physical properties required.

G. Valve Body: The body, including the stuffing box and the bonnet, shall be constructed of cast iron or ductile iron, meeting the latest revision of AWWA C153.

H. Valve Wedge:
1. Shall be constructed of ductile iron (less guiding mechanism);
2. Shall be fully encapsulated and permanently bonded with a resilient elastomer;
3. Shall be constructed such to allow the flushing of any interior exposed surface during operations.

I. Coatings:
1. The internal and external valve body, including the stuffing box, bonnet, and interior of the wedge shall be fusion bonded epoxy coated with 8 mils DFT;
2. The interior shall meet the latest version of AWWA C550;
3. Shall be holiday free, interior and exterior, per testing method described in AWWA C550, Section 5.1.

J. Operating Nut:
1. Shall be 2-inch square ductile iron;
   a. With a countersunk hold down nut (made of 316 stainless steel or silicone bronze). This applies to stems that are tapered; or
   b. With a stainless steel pin inserted thru the stem. This applies to stems of full diameter.

K. Bolts:
1. The seal plate and bonnet bolts shall be stainless steel (Type 316 or Type 304);

L. Valves 12" nominal diameter and smaller shall be directly operated by the nut on the valve stem and mounted vertically. Number of turns to open or close shall closely match the formula: (3 x D) + 2. For example, a 12" valve should open or close with approximately (3 x 12) + 2 = 38 turns of the operating nut.

M. Valves larger than 12" nominal diameter shall be designed to be installed horizontally and shall have bevel gear operators driven by the operating nut. Valves 14" - 24" nominal diameter shall have 4:1 bevel gear operators. Valves with 30" - 36" nominal diameters shall have 6:1 bevel gear operators and valves with 42" - 48" nominal diameters shall have 8:1 bevel gear operators. Number of turns to open or close shall closely match the formula: ((3 x D) + 2) times the bevel gear ratio. For example, a 24" valve should open or close with approximately ((3 x 24) + 2) x 4 = 296 turns of the operating nut.

N. General Provisions:
1. Vendor shall identify any and all exceptions to the specifications.
2. Vendor shall provide standard brochures for item quoted.
3. Vendor may be required to supply a valve for inspection and determination of coating process.

O. Approved Resilient Seated Gate Valves:

1. USP
2. AFC Series 2500
3. Mueller A-2360/61
4. Clow Series F6100

822.025 Service Box and Rod

A. Reference is made to the Standard Details.

B. Service Box – Approved Manufacturers: Laroche, Clow Canada, and Bibby

1. Shall be 1.0" Schedule 40 steel pipe with top having 1.0" NPT pipe threads for screw-on cover or coupling.
2. Shall be Erie style with 6ft slide-type riser.
3. Any extension of a service box requires a threaded merchant coupling with no set screw.

C. Service Box Cover – Approved Manufacturers: Laroche, Clow Canada, QWP, and Bibby

1. Shall be Quincy type (heavy duty) cover that screws on Service Box (1.1 above).
2. Shall be tapped with a 1" rope thread with a solid brass plug with pentagon operating head.

D. Service Box Foot Piece – Approved Manufacturers: Laroche

1. The standard foot piece shall be heavy duty (Ford style or equal) cast iron design.
2. The large, heavy-duty foot piece shall have an arch that will fit over 2" ball-valve curb stops.

E. Service Rod – Approved Manufacturers: North American Manufacture

1. Shall have a self aligning design.
   a. 36" length for all services.
   b. 24" length for air valves.
2. Shall be round and constructed of stainless steel (304) with an epoxy coating (minimum 4 mil DFT).
3. Shall have a yoke design that is an integral part of the rod.
4. The curb-stop attachment pin shall be a brass cotter pin.
5. The rod "wrench-flat" shall have a minimum thickness of 1/4" tapered to 1/16" and width of 5/8" or 1/2".
6. Diameter
   a. 1/2", 3/4" and 1" services use 1/2" diameter.
   b. 1 1/2" and 2" services use 5/8" diameter.

822.026 Service Sadles

A. The following is for use with Ductile Iron Pipe.

1. The service saddle shall have the "larger sized" body, the same as associated with the "service repair" saddle, which shall have a minimum diameter of 6 in. and multiple "O" ring type sealing.

2. The saddle body shall be constructed of epoxy coated ductile iron.
3. The sealing gasket(s) shall be either Buna-N rubber or SBR rubber (ASTM D2000).
4. Service saddles shall be installed with all 1 1/2" and 2" corporation stops (cc only).
5. Approved Manufacturers:

Size	Tap	Saddle
2" - 2-1/4"	3/4", 1" cc	Smith-Blair 315, Ford FC 202
4" - 12" D.I.	3/4"-1-1/2" cc	Smith Blair 331
4" - 12" D.I.	2" cc	Smith-Blair 313
16"	3/4"-2" cc	Smith-Blair 313
20" - 36"	3/4"-2"cc	Smith-Blair 366

B. The following is for use with PVC Pipe.

1. Stainless steel straps will be used on saddles on C900 PVC Pipe.
2. Approved Manufacturers

Size	Tap	Saddle
2" - 2-1/4"	3/4", 1" cc	Smith-Blair 315, Ford FC 202
4"-12"		Smith-Blair 265

C. The following is for use with HDPE Pipe.

1. Spring washers are required for service saddles on HDPE Pipe.
2. Approved Manufacturers

Size	Tap	Saddle
4"-12"		Smith-Blair 265

822.027 Tapping Sleeves

A. For sizes 16" and larger tapping sleeve shall be fabricated steel:

1. Body and flange A36.
2. Coating – Fusion bonded epoxy coating with minimum D.F.T. of 5 mils, inside and out.
3. Bolts, Nuts Stainless Steel (Type 304).
4. Gaskets - SBR.
5. Flange – AWWA Class D plate flange with ANSI 150# drilling, proper recessing for tapping vavles.
6. Sleeves shall be provided with 3/4" F.I.P.T. test port and plug.

B. Approved Manufacturers (4" – 12"):

1. AFC.
2. Mueller Co..
3. U.S. Pipe.

4. Tyler / Union.
5. Powerseal Model 3490 and 3490MJ (Fabricated Steel).

C. Approved Manufacturers (16" and larger):

1. Romac FTS 420.
2. Ford FTSC.
3. Smith Blair 622.
4. JCM 412.
5. Powerseal Model 3490 and 3490MJ (up to 24").
6. JCM 415 or approved equal (for RCCP pipe only)

822.028 Valve Boxes

A. Reference is made to the Standard Details.

B. The valve box bottom section shall be slide-type with bell-type base with bottom lip. Manufacturer: North American Manufacture.

C. The valve box top section shall be slide-type, 36 inches long (minimum). No top flange and no "bead" or bottom flange. Manufacturer: North American Manufacture.

D. The valve box cover shall be a 2" drop-type cover to fit the 7-1/4" opening of the top section. Manufacturer: Bibby St-Croix (no substitute).

E. The valve box intermediate (mid) section shall be slide-type with a minimum 3" belled bottom. Base section No. 645 may be used as an alternate. Manufacturer: North American Manufacture.

F. Material shall be cast iron or ductile iron free from defects.

G. Interior and exterior of all components shall be bituminous coated with a minimum of 4 mils D.F.T.

822.029 Underground Pipe Markers

A. Warning Tape: 3-inch-wide detectable tape with foil aluminum core. Tape shall be bright and have a warning message including the words "WATER LINE BELOW ".

822.030 Bedding and Cover Materials

A. Bedding: As specified in Section 31 20 00.

B. Cover: As specified in Section 31 20 00.

822.031 Disinfection Chemicals

A. Chemicals: According to Portland Water District Standards and Specifications.

822.041 Examination

A. Verify existing conditions before starting work.

B. Verify building service connection and municipal utility water main size, location, and invert are as indicated on Drawings.

822.042 Preparation

A. Inspect both ends of the Pipe. Defected or damaged pipe shall not be installed and shall be removed from the Site.

B. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.

C. Remove scale and dirt on inside and outside before assembly.

D. Prepare pipe connections to equipment with flanges or unions.

822.043 Bedding

A. Excavate pipe trench in accordance with Section 31 20 00 for Work of this Section.

B. Form and place concrete for pipe thrust restraints at changes of pipe direction according to the Drawing layout and details. Place concrete to permit full access to pipe and pipe accessories.

C. Place bedding material at trench bottom in accordance with Section 31 20 00.

D. Backfill around sides and top of pipe in accordance with Section 31 20 00.

E. Place any required fill material in accordance with Section 31 20 00.

822.043 Installation - Pipe

A. Begin installing pipe as soon as bedding below pipe is complete.

B. All installations shall follow manufacturer's recommended procedures unless otherwise specified in this section or by the Engineer.

C. Maintain a minimum 10 foot clear separation between water mains and sewer utilities.

D. Group domestic piping with fire line piping whenever practical.

E. Route pipe in straight lines in sections shown straight on the Drawings.

F. Plug ends of the pipe except when connecting the next length of pipe.

G. Do not lay pipe in water or when trench conditions or weather are unsuitable for such work.

H. For installations into the Maintenance Building, cut penetrations through the concrete retaining wall and the Maintenance Building concrete foundation wall.

I. Install pipe to allow for expansion and contraction without stressing pipe or joints.

J. Install access fittings to permit disinfection of water system.

K. Establish elevations of buried piping with not less than 4.5 ft of cover.

L. Install warning tape continuous over top of pipe overlapping a minimum of 3 feet at ribbon ends. Tape shall be a minimum 1.0 ft below finished grade and a minimum of 1.0 ft above top of pipe.

M. Backfill trench accordance with Section 31 20 00.

N. Make final connections to building components, both new and existing, including fire sprinkler systems and bring system on-line.

822.044 Installation - Valves

A. All installations shall follow manufacturer's recommended procedures unless otherwise specified in this section or by the Engineer.

B. Set valves on solid-bearing, compacted soil.

C. Center and plumb valve box over valve. Set box cover flush with finished grade.

D. Provide blow off assemblies in accordance with the Portland Water District Standards and Specifications.

822.045 Field Quality Control

A. Field quality control shall be performed in accordance with the MaineDOT Standard Specifications.

B. Conduct pipe tests before joints are covered, and after thrust blocks have sufficiently hardened. Use only potable water.

C. Perform pressure test on domestic site water distribution system in accordance with the Portland Water District Standards.

D. When tests indicate Work does not meet specified requirements, remove Work, replace and retested.

E. The Contractor shall bear all cost associated with correcting any Work that does not meet the requirements of this Section including retesting expenses.

822.046 Disinfection

A. Perform disinfection only after the water system has passed all required pressure tests.

B. Flush and disinfect system in accordance with Portland Water District Standards and with AWWA C651-86 "Standard for Disinfecting Water Mains."

822.05 Method of Measurement

Pipe shall be measured complete and fully installed by the linear foot. Thrust blocks, pipe bends, and insulation shall not be measured separately but rather shall be incidental to the corresponding pipe Pay Item. Excavation, backfilling, and compacting shall also be included in the corresponding pipe Pay Item.

Gate valves with boxes and tapping shall be measured complete and fully installed by the unit.

822.06 Basis of Payment

The accepted quantities of PVC water pipe will be full compensation for all labor, materials, incidentals, and equipment necessary to satisfactorily complete the work in accordance with the Plans and Specifications, and will be paid for at the Contract unit price per linear foot, which payment will be compensation for furnishing and installing all necessary fittings, thrust blocks, and insulation. Excavation, backfilling, and compacting shall also be included in the corresponding pipe Pay Item.

Included in the price of the 6-Inch PVC Water Pipe shall also be the removal of the existing broken fire hydrant and a 10-ft section of water line (5-ft on each side of the broken fire hydrant) in order to shut off the water service to New Yard, LLC. Capping both sections of the pipe, excavation, backfill, and compaction shall be incidental to the work. Upon discontinuation of this line, the Portland Water District shall be notified.

The accepted quantities of Gate Valves with Box will be full compensation for all labor, materials, incidentals, and equipment necessary to satisfactorily complete the work in accordance with the Plans and Specifications, and will be paid for at the Contract unit price.

Payment will be made under the following Pay Item:

Pay Item		Pay Unit
822.315	Tapping Sleeve, Valve, and Service Box	Each
822.3406	8-Inch Reducer	Each
822.320	6-Inch PVC Water Pipe	Linear Foot
822.3212	4-Inch PVC Water Pipe	Linear Foot
822.335	4-Inch Gate Valve with Service Box	Each
822.338	6-Inch Gate Valve with Service Box	Each
823.343	Post Indicator Valve	Each
824.30	Fire Hydrant	Each
824.40	Standpipe	Each

SPECIAL PROVISION
SECTION 825
UTILITY PROVISIONS
(Gas Line Relocation)
(4-Inch Compound Meter)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, with the following additions and modifications:

825.01 Description

Add the following paragraph:

The work shall include the relocation of a 1.5-inch diameter gas line in the vicinity of the bridge maintenance building so that the gas line will avoid the proposed trench and concrete foundations for the refrigerator outlet assemblies. The existing and proposed locations for the gas line are shown on the Plans.

The work shall include providing and installing a 4-Inch Compound Meter in accordance with the locations and designated on the Plans.

825.02 Materials

Add the following paragraph:

The gas line relocation shall meet the requirements of Unitil and shall be installed in accordance with those same standards.

The compound meter shall meet the requirements of the Portland Water District Standard Specifications, and shall be installed in accordance with those same standards.

825.05 Method of Measurement

Add the following:

Gas Line Relocation will be measured by the linear foot.

4-Inch Compound Meter will be measured by the individual unit.

825.06 Basis of Payment

Add the following paragraphs:

Gas Line Relocation shall be paid by the Contract linear foot price completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; and for all incidentals necessary to complete the work.

4-Inch Compound Meter shall be paid by the Contract unit price completely installed to the satisfaction of the resident. Payment will be full compensation for furnishing and assembling all materials; and for all incidentals necessary to complete the work.

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Pay Item		Pay Unit
825.35	4-Inch Compound Meter	Each
825.433	Gas Line Relocation	Each

SPECIAL PROVISION
SECTION 830
HORIZONTAL DIRECTIONAL DRILLING
(Directional Drilling, 4-Inch PVC Conduit)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, with the following additions and modifications:

830.01 Description

The work specified in this section consists of installing an underground conduit using Horizontal Directional Drilling, HDD, also commonly referred to as guided horizontal boring. This work shall include all services, equipment, miscellaneous materials, and labor for the complete and proper installation of the underground conduit.

HDD is required at the intersection of Commercial Street and Beach Street. The PVC conduit shall be 4-inch diameter, schedule 80 conduit provided as part of the electrical work. No sleeve is required for the conduit.

830.02 References

The following publications and/or standards may be referenced in this specification:

DCCA — Directional Drilling Contractors Association Guidelines for a Successful Directional Crossing Bid Package.

830.03 Quality Assurance

Adherence to the specifications contained herein, or the Resident's approval of any aspect of any directional drilling operation covered by this specification, shall in no way relieve the Contractor of their ultimate responsibility for the satisfactory completion of the work authorized under the Contract.

830.04 Submittals

The Contractor shall submit to the Resident a Directional Drilling Submittal Package for review, comment, and approval prior to the commencement of work. At a minimum, the following components shall be submitted as part of the Submittal Package:

Work Plan: The Contractor shall submit to the Resident a general work plan outlining the procedure to be used to execute the project. Plan should document the staging area requirements; the location and description of pits, if needed; the proposed alignment of the boring; the method used to create the bore hole; and the method used to pull the conduit through the hole. Drilling alignment shall include lines and grades, entry and exit points, and drilling angles. The proposed entry and exit angles shall be checked against the bending radius of the conduit, and the longitudinal pulling force shall be checked against the allowable strength of the conduit during pullback. The Work Plan shall also include a general construction schedule and sequence in order to coordinate this activity with the overall project. Work which may require notification to the adjacent properties affected by the Work, such as NGL/Osterman, Unitil, Nova Seafood, Graybar, and Portland Rubber Company.

Equipment: The Contractor shall submit specifications on directional drilling equipment to ensure that the equipment will be adequate to complete the project. Equipment used to locate and monitor the position of the drilling head shall also be provided in this submittal. Spares inventory shall be included.

Material: Include the slurry material description and material data safety sheets, and any miscellaneous materials needed to perform the work. An estimate of the volume of the slurry to be used and the location of the disposal facility shall be provided.

Personnel: Documentation of training and relevant experience of personnel shall be submitted. Indicate the number of years and/or projects that each individual has completed.

Environmental Controls: The Contractor shall indicate the environmental control devices it will employ to ensure that no slurry or hydraulic fluids enter the drainage structures within the site. The manner by which slurry will be introduced and captured for proper disposal shall be outlined.

Warranty: A five-year warranty shall be provided on the work.

830.05 Drilling Equipment

The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pullback the conduit; a drilling fluid mixing & delivery system of sufficient capacity to successfully complete the crossing; a guidance system to accurately guide boring operations; and trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.

Drilling Rig: The directional drilling machine shall consist of a hydraulically powered system to rotate, push, and pull conduit into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored or secured to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pull-back pressure during pull-back operations.

Drill Head: The drill head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and drilling fluid jets. The drill bit shall be equipped with a signal generator providing constant output for continuous path monitoring.

Mud Motors (if required): Mud motors shall be of adequate power to turn the required drilling tools.

Drill Pipe: Shall be constructed of high quality tubing with threaded box and pins.

830.06 Guidance System

The Guidance System shall be of a proven type and shall be setup and operated by personnel trained and experienced with this system. The Operator shall be aware of any magnetic anomalies and shall consider such influences in the operation of the guidance system if using a magnetic system.

830.07 Drilling Slurry

Mixing System: A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid composed of bentonite clay, potable water and appropriate additives. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing. The drilling fluid reservoir tank shall be sized for adequate storage of the mud. Mixing system shall continually agitate the drilling fluid during drilling operations.

Drilling Fluids: Contractor shall supply and/or arrange for connection to supply water for mixing drilling fluid. Drilling fluid shall be composed of clean water and an appropriate additive. Water shall be from a clean source with a pH of 8.5 – 10 and/or as per mixing requirements of the Manufacturer. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or

clods. A bentonite based drilling slurry shall be utilized which may include polymer extenders. The slurry shall be a mixture that will harden into a stable clay substance around the outside of the conduit, leaving no voids and allowing no settlement of ground after installation. No hazardous additives may be used. Drilling fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of bore wall. The slurry shall be recycled to minimize material and water requirements.

Delivery System: The mud pumping system shall have a minimum capacity to supply mud in accordance with the drilling equipment pull-back rating at a constant required pressure. The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used drilling fluid and drilling fluid spilled during drilling operations shall be contained and properly disposed of. A berm, minimum of 12" high, shall be maintained around drill rigs, drilling fluid mixing system, entry and exit pits and drilling fluid recycling system (if used) to prevent spills into the surrounding environment. Pumps and or vacuum truck(s) of sufficient size shall be in place to convey excess drilling fluid from containment areas to storage facilities.

830.08 Commencement of Work

The Submittal Package shall be approved by the Resident prior to starting work. The Resident must be notified seven days in advance of starting work. All personnel shall be fully trained in their respective duties as part of the directional drilling crew and in safety.

The Contractor shall note that the project site contains subsurface clays which may facilitate the HDD process, and may reduce the amount of slurry necessary to install the conduit. Consult the project boring logs prior to start of work.

Prior to any alterations to work-site, contractor shall photograph or video tape entire work area, including entry and exit points. The Contractor shall also survey the cross-section of the roadway for a distance of 20-ft to each side of the proposed drilling operation. Obtain grade elevations across the roadway no less than ten in number, which shall be taken at the edge of pavements and at accessible lane lines. One copy of the elevations shall be given to the Resident and one copy shall remain with the Contractor for a period of one year following the completion of the project.

Work site as indicated on the drawings, within the right-of-way, shall be graded or filled to provide a level working area. No alterations beyond what is required for operations are to be made. Contractor shall confine all activities to designated work areas. No construction equipment shall be located within 12 ft of the nearest travel lane without approval from the Resident.

Entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on drawings. If contractor is using a magnetic guidance system, drill path will be surveyed for any surface geo-magnetic variations or anomalies.

Contractor shall place silt fence between all drilling operations and any drainage, wetland, waterway or other area designated for such protection by contract documents, state, federal and local regulations. Hydraulic fluid and slurry is not permitted to enter any drainage ditch or water feature on site. Additional environmental protection necessary to contain any hydraulic or drilling slurry shall be put in place, including berms, liners, sump pumps, turbidity curtains, and other measures. Contractor shall adhere to all applicable environmental regulations. Fuel or oil may not be stored in bulk containers within 200 ft of any water-body or wetland.

Contractor shall adhere to all applicable state, federal and local safety regulations and all operations shall be conducted in a safe manner. Safety meetings shall be conducted at least weekly with a written record of attendance and topic submitted to Engineer.

830.09 Drilling Procedure

The drilling alignment shall conform to the lines and grades indicated on the Drawings. Ground entry and exit points shall be as shown on the drawings or as approved, and angles shall not deviate by more than 2 degrees. Entry and exit points shall be within 5 ft of their intended locations. The alignment of the conduit shall remain at least 10 ft below the traffic lanes at all times, and the depth of the bore head shall be monitored every 12 ft to 20 ft as dictated by traffic control. No monitoring shall be allowed in an active traffic lane.

Pilot hole shall be drilled on bore path with no deviations greater than 5% of desired depth over a length of 100 ft. In the event that pilot does deviate from bore path more than 5% of depth in 100 ft, Contractor will notify Engineer and Engineer may require Contractor to pull-back and re-drill from the location along bore path before the deviation.

In the event that a drilling fluid fracture, inadvertent returns, or returns loss occurs during pilot hole drilling operations, contractor shall cease drilling, wait at least 30 minutes, inject a quantity of drilling fluid with a viscosity exceeding 120 seconds as measured by a March funnel and then wait another 30 minutes. If mud fracture or returns loss continues, contractor will cease operations and notify Engineer. Engineer and contractor will discuss additional options and work will then proceed accordingly.

Upon successful completion of the pilot hole, contractor will ream bore hole to no greater than 25% of the outside diameter of the conduit using the appropriate tools. Contractor will not attempt to ream at one time more than the drilling equipment and mud system are designed to safely handle.

After successfully reaming bore hole to the required diameter, contractor will pull the PVC conduit through the bore hole. In front of the conduit will be a swivel. Once pull-back operations have commenced, operations must continue without interruption until conduit is completely pulled into borehole. During pull-back operations contractor will not apply more than the maximum safe conduit pull pressure at any time. The Contractor shall not exceed the allowable bending radius of the conduit as specified by the conduit manufacturer.

In the event that conduit becomes stuck, contractor will cease pulling operations to allow any potential hydro-lock to subside and will commence pulling operations. If conduit remains stuck, contractor will notify Engineer. Engineer and contractor will discuss options and then work will proceed accordingly.

In the event that the Contractor must abandon the drill hole before completion of the crossing, the Contractor will seal the hole and re-drill the crossing at no extra cost to the Department.

830.10 Site Restoration

Following drilling operations, Contractor will de-mobilize equipment and restore the work-site to original condition. All excavations will be backfilled and compacted to 95% of original density. Landscaping will be restored to original condition. All mud, cuttings, and slurry shall be properly contained, collected, and disposed of by the Contractor.

830.11 Record Keeping and Close Out

As-Builts: Contractor shall maintain a daily project log of drilling operations and a guidance system log with a copy given to Engineer at completion of the project. A final survey of elevations shall be completed by the Contractor of the mainline and ramp cross-section which shall accompany the as-built drawings.

Owner shall have access at all times to any measuring or gauging devices used for the horizontal drilling operation, as well as any drilling logs maintained by the Contractor.

830.12 Method of Measurement

Directional Drilling will be measured by the horizontal linear foot.

830.13 Basis of Payment

The accepted quantity of Directional Drilling will be paid for at the contract unit price per horizontal linear foot. No adjustment will be made for vertical depth or parabolic draping of the drilled hole. Payment shall be full compensation for labor, equipment and materials to complete the surveying, excavations, pits, drilling, environmental controls, installation of conduit, and site restoration. Payment shall also include full compensation for disposing of unsuitable and surplus soils, slurry, and materials. PVC conduit will not be paid for under Directional Drilling, but rather will be paid for under the corresponding electrical pay item.

Item	Description	Unit
830.22	Directional Drilling, 4-inch PVC Conduit	Linear Foot

SPECIAL PROVISION
SECTION 841
BOLLARDS
(Steel Bollard - 6-Inch)
(Steel Bollard - 12-Inch)
(Steel Bollard - 12-Inch, Install Only)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, Revision December 2002, with the following additions:

841.01 Description

The work shall consist of providing and installing steel bollards in accordance with the locations designated on the Plans. There are three types of steel bollards to be installed on this project, and they are as follows:

Steel Bollard - 6-Inch
These bollards will be pad mounted and installed atop concrete slabs such as the transformer slab, security building slab, and the concrete loading slab.

Steel Bollard - 12-Inch
These bollards will be installed within the storage yard and will protect light pole bases, fire hydrants, and reefer outlets.

Steel Bollard - 12-Inch, Install Only
These bollards will be installed within the storage yard and will protect light pole bases and fire hydrants. The bollards are currently located in the secured area of the terminal beneath the Casco Bay Bridge.

841.02 General

Steel Bollard - 6-Inch shall be constructed of 6-inch diameter steel pipe with 1/2 inch wall and shall have 1/2-inch base plates of 12-inches x 12-inches welded to the bottom of the bollard using 3/8-inch fillet weld. A circular 1/2-inch cover plate shall be welded to the top of the steel pipe using a 3/8-inch fillet weld. Grind flush the top rim of the steel bollard after welding the cover plate. Steel shall have a minimum strength of 36 ksi. Bollards shall project 36-inches above the concrete base to which they are anchored. Anchorages shall consist of 3/4-inch diameter galvanized threaded rod, ASTM A307, of sufficient length to provide an 8-inch embedment in the concrete substrate. Base plates shall be secured with washers and nuts. The anchor rod shall be drilled and epoxied in place. Bollards shall be painted with a two-part epoxy coat of yellow paint upon completion of installation. A 3/8-inch bead of silicone caulking shall be placed around the perimeter of the interface between the steel base plate and the concrete foundation after paint has been applied.

Steel Bollard - 12-Inch shall be constructed of 12-inch diameter steel pipe with 1/2-inch wall and shall be installed into the ground no less than 6-ft deep in a hole no less than 24-inches in diameter. The bollard shall be filled with Class S concrete both within the steel pipe and around the annulus of the pipe section within the ground as shown on the Plans. A circular 1/2-inch cover plate shall be welded to the top of the steel pipe using a 3/8-inch fillet weld. Grind flush the top rim of the steel bollard after welding the cover plate. Steel shall have a minimum strength of 36 ksi. Upon completion of the installation, bollards shall be painted with a two-part epoxy coat of yellow paint.

Steel Bollard - 12-Inch, Install Only shall be moved from their stored location within the Terminal and installed in their final position. The steel bollards are constructed of 12-inch diameter steel pipe and already

contain concrete fill and a concrete base. The bollards are to be installed such that the bottom of the steel pipe (concrete base) is approximately 5 ft below ground and the top of the concrete annulus is flush with the adjacent final grade (top of the crushed stone surface). In its final position, the bollard will extend approximately 4 ft above the ground. The rounded concrete tops of the bollards shall be removed by sawcutting, and a circular 1/2-inch cover plate shall be welded to the top of the steel pipe using a 3/8-inch fillet weld. Grind flush the top rim of the steel bollard after welding the cover plate. Steel shall have a minimum strength of 36 ksi. Upon completion of the installation, bollards shall be painted with a two-part epoxy coat of yellow paint

841.03 Method of Measurement

Steel Bollard - 6-Inch will be measured by the individual unit and shall include steel pipe, plates, and fastening devices installed and accepted. Anchorages, paint, and silicone caulking shall be incidental to this pay item.

Steel Bollard - 12-Inch will be measured by the individual unit and shall include steel pipe, plates, and concrete installed and accepted. Excavation, backfill, compaction, and paint shall be incidental to this pay item.

Steel Bollard - 12-Inch, Install Only will be measured by the individual unit and shall include moving the bollards from their existing location within the Terminal to their final location within the storage yard and installation including excavation, backfill, and compaction. Removal of the round concrete tops, installation of the steel plate, and painting of the steel bollard shall be incidental to this pay item.

For the bollards which protect the new light pole base beneath the Casco Bay Bridge, the final installation of the bollards shall include sawcutting and removal of the existing pavement and installation of 3 inches of HMA around the bollards.

841.04 Basis of Payment

Steel Bollard - 6-Inch will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident. Anchorages, paint, and silicone caulking will not be measured separately but shall be considered incidental to the pay item.

Steel Bollard - 12-Inch will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident. Excavation, backfill, compaction, and paint shall be incidental to this pay item..

Steel Bollard - 12-Inch, Install Only will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident. Moving and installation of the bollards as well as excavation, backfill, compaction, concrete removal, steel plates, and paint shall be incidental to this pay item..

HMA will not be measured for payment but shall be considered incidental to the installation the two steel bollards under the Casco Bay Bridge.

Payment will be made under:

Pay Item		Pay Unit
841.4712	Steel Bollard - 6-Inch	Each
841.4713	Steel Bollard - 12-Inch	Each
841.4714	Steel Bollard - 12-Inch, Install Only	Each

SPECIAL PROVISION
SECTION 890
SITE AMENITIES
(Bike Rack)

890.01 Description

The work shall consist of providing and installing Bike Racks at the pedestrian island at the Terminal entranceway.

890.02 General

The Bike Racks shall be the standard bike rack of the City of Portland which is the "Bike Hitch," manufactured by the Dero Company of Minneapolis, MN (www.dero.com/products/bike-hitch)

The bike racks shall be directly mounted to the top of the concrete pad within the pedestrian island at the location shown on the plans and to the satisfaction of the Resident. Anchor bolts shall be used to secure the bike racks in their finished location atop the concrete pad via drilled and tightened mechanical anchorage devices or drilled and epoxied threaded bolts. Anchor devices shall be hot-dipped galvanized. The bike rack itself shall receive a hot dipped galvanized coating and receive a black polyethylene top coat prior to delivery. The manufacturer shall provide a nominal-size touch-up paint kit for future maintenance needs.

890.03 Method of Measurement

Bike Racks will be measured by the individual unit installed and accepted.

890.04 Basis of Payment

Bike Rack will be paid for at the Contract unit price which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident. Anchor devices and installation shall be incidental to the Bike Rack unit price.

Payment will be made under:

Pay Item		Pay Unit
890.07	Bike Rack	Each

APPENDIX A

Permits

Environmental Summary Sheet

WIN: **22809.00/22809.20** **Date Submitted: 6/27/14**
Town: **Portland**
CPD Team Leader: Kristen Chamberlain
ENV Field Contact: **Mike Clark**

NEPA Complete: **No federal funds**

☒ **Section 106 –No federal action. Historic review completed pursuant to MaineDEP Site Law and City of Portland Site Plan Approval Requirements.**
SHPO Concurrence-No Adverse Effect
Section 106 Resources: Archaeological resources on portions of the site. See SP 105.9

☒ **Section 4(f) and 6(f)- No FHWA Funds.**
Section 4(f)
Review Complete- No USDOT $
Section 6(f)
Not Applicable

☒ **Maine Department of Inland Fisheries and Wildlife Essential Habitat**

Not Applicable **Timing Window: Not Applicable**

☒ **Section 7**
Not Applicable
Comments/References: No federal nexus. No in-water work. Clearing will be complete prior to 10/1/14.

☒ **Maine Department of Conservation/Public Lands, Submerged Land Lease**
Not Applicable

☒ **Maine Land Use Regulation Commission**
Not Applicable

☒ **Maine Department of Environmental Protection**
Permit by Rule (PBR); Site Location of Development Notice of Intent
**Applicable Standards and Permits are included with the contract*

☒ **Army Corps of Engineers, Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.**
Not applicable

☒ **Stormwater Review**
Chapter 500 -Stormwater management plan reviewed and approved by City of Portland and MaineDEP. Stormwater management requirements have been incorporated into project plans and specifications.

☒ **Special Provisions Required**

Special Provision 105-Timing of Work Restriction	N/A☒	Applicable☐
Special Provision 656-Erosion Control Plan	N/A☐	Applicable☒
Special Provision 203-Dredge Spec	N/A☐	Applicable☐
General Note for Hazardous Waste	N/A☐	Applicable☐
Special Provision 203-Hazardous Waste	N/A☐	Applicable☒
Special Provision 105.9-Archaeological Resources	N/A☐	Applicable☒

**All permits and approvals based on plans/scope as of: 6/27/14*

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

May 2014

Maine Department of Transportation
Attn: Kristen Chamberlain
16 State House Station
Augusta, ME 04333

RE: Site Location of Development Act General Permit, Portland, DEP #L-26347-TP-A-N

Dear Ms. Chamberlain:

Please find enclosed a signed copy of your Department of Environmental Protection land use permit. You will note that the permit includes a description of your project, findings of fact that relate to the approval criteria the Department used in evaluating your project, and conditions that are based on those findings and the particulars of your project. Please take several moments to read your permit carefully, paying particular attention to the conditions of the approval. The Department reviews every application thoroughly and strives to formulate reasonable conditions of approval within the context of the Department's environmental laws. You will also find attached some materials that describe the Department's appeal procedures for your information.

If you have any questions about the permit or thoughts on how the Department processed this application please get in touch with me directly. I can be reached at 207-592-1692 or at marybeth.richardson@maine.gov.

Sincerely,

Marybeth Richardson
Division of Land Resource Regulation
Bureau of Land and Water Quality

pc File:

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

web site: www.maine.gov/dep

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

MAINE DEPARTMENT OF	) SITE LOCATION OF DEVELOPMENT ACT
TRANSPORTATION	)
Portland, Cumberland County	)
LAYDOWN AREA AND CONNECTING	) GRANTING OF COVERAGE
RAIL CORRIDOR	) GENERAL PERMIT FOR THE MAINE
L-26347-TP-A-N (approval)	) DEPARTMENT OF TRANSPORTATION

The Department of Environmental Protection (Department) has considered the Notice of Intent submitted by MAINE DEPARTMENT OF TRANSPORTATION, with supportive data and other related materials on file, for coverage under the General Permit for the Maine Department of Transportation, issued by the Department on February 19, 2013, and FINDS THE FOLLOWING FACTS:

The applicant proposes to construct a laydown area and connecting railroad corridor between the existing International Marine Terminal and existing rail corridors. The project site is located between Commercial Street and the Fore River in Portland. The applicant has indicated that it intends to comply with the terms and conditions of the General Permit for the Maine Department of Transportation. The applicant is authorized to construct the facility in accordance with the applicant's Notice of Intent, received by the Department on May 16, 2014 and accepted for processing on May 22, 2014, and in accordance with the terms and conditions of the General Permit for the Maine Department of Transportation effective February 19, 2013 and authorized through February 18, 2018.

In conjunction with this project, the Maine Department of Transportation submitted a Natural Resources Protection Act (NRPA) Permit-by-Rule Notification form (PBR #57888) which indicates that activities occurring within 75 feet of the highest annual tide line will be carried out in accordance with the standards of the NRPA, Chapter 305, Section 11. The Department approved PBR #57888 on May 21, 2014.

Constructed and operated in accordance with the General Permit for the Maine Department of Transportation, the project will not adversely affect the natural environment, will be built on suitable soil types, will meet the standards for erosion control and stormwater management, will not pose an unreasonable risk of discharge to a significant ground water aquifer, will not unreasonably cause or increase the flooding of the area or adjacent properties nor create an unreasonable flood hazard to any structure and any blasting, if it occurs, will be conducted in accordance with the standards of 38 M.R.S. §490-Z(14). In addition, the applicant has made adequate provision of utilities and the

development will not have an unreasonable adverse effect on existing or proposed utilities in the municipality or area served by those services.

THEREFORE, the Department GRANTS coverage for MAINE DEPARTMENT OF TRANSPORTATION under the General Permit for the Maine Department of Transportation for the above-described laydown area and connecting rail corridor in Portland, Maine, subject to the terms and conditions therein.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED AT AUGUSTA, MAINE THIS 27th DAY OF May, 2014.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Filed
MAY 27 2014
State of Maine
Board of Environmental Protection

BY: Michael Kuhns
For: PATRICIA W. AHO, Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES…

MR/L26347AN/ATS#77750

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: March 2012 **Contact: (207) 287-2811**

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's ("DEP") Commissioner: (1) in an administrative process before the Board of Environmental Protection ("Board"); or (2) in a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S.A. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S.A. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S.A. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This INFORMATION SHEET, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S.A. §§ 341-D(4) & 346, the *Maine Administrative Procedure Act*, 5 M.R.S.A. § 11001, and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 CMR 2 (April 1, 2003).

HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days of the date on which the Commissioner's decision was filed with the Board will be rejected.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by the Board's receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner a copy of the appeal documents and if the person appealing is not the applicant in the license proceeding at issue the applicant must also be sent a copy of the appeal documents. All of the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

WHAT YOUR APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time submitted:

1. *Aggrieved Status.* The appeal must explain how the person filing the appeal has standing to maintain an appeal. This requires an explanation of how the person filing the appeal may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error.* Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge.* If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested.* The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing on the appeal is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered by the Board in an appeal only when the evidence is relevant and material and that the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2.

Other Considerations in Appealing a Decision to the Board

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed the license normally remains in effect pending the processing of the appeal. A license holder may proceed with a project pending the outcome of an appeal but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

What to Expect Once You File a Timely Appeal with the Board

The Board will formally acknowledge receipt of an appeal, including the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, and any materials submitted in response to the appeal will be sent to Board members with a recommendation from DEP staff. Persons filing appeals and interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, a license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2; 5 M.R.S.A. § 11001; & M.R. Civ. P 80C. A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. Failure to file a timely appeal will result in the Board's or the Commissioner's decision becoming final.

An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S.A. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452 or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

PERMIT BY RULE NOTIFICATION FORM

(For use with DEP Regulation, Chapter 305)

PLEASE TYPE OR PRINT IN *BLACK INK ONLY*

Name of Applicant: (owner)	Maine Department of Transportation c/o Judy Gates	Name of Agent:	Kristen Chamberlain
Applicant Mailing Address:	16 State House Station	Agent Phone # (include area code):	(207) 557-5089
Town/City:	Augusta	PROJECT Information Name of Town/City:	Portland
State and Zip code:	Maine 04333	Name of Wetland or Waterbody:	Fore River
Daytime Phone # (include area code):	(207) 621-3100	Map #:	Lot #:
Detailed Directions to Site:	Franklin Arterial off of I-295. Take Right onto Commercial Street. Project site is on the left just past the existing International Marine Terminal and Casco Bay Bridge. See attached map.		
	UTM Northing: (if known)	4833283mN	UTM Easting: (if known) 19T 398342mE
Description of Project:	Install railroad track within 75-feet of Fore River, complete grading, repair existing CSO outfall and repair fencing within 75-feet to construct gravel yard and associated facilities. Maintain existing riprap at CSO outfall below HAT.		

See Site Law NOI for additional project details.

Part of a larger project? (check one)→	☑ Yes ☐ No	After the Fact? (check one)→	☐ Yes ☑ No	Check one→ This project ☐ does (or) ☑does not involve work below mean low water (average low water).

PERMIT BY RULE (PBR) SECTIONS: (Check at least one)

I am filing notice of my intent to carry out work which meets the requirements for Permit By Rule (PBR) under DEP Rules, Chapter 305. I and my agents, if any, **have read** and will comply with all of the standards in the Sections checked below.

- ☐ **Sec. (2) Act. Adj. to Protected Natural Res.**
- ☐ **Sec. (3) Intake Pipes**
- ☐ **Sec. (4) Replacement of Structures**
- ☐ **Sec. (5) REPEALED**
- ☐ **Sec. (6) Movement of Rocks or Vegetation**
- ☐ **Sec. (7) Outfall Pipes**
- ☐ **Sec. (8) Shoreline stabilization**
- ☐ **Sec. (9) Utility Crossing**
- ☐ **Sec.(10) Stream Crossing**
- ☑ **Sec. (11) State Transportation Facil.**
- ☐ **Sec. (12) Restoration of Natural Areas**
- ☐ **Sec. (13) F&W Creation/Enhance/Water Quality Improvement**
- ☐ **Sec. (14) REPEALED**
- ☐ **Sec. (15) Public Boat Ramps**
- ☐ **Sec. (16) Coastal Sand Dune Projects**
- ☐ **Sec. (17) Transfers/Permit Extension**
- ☐ **Sec. (18) Maintenance Dredging**
- ☐ **Sec. (19) Activities in/on/over significant vernal pool habitat**
- ☐ **Sec. (20) Activities in existing dev. areas located in/on/over high or moderate value inland waterfowl & wading bird habitat or shorebird nesting, feeding & staging areas**

I have attached the following required submittals. **NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS:**

- ☐ ***Attach* a check for $70 made payable to: "Treasurer, State of Maine".** *State Agency-Internal Billing*
- ☑ ***Attach* a U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.**
- ☐ ***Attach Proof of Legal Name.*** If applicant is **not** an individual or municipality, provide a copy of Secretary of State's *registration information* (available at http://icrs.informe.org/nei-sos-icrs/ICRS?MainPage=x)
- ☐ ***Attach photos of the proposed site where activity will take place as outlined in PBR Sections checked above.***
- ☐ ***Attach* all other required submissions as outlined in the PBR Sections checked above.**

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.***

By signing this Notification Form, I represent that the project meets all applicability requirements and standards in the rule and that the applicant has sufficient title, right, or interest in the property where the activity takes place.

Signature of Agent or Applicant:	Judy C. Gates	Date:	5/1/14

Keep a copy as a record of permit. Send the form with attachments via certified mail or hand deliver 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	PORTLAND DEP	BANGOR DEP	PRESQUE ISLE DEP
17 STATE HOUSE STATION	312 CANCO ROAD	106 HOGAN ROAD	1235 CENTRAL DRIVE
AUGUSTA, ME 04333-0017	PORTLAND, ME 04103	BANGOR, ME 04401	PRESQUE ISLE, ME 04769
(207)287-3901	(207)822-6300	(207)941-4570	(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 (MaineDOT) 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 and the Department of Marine Resources, as applicable. The applicant must coordinate with the reviewing agencies and incorporate any recommendations from those agencies into the performance of the activity.

(3) All construction activities undertaken must be detailed in a site-specific Soil Erosion and Water Pollution Control Plan and conducted in accordance with MaineDOT's Best Management Practices for Erosion and Sediment Control, dated January 2000, and Standard Specifications, dated December 2002.

(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 and Waterbodies 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(A), 9(B) and 9(C).

(8) The activity may not permanently block any fish passage in any watercourse containing fish. The applicant must coordinate with the reviewing agencies listed in paragraph 2 above to improve fish passage and incorporate any recommendations from those agencies into the performance of the activity.

NOTE: For guidance on meeting the design objectives for fish passage, including peak flow, maximum velocity, mining depth and gradient, see the MaineDOT Waterbody and Wildlife Crossing Policy and Design Guide (July 2008), developed in conjunction with state and federal resource and regulatory agencies.

(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, the applicant must isolate the work area from the resource and divert stream flows around the work area, maintaining downstream flows while work is in progress.

(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. If avoiding the operation of wheeled or tracked equipment in the water is not possible, the applicant must explain the need to operate in the water. Approval from the DEP to operate in the water must be in writing, and any recommendations from the DEP must be incorporated into the performance of the activity.

(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. Erosion and sediment control best management practices 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.

(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.

(16) The use of untreated lumber is preferred. Lumber pressure treated with chromated copper arsenate (CCA) may be used only if necessary and only if use is allowed under federal law and not prohibited from sale under 38 M.R.S.A. 1682, and 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) Non-native species may not be planted in restored areas.

(19) 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.*

(20) 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.

(21) 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. The rerouting of a river, stream or brook around a construction site and then back to the downstream 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. Heavy, irregularly shaped rocks that are fit into place, without mortar, on a slope as defined in the MaineDOT Standard Specifications, dated December 2002.

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/env/documents/pdf/bmp2008/BMP2008full.pdf

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. All disturbed ditches/slopes shall be stabilized by the end of each workday. Stabilization shall be maintained on a daily basis.

3. 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.

4. 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.

5. **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.

6. Dust control items other than those under Standard Specification 637, if applicable, shall be included in the plan.

7. Permanent slope stabilization measures shall be applied within one week of the last soil disturbance. Temporary slope stabilization is required on a daily basis.

SPECIAL PROVISION
SECTION 656
Temporary Soil Erosion and Water Pollution Control

8. Permanent seeding shall be done in accordance with *Special Provision, Section 618, Seeding* unless the Contract states otherwise.

9. Culvert inlet and outlet protection shall be installed within 48 hours of culvert installation, or prior to a storm event, whichever is sooner.

10. Temporary winter stabilization must be used between November 1st and April 1st or outside of that 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 then 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.

11. 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.

12. 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 a 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.

13. 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 (*Section 656.4.4.*)

14. **A preconstruction field review is mandatory for this project. The preconstruction field review shall take place before commencing any work that involves soil disturbance or potential impacts on water quality. Attendees shall include the Environmental Coordinator, the preparer of the SEWPCP, the Construction Manager, and a representative from the Department's ENV Water Resources Unit. The date and time shall be set by the Contractor in consultation with the Construction Manager and ENV Water Resources Unit representative.**

APPENDIX B

Certifications

STATE OF MAINE

Interoffice Memorandum

Date: June 18, 2014

To: Joel Kittredge, Project Manager — MDOT – Augusta, Office

From: Rick Paraschak, Utility Coordinator — MDOT - Multimodal Program

Subject: **Utility-Railroad Certification** — **Portland**
WIN 022809.20

==========

To the best of my ability all necessary arrangements have been made for utility and Railroad work to be undertaken and completed as necessary for proper coordination with physical construction schedules in accordance with Federal Aid Policy Guide, Title 23, Code of Federal Regulation, Chapter 1, Subchapter G, Part 645, Subpart A, Subpart B or both.

Pan Am Railroad which operates and/or owns facilities located within the projects limits have been notified and their concerns have been accommodated in these specifications and design.

No direct payments to utilities are anticipated as a part of this project.

Rick Paraschak
MaineDOT

Cc: Jeff Tweedie, Multimodal Program

MAINE DEPARTMENT OF TRANSPORTATION
STATE FUNDED CONSTRUCTION PROJECT
RIGHT OF WAY CERTIFICATE

TOWN	Portland	PIN	22809.20
STATE HWY	1	ROUTE	US Route 1A

Total Parcels / Items: 1

Displacement Summary:	Number of Cases
Number Displaced	N/A
Number Relocated	N/A

The Property Office, Maine Department of Transportation hereby certifies that the right to occupy and use all the rights of way necessary for this project has been acquired by [ ] deed, [ ] condemnation or [X] permit to work. All right of way has been acquired in accordance with applicable State Laws following procedures laid out in the MaineDOT Right of Way Manual. If federal funding was used in any part of the project, compliance with the federal Uniform Act is hereby certified.

[X] **Without Exception**
[ ] **Except as Reserved Below**

Legal Possession completed as of: **July 9, 2014**

Reserved Limits

Parcel / Item	Name	Stationing / Description	Reserve Date
None			

All displacees on the project were treated in accordance with MRSA Title 23 Subchapter 7 - Relocation Assistance

July 9, 2014
Date

Director, Property Office
Chief Property Officer [X]
Director, Bureau of Project Development

APPENDIX C

Geotechnical Report

GEOTECHNICAL DESIGN REPORT FOR
INTERNATIONAL MARINE TERMINAL EXPANSION
PORTLAND, MAINE
MAINEDOT WIN 22809.20

PREPARED FOR:

HNTB Corporation
Westbrook, Maine

PREPARED BY:

Isabel V. (Be) Schonewald, P.E.
Schonewald Engineering Associates, Inc. (SchonewaldEA)
129 Middle Road
Cumberland, Maine 04021
Be@SchonewaldEngineering.com

June 27, 2014

SchonewaldEA Project No. 14-009

SCHONEWALD ENGINEERING ASSOCIATES, INC.
■ www.SchonewaldEngineering.com ■

129 MIDDLE ROAD, CUMBERLAND, MAINE 04021
phone 207/829-5226
cell 207/272-9879

VIA EMAIL

June 27, 2014
Project No. 14-009

Mr. Craig Morin, P.E.
HNTB Corporation
340 County Road, Suite 6C
Westbrook, Maine 04092

Re: Geotechnical Design Report for
International Marine Terminal Expansion
Portland, Maine
MaineDOT WIN 22809.20

Dear Craig:

Schonewald Engineering Associates, Inc. (SchonewaldEA) is pleased to provide HNTB Corporation (HNTB) with this report that summarizes the geotechnical engineering evaluation completed to support HNTB's design of the expansion of the International Marine Terminal (IMT) located on West Commercial Street in Portland, Maine (MaineDOT WIN 22809.20 – "Portland International Marine Terminal, Existing Laydown and Connecting Corridor Connection Project"). SchonewaldEA's work included evaluating subsurface conditions, completing geotechnical engineering analyses, providing design and construction recommendations for the geotechnical aspects of the project, and preparing this report that summarizes the findings of the work.

This work was completed in accordance with the agreement between HNTB and SchonewaldEA dated April 23, 2014. This report is subject to the limitations contained in Appendix A. A quality assurance review of the technical aspects of SchonewaldEA's work has been completed by Stephen J. Rabasca, P.E. of SoilMetrics, LLC located in Cape Elizabeth, Maine.

EXECUTIVE SUMMARY

This report summarizes the geotechnical engineering evaluation completed to support HNTB's design of the expansion of the IMT located on West Commercial Street in Portland, Maine, and provides design and construction recommendations for the geotechnical aspects of the project. Specifically, the geotechnical work focused on the following features of the IMT expansion project:

Foundations for New Traffic Signal Mast Arm Poles: The foundations for the new mast arm poles proposed in the intersection of West Commercial and Beach Streets should consist of drilled shafts due to space constraints imposed by utilities and ROW. Special Provisions 626 and 643 included in the project documents provide the geotechnical and structural design, as well as the construction requirements for the foundations. The design charts for the drilled shaft foundations are based upon a 28 degree soil friction angle for the soils encountered in the test boring drilled in the vicinity of the intersection of West Commercial and Beach Streets. The contractor will select the diameters and lengths of the drilled shaft foundations based upon the actual bending moment and torsion at the top of each foundation.

Subgrade Preparation and Engineered Fill for Concrete Loading Slab: The satisfactory performance of the new concrete loading slab requires, in part, adequate subgrade preparation and an appropriate engineered fill subbase and base section. Subgrade should be prepared in accordance with Special Provision 203 included in the project documents. The engineered fill section should consist of 8 inches of Type B base material (MaineDOT 703.06.a, Type B) underlain by 16 inches of Type D subbase material

(MaineDOT 703.06.b, Type D). A separation geotextile should be placed over the prepared subgrade prior to placing the subbase material. Special Provision 304 provides the placement requirements for the engineered fill section; Special Provisions 620 and 722 include the requirements for the recommended special separation geotextile. Given subgrade preparation meets the requirements of Special Provision 203, the engineered fill section described herein is placed in accordance with Special Provision 304, and adequate surface water and groundwater controls are provided, a modulus of subgrade reaction equal to 150 pounds per cubic inch (for a one-foot square plate) may be used for the structural design of the concrete slab.

Chassis Storage Yard: HNTB's design of the chassis storage yard consists of 4 inches of crushed stone surface material underlain by 20 inches of Type D subbase material (MaineDOT 703.06.b, Type D). Stormwater management for the chassis storage yard relies primarily on infiltration of incident precipitation into the subgrade soils. Grading and structural measures to collect and convey excess stormwater to the City of Portland's stormwater sewer system is provided to manage stormwater after major storm events and spring thaw if necessary. A typical hydraulic conductivity of the subgrade soils was estimated based upon the results of subsurface explorations and soils laboratory testing. We recommend that a separation geotextile be placed between the prepared subgrade soils and overlying Type D subbase material. The separation geotextile was sized to provide adequate permittivity and filtration. Special Provisions 620 and 722 include the requirements for the recommended special separation geotextile. Subgrade should be prepared in accordance with Special Provision 203 included in the project documents. Strip drains placed at the subgrade-subbase interface are recommended in areas of convergent flow to enhance the performance of the chassis storage yard during periods after major storm events and spring thaw. Special Provisions 620 and 722 include the requirements for the recommended strip drains and the locations of the strip drains are depicted on the project plans. As depicted on the project plans, the strip drains should be provided with a free-draining outlet into an underdrain, which in turn discharges into the site stormwater management system.

INTRODUCTION

SchonewaldEA understands that HNTB was retained by the MaineDOT to design the expansion of the IMT, which will provide facilities to store cargo containers and transfer them to/from rail. The expansion includes constructing an unpaved (stone) chassis storage yard to the west of the existing IMT and a concrete container loading slab further west along West Commercial Street at a new railroad siding. The IMT improvements include interconnecting access roads on the property that has been acquired by the State of Maine. Off-site improvements include installing three poles with mast-arm-mounted traffic signals at the intersection of West Commercial Street and Beach Street and a new entrance into the expanded IMT and adjacent Unitil and New Yard LLC parcels. The three poles will each have one mast arm, with the mast arms ranging from approximately 35 to 55 feet long. The general site features are depicted on Figure 1 of this report. SchonewaldEA's work focused on the following three project features:

- Traffic Signal Mast Arm Pole Foundations – intersection of West Commercial and Beach Streets; three poles, each with one mast arm; mast arms range from approximately 35 to 55 feet long.

- Concrete Loading Slab – finished slab elevation approximately 14 feet; includes an underdrain system to limit head build up and saturation of engineered fill section; requires up to about 6 feet cut along West Commercial Street and less than about 1 foot cut along the southerly edge of the concrete slab to achieve engineered fill subgrade.

- Chassis Storage Yard – finished yard elevation approximately 13 to 14 feet; flat slope; requires little cut or fill to achieve engineered fill subgrade.

The objectives of our work were to develop design and construction recommendations for the geotechnical aspects of the project, and to prepare the associated geotechnical project documents to support HNTB's work

GEOLOGIC SETTING

The project area has a long history of industrial development and uses. Based upon the map entitled "Surficial Geology of the Portland 1:100,000 Quadrangle, Maine" published by the Maine Geologic Survey, the surficial soils in the vicinity of the site consist of a broad area of the "artificial fill" associated with Portland's working waterfront and commercial areas.

Specific subsurface information for the project area was obtained from a number of sources. Based upon a review of the logs of three test borings completed along West Commercial Street in 1973 for Portland Water District, soils underlying the northerly limits of the IMT expansion area consisted of varying depths of granular and/or urban fill, underlain by loose to medium dense silty fine or fine to medium sand. Silty clay was encountered at about 27 feet below the elevation of the railroad tracks that parallel West Commercial Street. Near surface soils encountered in test borings completed to the south and west of the proposed concrete loading slab for the recent New Yard LLC development consisted of urban fill.

Twelve of the geotechnical test borings that were completed in 1988 for the Casco Bay Bridge were located in the immediate vicinity of the IMT and Beach Street ramp onto the bridge. All of the ten borings that were completed in the relatively flat area to the south of West Commercial Street were terminated between elevation -106 and -199 feet without encountering bedrock. Borings located at and slightly to the north of Commercial Street, however, encountered bedrock at elevation -91 and -66 feet, respectively.

SUBSURFACE EXPLORATION PROGRAM

SchonewaldEA retained Maine Test Borings (MTB) of Hermon, Maine to drill nine test borings designated B-101 through B-109. The drilling work was completed on May 2, 2014 and was observed and logged by SchonewaldEA. Figure 1 shows the locations of the test borings that were surveyed by HNTB's project surveyor. Logs of the subsurface explorations are included as Appendix B, together with a description of the modified Burmister field soil classification system.

The locations of the test borings for the loading slab and chassis storage yard were selected to provide areal coverage of those areas, since we anticipated encountering urban fill and needed a sense for how it varied across the site. The depths of the borings were selected to obtain specific information required for the design of the respective project feature. Specifically, the test boring for the mast arm pole foundations extended to about 32 feet below the ground surface (BGS) to provide adequate subsurface information for the design of the drilled shaft foundations. For the loading slab and chassis storage yard, where the subgrade soils were of greatest interest, the test borings extended from about 5 to 14 feet BGS, which corresponds to typically 5 to 7 feet below anticipated subgrade elevation.

The explorations were advanced using standard hollow-stem or solid-stem auger techniques to avoid the use of drilling fluids. For the deeper test boring completed for the mast arm pole foundations, Standard Penetration Tests (SPTs) were completed and split-spoon soil samples obtained near the ground surface and at approximately 5-foot intervals thereafter to the bottom of the boring. For the shallow test borings for the loading slab and chassis storage yard, SPTs were completed and split-spoon soil samples obtained typically continuously from approximate proposed subgrade elevation to the bottom of the boring. No rock coring was undertaken. The boreholes were backfilled with auger cuttings, supplemented with manufactured sand and gravel, upon completion of the exploration.

LABORATORY TESTING PROGRAM

SchonewaldEA submitted representative split-spoon samples of the subgrade soils that were collected from the test borings completed in the loading slab and chassis storage yard to better define the typical subgrade characteristics. Index testing was completed by R. W. Gillespie & Associates, Inc.'s geotechnical laboratory in Saco, Maine. The laboratory testing program is summarized in the following table. Index testing of soil samples collected from test boring B-102 (mast arm pole foundations) was not warranted, as discussed in the subsequent section.

Boring No.	Sample No.	Sample Depth	Site Feature: Sample Representative of: Index Tests Performed:
B-101	1D-A	6.7 to 7.5 ft. BGS	Loading Slab; subgrade; sieve with hydrometer (including moisture content)
B-103	1D*	1 to 3 ft. BGS	Chassis Storage Yard; subgrade; sieve with hydrometer (including moisture content)
B-104	1D*	1 to 3 ft. BGS	Chassis Storage Yard; subgrade; sieve with hydrometer (including moisture content)
B-105	1D*	1 to 3 ft. BGS	Chassis Storage Yard; subgrade; sieve with hydrometer (including moisture content)
B-106	2D*	3 to 4.3 ft. BGS	Chassis Storage Yard; subgrade; sieve with hydrometer (including moisture content)
B-107	1D*	1 to 3 ft. BGS	Chassis Storage Yard; subgrade; sieve with hydrometer (including moisture content)
B-108	2D	3 to 5 ft. BGS	Loading Slab; subgrade; sieve with hydrometer (including moisture content)
B-109	1D*	3 to 5 ft. BGS	Loading Slab; subgrade; sieve with hydrometer (including moisture content)

* indicates composite sample of split-spoon contents were submitted for testing

The results of the index testing are summarized in the following section. Laboratory test data are included as Appendix C.

SUBSURFACE CONDITIONS

Traffic Signal Mast Arm Pole Foundations: The test boring completed in the intersection of West Commercial and Beach Streets (B-102) encountered medium dense, fine sand with up to about 10 percent Silt to approximately 18.5 feet BGS. The fine sand was underlain by an approximately 10-foot thick layer of soft to medium stiff silt-clay with varying amounts of silt and sand. Dense glacial till was encountered at about 29 feet BGS. Groundwater was observed at 8 feet BGS (elevation 8 feet) as drilling progressed. Split-spoon refusal was encountered at 32.2 feet BGS in test boring B-102. No samples from test boring B-102 were submitted for laboratory index testing because the field data collected during test boring advancement was sufficient to develop the drilled shaft foundation design charts for the project.

Concrete Loading Slab: The test borings completed within the proposed footprint of the concrete loading slab (B-101, B-108, and B-109) encountered typically loose, silty sand, sandy silt, or reworked silt-clay soils at subgrade elevations. The subgrade material appears to be fill. Groundwater was observed at elevations 6.6 and 9.5 feet in test borings B-101 and B-109, respectively; no groundwater was observed in test boring B-108 during drilling. Refusal was not encountered in any of the three loading slab test borings.

The following table summarizes the results of the laboratory tests completed on representative samples of the loading slab subgrade soils.

Boring No.	Sample No.	Sample Depth (ft. BGS)	Sample Elev. (ft.)	N value	Lab Classification		-#200 sieve (%)
					USCS	AASHTO	
B-101	1D-A	6.7 to 7.5	10.9 to 10.1	9	SM	A-4(0)	50
B-108	2D	3 to 5	10.6 to 8.6	5	ML	A-4(0)	56
B-109	1D	3 to 5	9.7 to 7.7	8	SW-SM	A-1-b	9

Where N value is the SPT blow count; USCS is Unified Soil Classification System; AASHTO is American Association of State Highway and Transportation Officials; and -#200 sieve is the fines content

Chassis Storage Yard: Subgrade soils encountered in test borings B-103 through B-107 located in the chassis storage yard consisted of typically loose to medium dense, sandy urban fill. Distinct layering was observed in the split-spoon samples. However, to better interpret the "typical" engineering characteristics of the subgrade soils, each of the split-spoon samples was composited.

The composite samples submitted for laboratory testing were classified as an SM (silty sand) or SW-SM (sand with silt) soil type per the Unified Soil Classification System and had fines contents that varied from 11 to 22 percent. The following table summarizes the results of the laboratory tests completed on representative samples of the chassis storage yard subgrade soils.

Boring No.	Sample No.	Sample Depth (ft. BGS)	Sample Elev. (ft.)	N value	Lab Classification		-#200 sieve (%)
					USCS	AASHTO	
B-103	1D	1 to 3	10.6 to 8.6	30	SM	A-1-b	13
B-104	1D	1 to 3	9.6 to 7.6	29	SM	A-1-b	18
B-105	1D	1 to 3	10.5 to 8.5	54	SM	A-1-b	17
B-106	2D	3 to 4.3	8.2 to 6.9		SM	A-2-4(0)	22
B-107	1D	1 to 3	8.7 to 6.7	9	SW-SM	A-1-b	11

Where N value is the SPT blow count; USCS is Unified Soil Classification System; AASHTO is American Association of State Highway and Transportation Officials; and -#200 sieve is the fines content

Groundwater was observed in test boring B-107 at 4 feet BGS; otherwise groundwater was not observed in the chassis storage yard test borings during drilling. With the exception of B-106, refusal was not encountered in the chassis storage yard test borings. In test boring B-106, auger refusal apparently on a timber was encountered at 4.3 feet BGS.

Detailed descriptions of the soils encountered in the test borings are provided on the logs included in Appendix B.

Groundwater observations were made during the exploration program and are noted on the logs included in Appendix B. Groundwater fluctuations would be expected to vary over time due to a number of factors, most notably tidal, weather, and seasonal fluctuations.

GEOTECHNICAL ENGINEERING EVALUATION AND RECOMMENDATIONS

Analyses were completed and the following recommendations are provided for the design and construction of the following project elements:

Traffic Signal Mast Arm Poles: The foundations for the new mast arm poles should consist of drilled shafts due to space constraints imposed by utilities and ROW. The development of the design charts for the drilled shaft foundations are discussed below and are based upon the subsurface conditions encountered in test boring B-102 that was completed in the general vicinity of the mast arm poles. Special Provisions 626 and 643 included in the project documents provide the geotechnical and structural design, as well as the construction requirements, for the foundations. The designs of the drilled shaft foundations are based upon a 28 degree soil friction angle for the soils encountered in the test boring. The final selection of the diameters and lengths of the drilled shafts will be by the contractor from Charts 1 and 2 in Special Provision 626 based upon the bending moment and torsion at the top of each foundation.

MaineDOT has developed standardized design charts for drilled shaft foundations for traffic signals and highway signage that account for site-specific soil conditions. The geotechnical design charts for drilled shaft foundations provided in Special Provision 626 are based upon Section 13 of the current edition of AASHTO's "Standard Specifications for Structural Supports for Highway Sign, Luminaires and Traffic Signals" and AASHTO Standard Specifications for Highway Bridges, 17th Edition, as well as FHWA-IF-99-025, Drilled Shafts, Construction Procedures and Design Methods. In addition to other design requirements, the geotechnical design accounts for Torsion for which a minimum Factor of Safety equal to 1.2 is achieved. In evaluating axial capacity and torsional resistance in cohesionless soils, the load transfer coefficient or side resistance coefficient (beta, β) was used in accordance with Subsection 13.3.5.1 of FHWA-NHI-10-016, with beta determined in accordance with Equations 13-13 and 13-11 for silty sands to sandy silts (with varying amounts of gravel). IllinoisDOT torsional design methodology was utilized.

Based upon the conditions encountered in test boring B-102, the contractor should be prepared to implement groundwater controls and to use temporary casing to maintain a stable hole for drilled shaft construction.

Concrete Loading Slab: The satisfactory performance of the new concrete loading slab requires, in part, adequate subgrade preparation and an appropriate engineered fill subbase and base section, along with surface water and groundwater controls that will prevent head build up and saturation of the subbase material.

Subgrade should be prepared in accordance with Special Provision 203 included in the project documents. Specifically, all existing vegetation, unsuitable existing fill materials, asphalt, topsoil and other organic or deleterious material should be removed from the loading slab area to expose suitable subgrade soils consisting of inorganic granular soils. The subgrade preparation area for the loading slab should extend outward from the edge of the concrete slab to the limit of the zone of influence. The limit of the zone of influence is defined by a line extending downward and outward at a one horizontal to two vertical (1H:2V) slope from a point two feet outside of the lower outside edge of the slab to the exposed subgrade surface.

Unsuitable subgrade soils should be overexcavated and replaced using granular material that meets the material specifications for Granular Borrow for Underwater Backfill (MaineDOT 703.19). The subgrade soils should be proofrolled using a self-propelled static roller. Loose or yielding areas should also be overexcavated and replaced using Granular Borrow for Underwater Backfill. Fill material should be placed in loose lifts not to exceed 12 inches and compacted to 95 percent of the material's maximum dry density as determined by AASHTO T-180. Special placement and compaction methods may be warranted in wet areas. Crushed stone wrapped in geotextile fabric is typically used to fill depressions in wet areas. Because of the potential for encountering pockets of unsuitable or only marginally suitable materials at the engineered fill subgrade, it is recommended that a qualified geotechnical engineer be on site to observe subgrade preparation activities.

A separation geotextile should be placed over the prepared subgrade prior to placing the overlying engineered fill section. The engineered fill section should consist of 16 inches of Type D subbase material (MaineDOT 703.06.b, Type D) overlain by 8 inches of Type B base material (MaineDOT 703.06.a, Type B). Special Provision 304 provides the placement requirements for the engineered fill section. Specifically, Type D subbase and Type B base material should be placed in loose lifts not to exceed 10 inches and compacted to 95 percent of the material's maximum dry density as determined by AASHTO T-180. The compacted thickness of each lift shall not exceed 8 inches. The surface, compaction, and stability of the engineered fill should be maintained until the overlying concrete slab has been placed and accepted.

Special Provisions 620 and 722 include the requirements for the recommended special separation geotextile. Selection of the material properties for the special separation geotextile is discussed in the following section.

Given implementation of the subgrade preparation and engineered fill requirements described above and the provision of adequate surface water and groundwater controls to prevent head build up and saturation of the subbase material, a modulus of subgrade reaction equal to 150 pounds per cubic inch (for a 1-foot square plate) may be used for the structural design of the concrete slab.

Chassis Storage Yard: The design of the chassis storage yard calls for 4 inches of crushed stone surface material underlain by 20 inches of Type D subbase material (MaineDOT 703.06.b, Type D). Stormwater management for the chassis storage yard relies primarily on infiltration of incident precipitation through the fill section and into the subgrade soils. Grading and structural measures to collect and convey excess stormwater to the City of Portland's stormwater sewer system is provided to manage stormwater after major storm events and spring thaw if necessary.

Composite samples of the near surface soils from each of the five test borings completed in the Chassis Storage Yard were submitted for gradation testing. Using correlations presented by Freeze and Cherry, a typical hydraulic conductivity of the subgrade soils was estimated to be on the order of 5×10^{-4} cm/sec. Likewise, an average hydraulic conductivity of Type D subbase material with 4 to 7 percent fines was estimated to be on the order of 3×10^{-3} cm/sec.

A separation geotextile should be placed between the prepared subgrade soils and overlying Type D subbase material. The separation geotextile was sized to provide adequate permittivity (cross-plane permeability) and filtration. The filtration criterion was evaluated for the condition of infiltration of stormwater through Type D subbase material into the underlying subgrade soils. A geotextile having an apparent opening size no larger than 0.18 mm (#80 U.S. standard sieve) is recommended. The permittivity criterion was evaluated such that infiltration of stormwater is not impeded by the geotextile. A geotextile having a measured permittivity of 1.4/sec is recommended. Given the heavy point loads that are anticipated in the chassis storage yard, the special separation geotextile should be a relatively thick (8-ounce) nonwoven material. Special Provisions 620 and 722 include the requirements for the recommended special separation geotextile.

Strip drains placed on top of the special separation geotextile at the subgrade-subbase interface are recommended at select locations to enhance the performance of the chassis storage yard during periods after major storm events and spring thaw. Strip drains are prefabricated soil drains that consist of a high flow capacity drainage core fully wrapped in a nonwoven geotextile filter fabric to provide a three dimensional structure to collect water through the filter fabric surface and for water flow along the length of the composite assembly. The recommended strip drain locations were selected to collect convergent flow when the subgrade infiltration rate is insufficient, but not to impede infiltration during normal precipitation scenarios. A limited number of collector underdrains are necessary to collect and discharge the flow from the strip drains to the site stormwater management system. The recommended strip drains are 3-feet wide (approximately 1 inch thick) and have a high compressive strength due to the high point loads that are anticipated in the chassis storage yard. Special Provisions 620 and 722 include the requirements for the recommended strip drains and the locations of the strip drains are depicted on the project plans. The project plans should include a detail showing the strip drains outlet into a stone-filled underdrain trench. Provisions should be made for the underdrains to discharge into stormwater manhole structures.

Subgrade preparation and fill placement in the chassis storage yard should be similar to the concrete loading slab. The requirements for subgrade preparation and fill placement are set forth in Special Provisions 203 and 304 that are included in the project documents.

SchonewaldEA appreciates the opportunity to assist HNTB and MaineDOT on the International Marine Terminal expansion project. If you have any questions regarding the findings described or recommendations provided in this report, please call me at your convenience.

Sincerely,
Schonewald Engineering Associates, Inc.

STATE OF MAINE
ISABEL V. SCHONEWALD
No. 7628
LICENSED
PROFESSIONAL ENGINEER

6/27/14

Isabel V. Schonewald, P.E.
President

Attachments:	Figure 1:	Site and Exploration Location Plan
	Appendix A:	Limitations
	Appendix B:	Subsurface Exploration Logs
	Appendix C:	Laboratory Test Results

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FIGURE

SITE AND EXPLORATION LOCATION PLAN

PLAN NOTES

1. BASE PLAN WAS DEVELOPED FROM A PLAN ENTITLED "PORTLAND INTERNATIONAL MARINE TERMINAL, EXISTING LAYDOWN AND CONNECTING CORRIDOR CONNECTION, PORTLAND, CUMBERLAND COUNTY, BORING LOGS, SHEET NUMBER: C04, 7 OF 113" PREPARED BY HNTB CORPORATION AND DATED 6/2014. ORIGINAL SCALE 1"=150'.

2. THE AS-DRILLED LOCATIONS AND GROUND SURFACE ELEVATIONS OF THE TEST BORINGS WERE DETERMINED IN THE FIELD BY OWEN HASKELL, INC. OF FALMOUTH, MAINE USING OPTICAL SURVEY METHODS AND ARE DEPICTED ON THE PROJECT PLANS.

3. TEST BORINGS WERE COMPLETED BY MAINE TEST BORINGS OF HERMON, MAINE ON MAY 2, 2014 AND WERE OBSERVED AND LOGGED BY SchonewaldEA. DETAILED DESCRIPTIONS OF THE MATERIALS ENCOUNTERED ARE PROVIDED ON THE BORING LOGS.

PLAN LEGEND

B-101
EL 17.6'

TEST BORING
BORING NUMBER
GROUND SURFACE ELEV.

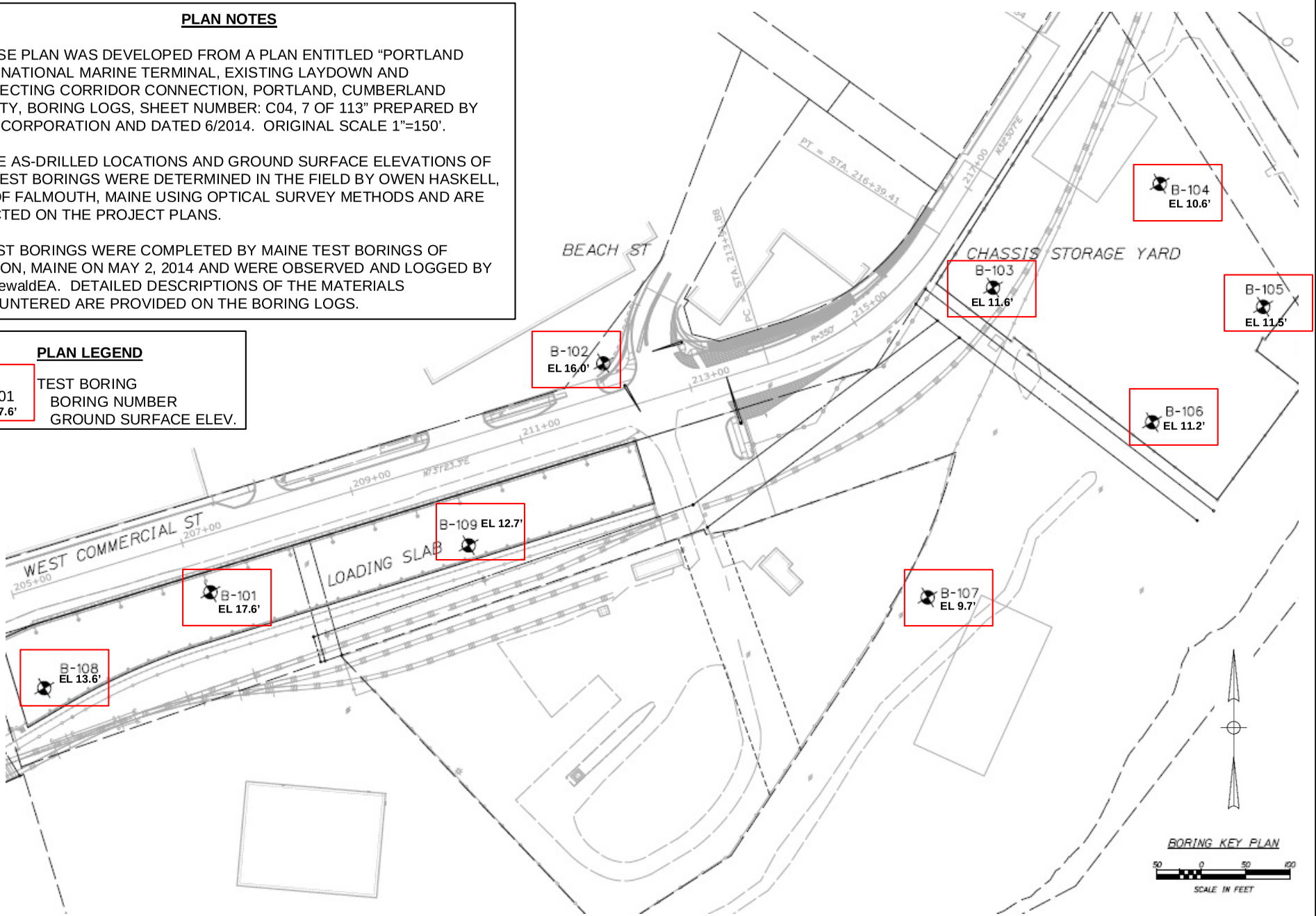

Figure No.: 3

SITE AND EXPLORATION LOCATION PLAN
INTERNATIONAL MARINE TERMINAL
MAINE DOT WIN 22809.20
PORTLAND, MAINE

PROJECT NO.:	14-009
DATE:	JUNE 2014
DRAWN BY:	IVS
SCALE:	1 IN. = 150 FT.

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APPENDIX A

LIMITATIONS

LIMITATIONS

Explorations

The analyses and recommendations submitted in this report are based in part upon the data obtained from subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the boring logs.

Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors occurring since the time the measurements were made.

Review

In the event that any changes in the nature, design, or location of the proposed construction are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by SchonewaldEA. It is recommended that this firm be provided the opportunity for a general review of final design and specifications in order that geotechnical design and construction recommendations may be properly interpreted and implemented in the design and specifications.

Construction

It is recommended that this firm be retained to provide geotechnical engineering support services during construction of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

Use of Report

This geotechnical engineering report has been prepared for this project by SchonewaldEA. This report is for design purposes only and is not sufficient to prepare an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to design considerations only.

This report has been prepared for this project by SchonewaldEA for the exclusive use of the HNTB Corporation for specific application to MaineDOT's Portland International Marine Terminal, Existing Laydown and Connecting Corridor Connection Project located in Portland, Maine (MaineDOT WIN 22809.20) in accordance with generally accepted soil and foundation engineering practices. No Warranty, express or implied, is made.

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APPENDIX B

SUBSURFACE EXPLORATION LOGS

SCHONEWALD ENGINEERING ASSOCIATES, INC.	**PROJECT:** Maine Department of Transportation Intl Marine Terminal Expansion **LOCATION:** Portland, Maine	**Boring No.:** B-101 **WIN:** 22809.20

Driller:	Maine Test Borings	**Elevation (ft.)**	17.6	**Auger ID/OD:**	3"ID/6"OD (approx.)
Operator:	Porter/ Nason	**Datum:**	NGVD 1929	**Sampler:**	standard split-spoon
Logged By:	Schonewald	**Rig Type:**	Mobile B-47	**Hammer Wt./Fall:**	140 lbs / 30 inches (safety)
Date Start/Finish:	5/2/14; 0800 - 5/2/14; 0910	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	loading slab - see geoplan	**Casing ID/OD:**		**Water Level*:**	11.0 ft. (in augers)

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOC = weight of casing
WOH = weight of 140lb. hammer
WOR = weight of rods

Definitions:
-- = not recorded
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = water content, percent
G = grain size analysis

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0									grass surface	
5	1D	24/20	5.5 - 7.5	4-6-3-3	9				1D: Moist, black-brown, f. SAND, some Silt, trace c. Sand; FILL. Changing at 6.7 ft to 1D-A: grayish-brown, moist, f. Sandy SILT.	1D-A SM A-4(0) 50% -#200
	2D	24/20	8.0 - 10.0	1-1/12"-3	1				2D: V. loose, moist, mixture of reddish-brown, Silty f. SAND, trace m-c Sand and gray, Clayey SILT, some f. Sand; APPEARS DISTURBED.	
10	3D	24/18	10.0 - 12.0	2-3-5-8	8				3D: Loose, moist, gray, f. Sandy SILT w/ pockets and seams of reddish-brown, Silty f. SAND.	
	4D	24/12	12.0 - 14.0	1-3-9-9	12				4D: M. dense, wet, gray, slightly mottled, alternating layers of SILT, some f. Sand and f. SAND, trace to little Silt.	
							3.6		14.0 **Bottom of Exploration at 14.0 feet below ground surface.** No refusal encountered.	
15										
20										
25										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.	**PROJECT:** Maine Department of Transportation Intl Marine Terminal Expansion **LOCATION:** Portland, Maine	**Boring No.:** B-102 **WIN:** 22809.20

Driller:	Maine Test Borings	**Elevation (ft.)**	16.0	**Auger ID/OD:**	3"ID/6"OD (approx.)
Operator:	Porter/ Nason	**Datum:**	NGVD 1929	**Sampler:**	standard split-spoon
Logged By:	Schonewald	**Rig Type:**	Mobile B-47	**Hammer Wt./Fall:**	140 lbs / 30 inches (safety)
Date Start/Finish:	5/2/14; 0925 - 5/2/14; 1200	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	intersection - see geoplan	**Casing ID/OD:**		**Water Level*:**	8 ft. (in augers)

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOC = weight of casing
WOH = weight of 140lb. hammer
WOR = weight of rods

Definitions:
-- = not recorded
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = water content, percent
G = grain size analysis

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0									4" asphalt pavement	
5	1D	24/19	5.0 - 7.0	7-10-9-8	19				1D: M. dense, damp, gray, f. SAND, trace Silt, trace m. Sand.	
10	2D	24/22	10.0 - 12.0	6-10-11-16	21				2D: M. dense, wet, brownish-gray, slightly mottled, f. SAND, trace Silt.	
									Few gravelly layers from approximately 13 to 14 feet.	
15	3D	24/15	15.0 - 17.0	11-8-13-13	21				3D: M. dense, wet, grayish-brown, f. SAND, trace to little Silt. Running sands encountered.	
							-2.5		18.5	
20	4D	24/24	20.0 - 22.0	1/12"-2-3	2				4D: Soft, wet, dark gray, Silty CLAY, trace f. Sand.	
25							-8.5		24.5	

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.	**PROJECT:** Maine Department of Transportation Intl Marine Terminal Expansion **LOCATION:** Portland, Maine	**Boring No.:** B-102 **WIN:** 22809.20

Driller:	Maine Test Borings	**Elevation (ft.)**	16.0	**Auger ID/OD:**	3"ID/6"OD (approx.)
Operator:	Porter/ Nason	**Datum:**	NGVD 1929	**Sampler:**	standard split-spoon
Logged By:	Schonewald	**Rig Type:**	Mobile B-47	**Hammer Wt./Fall:**	140 lbs / 30 inches (safety)
Date Start/Finish:	5/2/14; 0925 - 5/2/14; 1200	**Drilling Method:**	HSA	**Core Barrel:**	
Boring Location:	intersection - see geoplan	**Casing ID/OD:**		**Water Level*:**	8 ft. (in augers)

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
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WOC = weight of casing
WOH = weight of 140lb. hammer
WOR = weight of rods

Definitions:
-- = not recorded
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = water content, percent
G = grain size analysis

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
25	5D	24/20	25.0 - 27.0	1-2-3-12	5				Driller notes sand layers within silt-clay. 5D: M. stiff, wet, dark gray, Silty CLAY w/ multiple partings of f. Sand and one 2-inch seam f. Sand at 26.4 ft.	
							-10.6		26.6 Possible change at 26.6 ft. to organic f. Sandy SILT.	
							-13.2		29.2 Drilling behavior suggests gravel seams.	
30	6D	20/13	30.5 - 32.2	11-18-23-50/4"	41				6D: Dense, wet brown, f-m SAND, trace Silt, trace c. Sand; changing at 31.7 ft to brown, f-c Sandy GRAVEL, trace Silt.	
							-16.2		32.2 **Bottom of Exploration at 32.2 feet below ground surface.** Split-spoon refusal.	
35										
40										
45										
50										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.	**PROJECT:** Maine Department of Transportation Intl Marine Terminal Expansion **LOCATION:** Portland, Maine	**Boring No.:** B-103 **WIN:** 22809.20

Driller:	Maine Test Borings	**Elevation (ft.)**	11.6	**Auger ID/OD:**	3-1/2"OD (approx.)
Operator:	Porter/ Nason	**Datum:**	NGVD 1929	**Sampler:**	standard split-spoon
Logged By:	Schonewald	**Rig Type:**	Mobile B-47	**Hammer Wt./Fall:**	140 lbs / 30 inches (safety)
Date Start/Finish:	5/2/14; 1230 - 5/2/14; 1250	**Drilling Method:**	SSA	**Core Barrel:**	
Boring Location:	storage pad - see geoplan	**Casing ID/OD:**		**Water Level*:**	none observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOC = weight of casing
WOH = weight of 140lb. hammer
WOR = weight of rods

Definitions:
-- = not recorded
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = water content, percent
G = grain size analysis

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0									gravel surface	
	1D	24/11	1.0 - 3.0	12-14-16-15	30				1D: Dense, damp, dark reddish-brown, f-m SAND, little to some Silt, trace to little Gravel, trace c. Sand; URBAN FILL.	1D SM A-1-b 13% -#200
	2D	24/15	3.0 - 5.0	9-11-9-7	20				2D: M. dense, damp, reddish-brown f-m SAND, trace to little Silt, trace c. Sand, trace Gravel; URBAN FILL.	
5	3D	24/14	5.0 - 7.0	5-4-5-4	9				3D: Loose, damp, reddish-brown f-m SAND, trace to little Silt, trace c. Sand, trace Gravel; URBAN FILL. Tip of spoon wet.	
							4.6		7.0 **Bottom of Exploration at 7.0 feet below ground surface.** No refusal encountered.	
10										
15										
20										
25										

Remarks:

Distinct layering observed in split-spoon samples; descriptions are of composited samples.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.	**PROJECT:** Maine Department of Transportation Intl Marine Terminal Expansion **LOCATION:** Portland, Maine	**Boring No.:** B-104 **WIN:** 22809.20

Driller:	Maine Test Borings	**Elevation (ft.)**	10.6	**Auger ID/OD:**	3-1/2"OD (approx.)
Operator:	Porter/ Nason	**Datum:**	NGVD 1929	**Sampler:**	standard split-spoon
Logged By:	Schonewald	**Rig Type:**	Mobile B-47	**Hammer Wt./Fall:**	140 lbs / 30 inches (safety)
Date Start/Finish:	5/2/14; 1255 - 5/2/14; 1315	**Drilling Method:**	SSA	**Core Barrel:**	
Boring Location:	storage pad - see geoplan	**Casing ID/OD:**		**Water Level*:**	none observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOC = weight of casing
WOH = weight of 140lb. hammer
WOR = weight of rods

Definitions:
-- = not recorded
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = water content, percent
G = grain size analysis

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0									gravel surface	
	1D	24/18	1.0 - 3.0	9-17-12-14	29				1D: M. dense, damp, dark reddish-brown, f-m SAND, little to some Silt, little Gravel, trace c. Sand; URBAN FILL (w/ ash and coal).	1D SM A-1-b 18% -#200
	2D	24/13	3.0 - 5.0	6-8-10-14	18				2D: M. dense, damp, brown, f-m SAND, trace to little Silt, trace c. Sand. trace Gravel; URBAN FILL (w/ ash and coal).	
5	3D	24/14	5.0 - 7.0	9-8-5-3	13				3D: M. dense, damp, brown, f-m SAND, trace to little Silt, trace c. Sand, trace Gravel; URBAN FILL (w/ ash and coal).	
							3.6		7.0 **Bottom of Exploration at 7.0 feet below ground surface.** No refusal encountered.	
10										
15										
20										
25										

Remarks:

Distinct layering observed in split-spoon samples; descriptions are of composited samples.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.	**PROJECT:** Maine Department of Transportation Intl Marine Terminal Expansion **LOCATION:** Portland, Maine	**Boring No.:** B-105 **WIN:** 22809.20

Driller:	Maine Test Borings	**Elevation (ft.)**	11.5	**Auger ID/OD:**	3-1/2"OD (approx.)
Operator:	Porter/ Nason	**Datum:**	NGVD 1929	**Sampler:**	standard split-spoon
Logged By:	Schonewald	**Rig Type:**	Mobile B-47	**Hammer Wt./Fall:**	140 lbs / 30 inches (safety)
Date Start/Finish:	5/2/14; 1320 - 5/2/14; 1340	**Drilling Method:**	SSA	**Core Barrel:**	
Boring Location:	storage pad - see geoplan	**Casing ID/OD:**		**Water Level*:**	none observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOC = weight of casing
WOH = weight of 140lb. hammer
WOR = weight of rods

Definitions:
-- = not recorded
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = water content, percent
G = grain size analysis

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0									gravel surface	
	1D	24/24	1.0 - 3.0	18-31-23-25	54				1D: V. dense, moist, dark brown w/ light gray, f-m Sandy GRAVEL, little Silt, trace c. Sand; gravel includes pieces of concrete and brick; URBAN FILL.	1D SM A-1-b 17% -#200
	2D	24/0	3.0 - 5.0	18-15-15-17	30				2D: No recovery	
5	3D	24/22	5.0 - 7.0	7-5-4-7	9				3D: Loose, moist, black-tan-reddish brown, f-m SAND, trace to little Silt; URBAN FILL (w/ ash and coal).	
							4.5		7.0 **Bottom of Exploration at 7.0 feet below ground surface.** No refusal encountered.	
10										
15										
20										
25										

Remarks:

Distinct layering observed in split-spoon samples; descriptions are of composited samples.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.	**PROJECT:** Maine Department of Transportation Intl Marine Terminal Expansion **LOCATION:** Portland, Maine	**Boring No.:** B-106 **WIN:** 22809.20

Driller:	Maine Test Borings	**Elevation (ft.)**	11.2	**Auger ID/OD:**	3-1/2"OD (approx.)
Operator:	Porter/ Nason	**Datum:**	NGVD 1929	**Sampler:**	standard split-spoon
Logged By:	Schonewald	**Rig Type:**	Mobile B-47	**Hammer Wt./Fall:**	140 lbs / 30 inches (safety)
Date Start/Finish:	5/2/14; 1350 - 5/2/14; 1415	**Drilling Method:**	SSA	**Core Barrel:**	
Boring Location:	storage pad - see geoplan	**Casing ID/OD:**		**Water Level*:**	none observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOC = weight of casing
WOH = weight of 140lb. hammer
WOR = weight of rods

Definitions:
-- = not recorded
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = water content, percent
G = grain size analysis

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0									gravel surface	
	1D	24/15	1.0 - 3.0	7-8-6-7	14				1D: M. dense, damp, black, coal (Gravelly f-c SAND, trace Silt); URBAN FILL.	
	2D	16/8	3.0 - 4.3	4-4-50/4"					2D: Damp, tan-reddish brown-black, f-c SAND, some Silt, trace Gravel; URBAN FILL (w/ ash and coal).	2D SM A-2-4(0) 22% -#200
							6.7		4.5	
5									**Bottom of Exploration at 4.5 feet below ground surface.** Auger refusal on wood.	
10										
15										
20										
25										

Remarks:

Distinct layering observed in split-spoon samples; descriptions are of composited samples.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.	**PROJECT:** Maine Department of Transportation Intl Marine Terminal Expansion **LOCATION:** Portland, Maine	**Boring No.:** B-107 **WIN:** 22809.20

Driller:	Maine Test Borings	**Elevation (ft.)**	9.7	**Auger ID/OD:**	3-1/2"OD (approx.)
Operator:	Porter/ Nason	**Datum:**	NGVD 1929	**Sampler:**	standard split-spoon
Logged By:	Schonewald	**Rig Type:**	Mobile B-47	**Hammer Wt./Fall:**	140 lbs / 30 inches (safety)
Date Start/Finish:	5/2/14; 1420 - 5/2/14; 1435	**Drilling Method:**	SSA	**Core Barrel:**	
Boring Location:	storage pad - see geoplan	**Casing ID/OD:**		**Water Level*:**	4 ft (open hole)

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOC = weight of casing
WOH = weight of 140lb. hammer
WOR = weight of rods

Definitions:
-- = not recorded
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = water content, percent
G = grain size analysis

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0									gravel surface	
	1D	24/19	1.0 - 3.0	5-6-3-4	9				1D: [COMPOSITE SAMPLE] Loose, dry, black-reddish brown, f-m SAND, little to some Silt, trace to little Gravel, trace c. Sand; URBAN FILL (w/ coal and ash).	1D SW-SM A-1-b 11% -#200
	2D	24/22	3.0 - 5.0	1-1-1-1	2				2D: V. loose, wet, brown, f-c SAND, trace Silt; FILL.	
5							4.7		5.0 **Bottom of Exploration at 5.0 feet below ground surface.** No refusal encountered.	
10										
15										
20										
25										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.	**PROJECT:** Maine Department of Transportation Intl Marine Terminal Expansion **LOCATION:** Portland, Maine	**Boring No.:** B-108 **WIN:** 22809.20

Driller:	Maine Test Borings	**Elevation (ft.)**	13.6	**Auger ID/OD:**	3-1/2"OD (approx.)
Operator:	Porter/ Nason	**Datum:**	NGVD 1929	**Sampler:**	standard split-spoon
Logged By:	Schonewald	**Rig Type:**	Mobile B-47	**Hammer Wt./Fall:**	140 lbs / 30 inches (safety)
Date Start/Finish:	5/2/14; 1450 - 5/2/14; 1505	**Drilling Method:**	SSA	**Core Barrel:**	
Boring Location:	loading slab - see geoplan	**Casing ID/OD:**		**Water Level*:**	none observed

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOC = weight of casing
WOH = weight of 140lb. hammer
WOR = weight of rods

Definitions:
-- = not recorded
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = water content, percent
G = grain size analysis

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0									gravel surface	
	1D	24/21	1.0 - 3.0	6-6-6-5	12				1D: Damp, dark brown, f. SAND, little Silt; FILL; changing at 1.9 ft. to 1D-A: brownish gray, mottled, f. Sandy SILT, trace m-c Sand; FILL.	
	2D	24/20	3.0 - 5.0	2-2-3-4	5				2D: Loose, damp, olive gray, mottled, f. Sandy SILT.	2D ML A-4(0) 56% -#200
5	3D	24/20	5.0 - 7.0	1-3-2-4	5				3D: Loose, damp, brownish gray, mottled, f. Sandy SILT, w/ one 2-inch seam f-m SAND, trace to little Silt.	
							6.6		7.0 **Bottom of Exploration at 7.0 feet below ground surface.** No refusal encountered.	
10										
15										
20										
25										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.	**PROJECT:** Maine Department of Transportation Intl Marine Terminal Expansion **LOCATION:** Portland, Maine	**Boring No.:** B-109 **WIN:** 22809.20

Driller:	Maine Test Borings	**Elevation (ft.)**	12.7	**Auger ID/OD:**	3-1/2"OD (approx.)
Operator:	Porter/ Nason	**Datum:**	NGVD 1929	**Sampler:**	standard split-spoon
Logged By:	Schonewald	**Rig Type:**	Mobile B-47	**Hammer Wt./Fall:**	140 lbs / 30 inches (safety)
Date Start/Finish:	5/2/14; 1510 - 5/2/14; 1530	**Drilling Method:**	SSA	**Core Barrel:**	
Boring Location:	loading slab - see geoplan	**Casing ID/OD:**		**Water Level*:**	3.2 ft (open hole)

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

Definitions:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOC = weight of casing
WOH = weight of 140lb. hammer
WOR = weight of rods

Definitions:
-- = not recorded
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
WC = water content, percent
G = grain size analysis

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0									gravel surface	
	1D	24/19	3.0 - 5.0	6-5-3-2	8				1D: [COMPOSITE SAMPLE] Loose, damp, reddish brown, f-c SAND, little to some Silt, trace Gravel; FILL. Gray Silty CLAY in tip of spoon.	1D SW-SM A-1-b 9% -#200
5	2D	24/15	5.0 - 7.0	3-5-12-22	17				Wet, gray, Silty CLAY, changing at 6.0 ft to 2D: grayish-brown, wet, Gravelly f-c SAND, trace to little Silt.	
							5.7		7.0 **Bottom of Exploration at 7.0 feet below ground surface.** No refusal encountered.	
10										
15										
20										
25										

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.
129 Middle Road
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LEGEND TO FIELD DESCRIPTIONS OF SOIL AND ROCK

Coarse-Grained Soils (Greater than 50% of material is larger than the #200 U.S. Std. Sieve)

Description:

Based on relative proportions of grain sizes.

Major component: Soil type is based on grain size of the component of the soil that comprises 50% or more of the sample by weight.

Major component identified by all capital letters (GRAVEL, SAND)

Minor components: Relative proportions by weight identified by the following:

TERM	% OF SAMPLE BY WEIGHT
---y	36-50
some	21-35
little	11-20
trace	0-10

Component grain size:

NAME	GRAIN SIZE (U.S. STD. SIEVE)
fine SAND	>No. 200 thru No. 40
medium SAND	>No. 40 thru No. 10
coarse SAND	>No. 10 thru No. 4
fine GRAVEL	>No. 4 thru 3/4-inch
coarse GRAVEL	>3/4-inch thru 3-inch
COBBLES	>3-inch thru 6-inch
BOULDERS	> 6-inch

Expanded descriptions for samples of Sand and Gravel:

TERM	% OF SAMPLE BY WEIGHT
fine	predominantly fine; <10% medium or coarse
medium	predominantly medium; <10% fine or coarse
fine to medium	< 10% coarse
medium to coarse	<10% fine
fine to coarse	all greater than 10%

Relative Density:

Based on N-values from Standard Penetration Test (SPT). SPT consists of driving a standard split-spoon sampler 18 or 24 inches with a 140-pound weight falling 30 inches. N-value is the sum of the blows required to drive the split-spoon sampler from 6 inches to 18 inches within the SPT interval.

SPT N-value	RELATIVE DENSITY
0-4	Very loose
5-10	Loose
11-30	Medium dense
31-50	Dense
>50	Very dense

Fine-Grained Soils (Greater than 50% of material is smaller than the #200 U.S. Std. Sieve (individual grains not visible by eye))

Description:

Based on plasticity, as determined in the field by rolling threads.

TERM	THREAD DIAMETER*
SILT	unable to roll thread (non-plastic)
Clayey SILT	can roll 1/4-inch thread
SILT & CLAY	can roll 1/8-inch thread
CLAY & SILT	can roll 1/16-inch thread
Silty CLAY	can roll 1/32-inch thread
CLAY	can roll 1/64-inch thread

* at approximately natural moisture content

Consistency

Based on N-values from Standard Penetration Test (SPT). (See above for description of SPT and N-value.)

SPT N-value	CONSISTENCY
<2	Very soft
2-4	Soft
5-8	Medium stiff
9-15	Stiff
16-30	Very stiff
>30	Hard

SCHONEWALD ENGINEERING ASSOCIATES, INC.
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LEGEND TO FIELD DESCRIPTIONS OF SOIL AND ROCK

Additional Soil Descriptors:

Organic Soil:

Based on relative proportions of grain sizes and description of organic component.

Examples: fibrous PEAT, Organic SILT

Peat is partially decomposed organic matter.

Moisture Content:

TERM	DESCRIPTION
dry	no moisture apparent, dusty, dry to the touch
moist	damp, but no visible free water
wet	visible free water

Soil Structure:

TERM	DESCRIPTION
layer	3 to 12 inches thick
seam	1/8-inch to 3 inches thick
parting or lens	< 1/8-inch thick
pocket	feature that is not continuous across sample

Frequency descriptors:

TERM	DESCRIPTION
few	widely spaced throughout sample
occasional	moderately spaced throughout sample
numerous	closely spaced throughout sample

Rock Core:

Description:

General description includes, in the following order: color, texture (grain size), field hardness, weathering, ROCK TYPE; notable features or mineralogy related to rock. Discontinuity description or massive if no observed discontinuities. FORMATION

Discontinuity description includes, in the following order: spacing, dip angle, shape, roughness, weathering of discontinuities, aperture, infilling, discontinuity type; notable features or mineralogy related to discontinuities.

SPACING

TERM	DESCRIPTION
Extremely close	less than 3/4 inch
Very close	3/4 inches to 2-1/2 inches
Close	2-1/2 inches to 8 inches
Moderate	8 inches to 24 inches
Wide	24 inches to 80 inches

DIP ANGLE

TERM	DESCRIPTION
Horizontal	0 to 5 degrees
Low angle	5 to 35 degrees
Moderately dipping	35 to 55 degrees
High angle	55 to 85 degrees
Vertical	85 to 90 degrees

SHAPE

planar, undulating, stepped

ROUGHNESS

rough, smooth, slickensided

WEATHERING OF DISCONTINUITIES

fresh, discolored (stained), decomposed, disintegrated

APERTURE

closed or tight (< 0.004 to 0.02 inches); gapped or open (0.02 to 0.4 inches); healed

INFILLING

silt, clay, sand, calcite

DISCONTINUITY TYPE

bedding, foliation, joint, shear, fault, shear or fault zone

Recovery:

% REC = (total length of recovered core / length of core run) * 100

Rock Quality Designation:

$$\% \text{ RQD} = \frac{\text{sum of the lengths of intact, full-diameter core greater than or equal to 4 inches long}}{\text{length of core run}} * 100$$

Related to rock mass quality as follows:

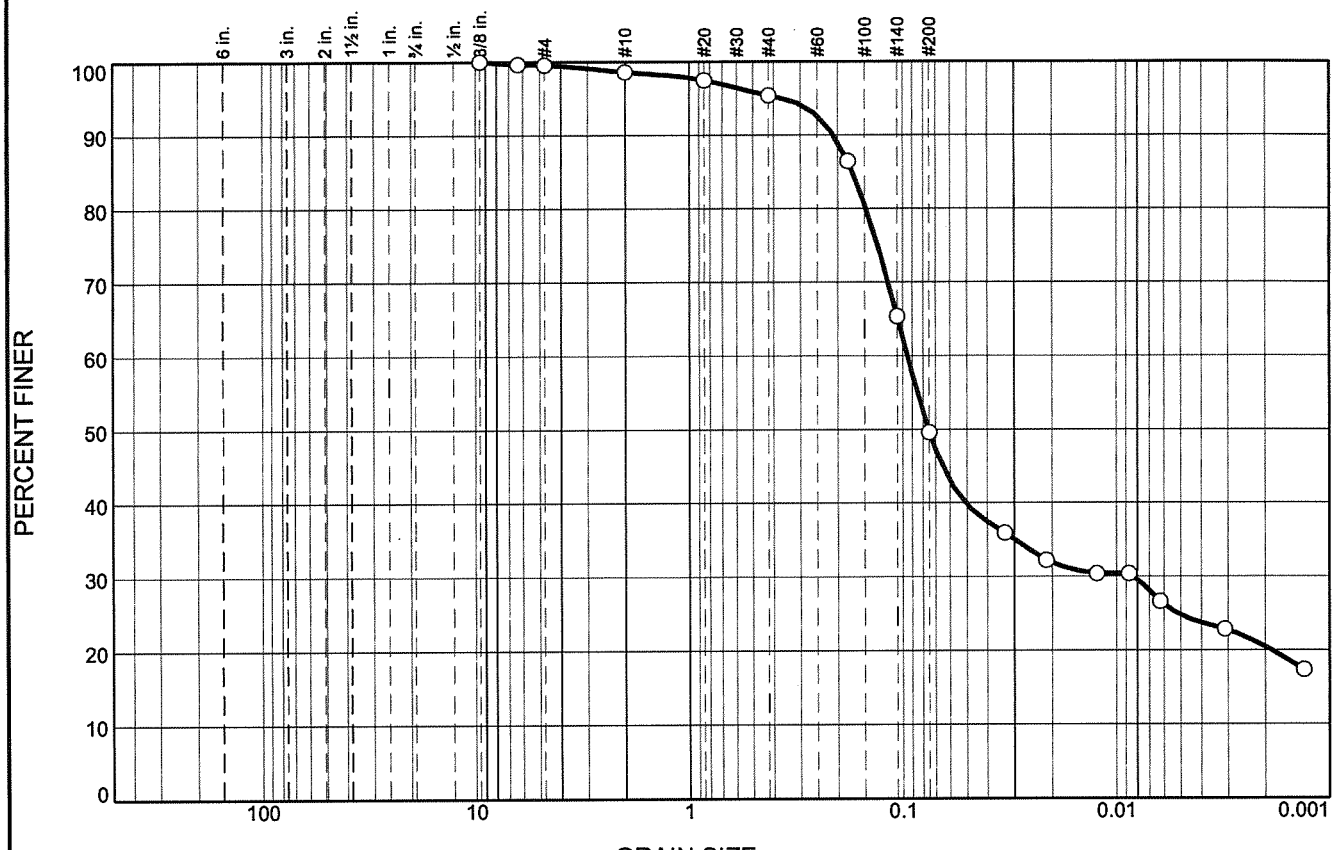
ROCK MASS QUALITY	% RQD
Very poor	< 25%
Poor	26% to 50%
Fair	51% to 75%
Good	76% to 90%
Excellent	91% to 100%

SCHONEWALD
ENGINEERING
ASSOCIATES, INC.

APPENDIX C

LABORATORY TEST RESULTS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	0.9	3.2	45.8	24.9	24.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
1/4"	99.6		
#4	99.5		
#10	98.6		
#20	97.5		
#40	95.4		
#80	86.4		
#140	65.4		
#200	49.6		
0.0332 mm.	36.0		
0.0213 mm.	32.2		
0.0123 mm.	30.4		
0.0087 mm.	30.4		
0.0063 mm.	26.6		
0.0031 mm.	22.9		
0.0013 mm.	17.4		

* (no specification provided)

Soil Description

silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.1713 D_{60}= 0.0949 D_{50}= 0.0758
D_{30}= 0.0083 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM AASHTO= A-4(0)

Remarks

Moisture Content: 20.0%

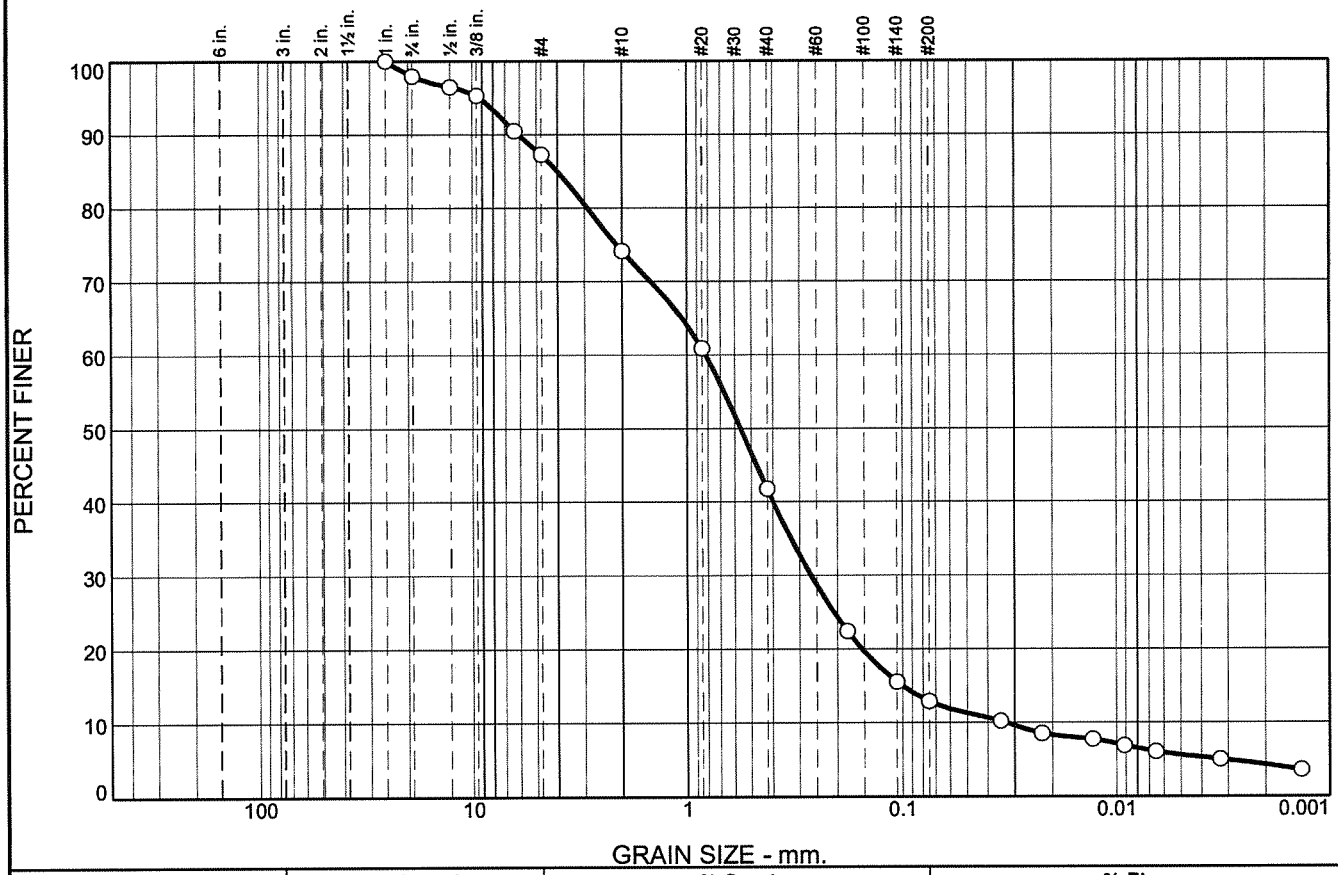
Sample No.: 1D-A **Source of Sample:** #14-009 (IMT - Ptld) **Date:** 5/8/2014
Location: B-101 **Elev./Depth:** 6.7'-7.5'

R.W. Gillespie & Associates, Inc.
Saco, Maine

Client: Schonewald Engineering Associates, Inc.
Project: Miscellaneous Testing
Project No: 1368-001 **Lab No.** 13174a

Tested By: DCH/SAP **Checked By:** JMB JMB

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.1	10.6	13.2	32.3	28.9	7.3	5.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	97.9		
1/2"	96.4		
3/8"	95.3		
1/4"	90.5		
#4	87.3		
#10	74.1		
#20	60.9		
#40	41.8		
#80	22.4		
#140	15.5		
#200	12.9		
0.0348 mm.	10.2		
0.0223 mm.	8.5		
0.0129 mm.	7.7		
0.0092 mm.	6.9		
0.0065 mm.	6.1		
0.0033 mm.	5.0		
0.0014 mm.	3.6		

* (no specification provided)

Soil Description

silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 4.0002 D_{60}= 0.8166 D_{50}= 0.5635
D_{30}= 0.2658 D_{15}= 0.1001 D_{10}= 0.0329
C_u= 24.80 C_c= 2.63

Classification

USCS= SM AASHTO= A-1-b

Remarks

Moisture Content: 8.7%

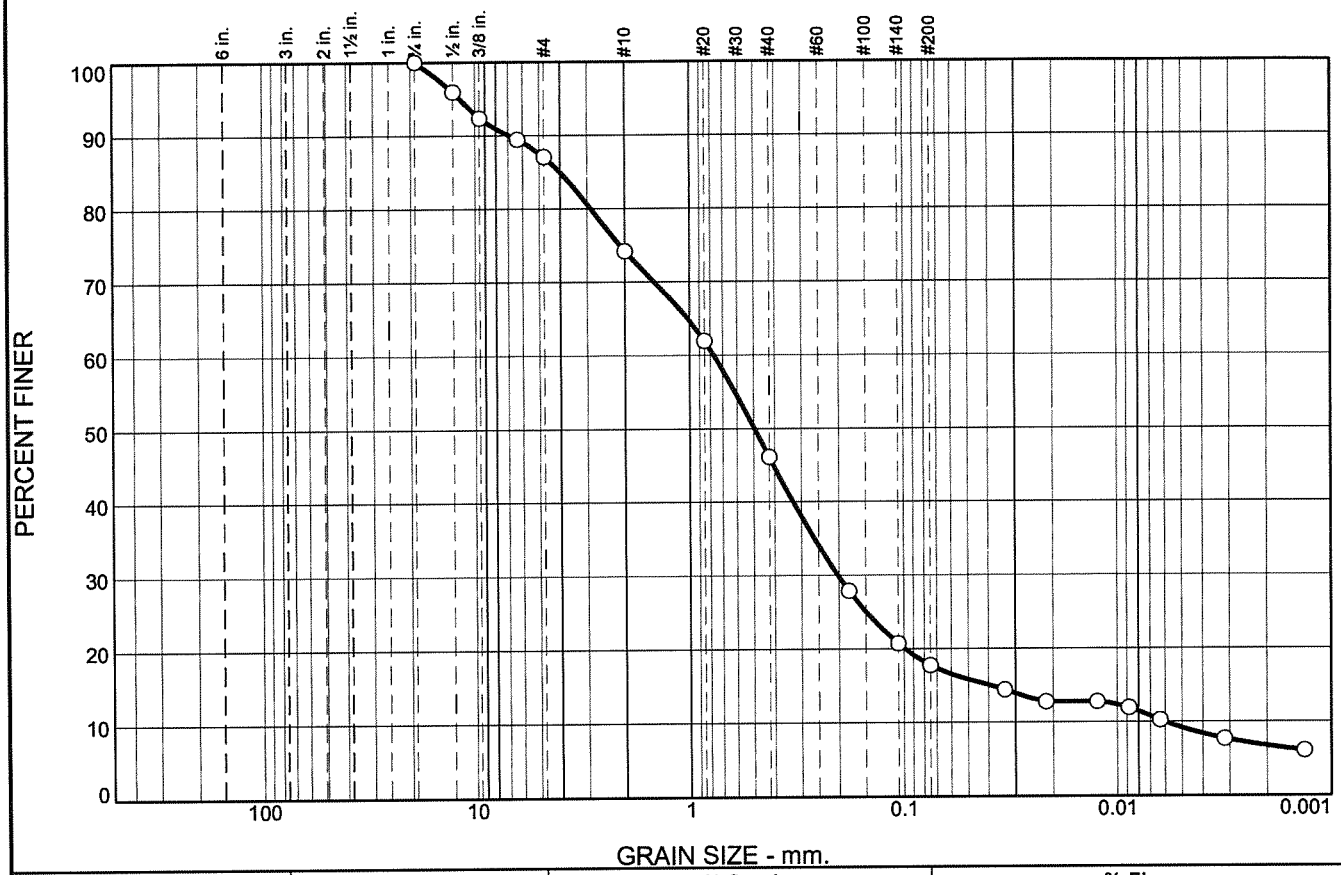
Sample No.: 1D **Source of Sample:** #14-009 (IMT - Ptld) **Date:** 5/8/2014
Location: B-103 **Elev./Depth:** 1'-3'

R.W. Gillespie & Associates, Inc.
Saco, Maine

Client: Schonewald Engineering Associates, Inc.
Project: Miscellaneous Testing
Project No: 1368-001 **Lab No.** 13174b

Tested By: DCH/SAP **Checked By:** JMB JMB

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	12.9	12.9	28.1	28.3	8.6	9.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	95.9		
3/8"	92.3		
1/4"	89.4		
#4	87.1		
#10	74.2		
#20	62.0		
#40	46.1		
#80	27.9		
#140	20.7		
#200	17.8		
0.0336 mm.	14.4		
0.0215 mm.	12.8		
0.0124 mm.	12.8		
0.0088 mm.	11.9		
0.0063 mm.	10.3		
0.0032 mm.	7.7		
0.0013 mm.	6.1		

* (no specification provided)

Soil Description

silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 4.0044 D_{60}= 0.7693 D_{50}= 0.4982
D_{30}= 0.2030 D_{15}= 0.0392 D_{10}= 0.0060
C_u= 128.29 C_c= 8.93

Classification

USCS= SM AASHTO= A-1-b

Remarks

Moisture Content: 9.1%

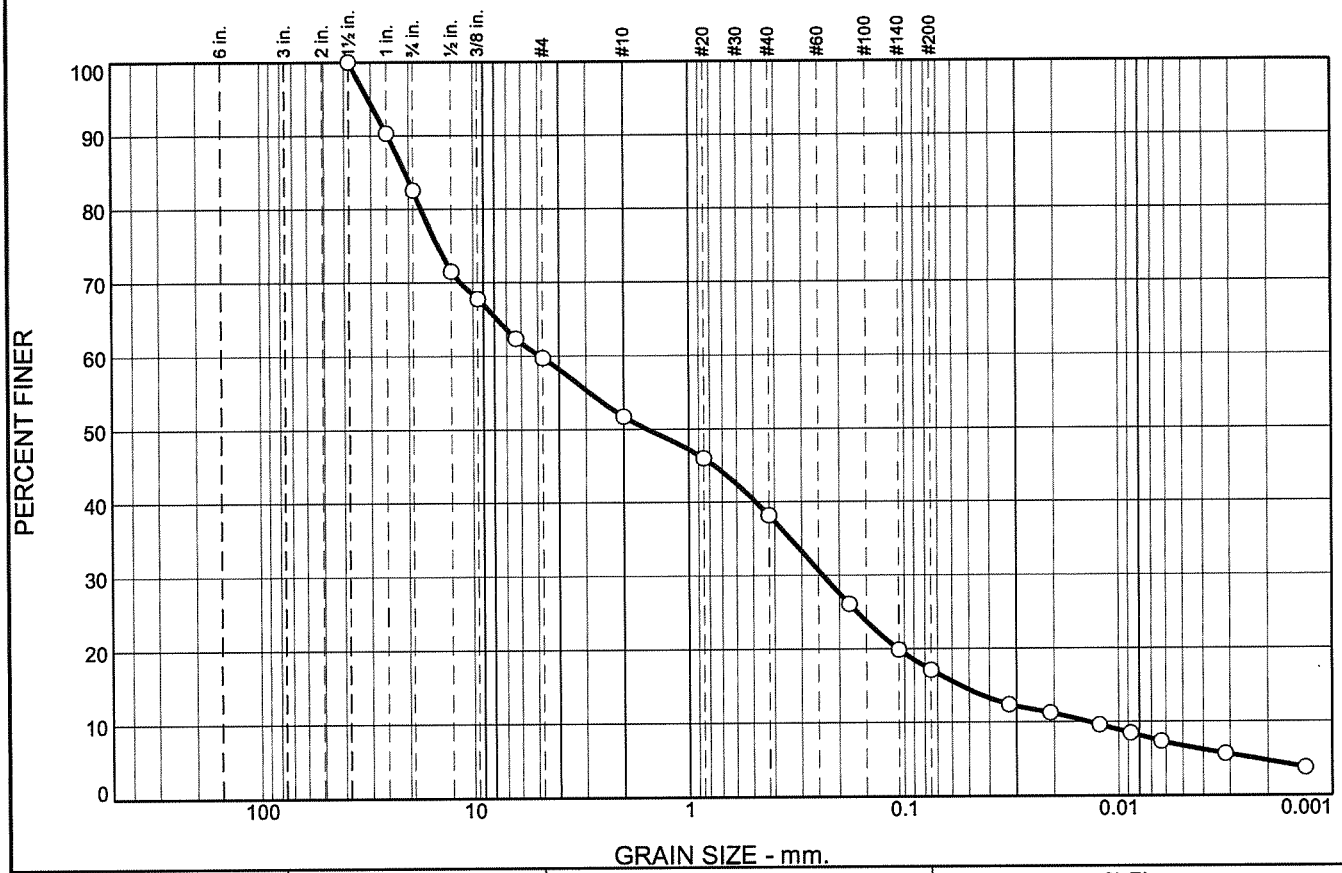
Sample No.: 1D **Source of Sample:** #14-009 (IMT - Ptld) **Date:** 5/8/2014
Location: B-104 **Elev./Depth:** 1'-3'

R.W. Gillespie & Associates, Inc.
Saco, Maine

Client: Schonewald Engineering Associates, Inc.
Project: Miscellaneous Testing
Project No: 1368-001 **Lab No.** 13174c

Tested By: DCH/SAP **Checked By:** JMB JMB

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	17.5	22.8	8.0	13.5	21.1	10.4	6.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 1/2"	100.0		
1"	90.3		
3/4"	82.5		
1/2"	71.5		
3/8"	67.8		
1/4"	62.4		
#4	59.7		
#10	51.7		
#20	46.0		
#40	38.2		
#80	26.1		
#140	19.9		
#200	17.1		
0.0324 mm.	12.4		
0.0208 mm.	11.3		
0.0123 mm.	9.6		
0.0088 mm.	8.5		
0.0063 mm.	7.4		
0.0031 mm.	5.7		
0.0013 mm.	3.8		

* (no specification provided)

Soil Description

silty sand with gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 20.7633 D_{60}= 4.9107 D_{50}= 1.5603
D_{30}= 0.2380 D_{15}= 0.0548 D_{10}= 0.0138
C_u= 355.61 C_c= 0.84

Classification

USCS= SM AASHTO= A-1-b

Remarks

Moisture Content: 6.2%

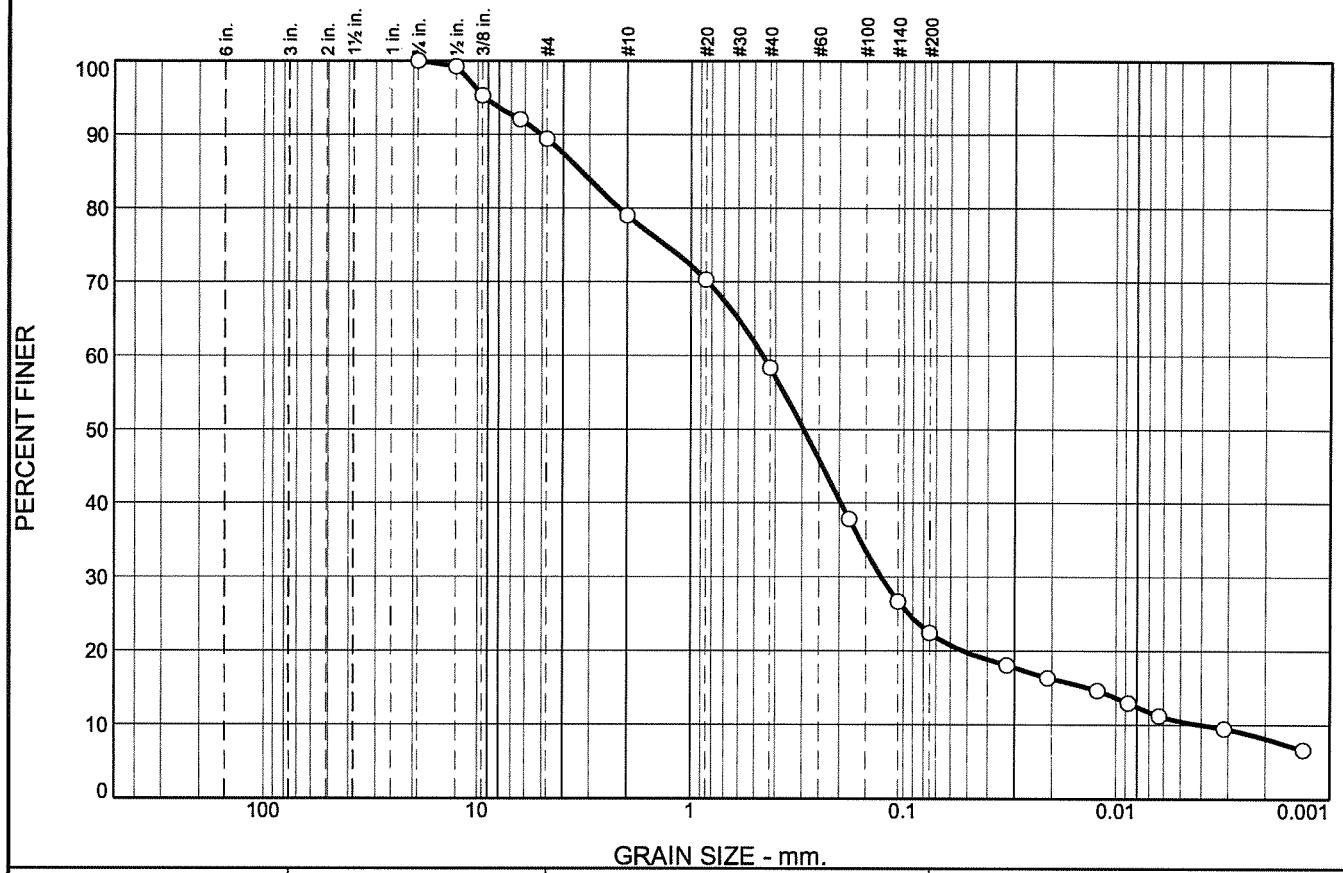
Sample No.: 1D **Source of Sample:** #14-009 (IMT - Ptld) **Date:** 5/8/2014
Location: B-105 **Elev./Depth:** 1'-3'

R.W. Gillespie & Associates, Inc.
Saco, Maine

Client: Schonewald Engineering Associates, Inc.
Project: Miscellaneous Testing
Project No: 1368-001 **Lab No.** 13174d

Tested By: DCH/SAP **Checked By:** JMB JMB

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	10.6	10.4	20.7	35.9	11.9	10.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	99.2		
3/8"	95.3		
1/4"	92.0		
#4	89.4		
#10	79.0		
#20	70.3		
#40	58.3		
#80	37.9		
#140	26.7		
#200	22.4		
0.0326 mm.	18.1		
0.0209 mm.	16.3		
0.0123 mm.	14.6		
0.0088 mm.	13.0		
0.0063 mm.	11.2		
0.0031 mm.	9.5		
0.0013 mm.	6.6		

* (no specification provided)

Soil Description

silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 3.2794 D_{60}= 0.4601 D_{50}= 0.2954
D_{30}= 0.1273 D_{15}= 0.0134 D_{10}= 0.0040
C_u= 114.51 C_c= 8.76

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Moisture Content: 12.5%

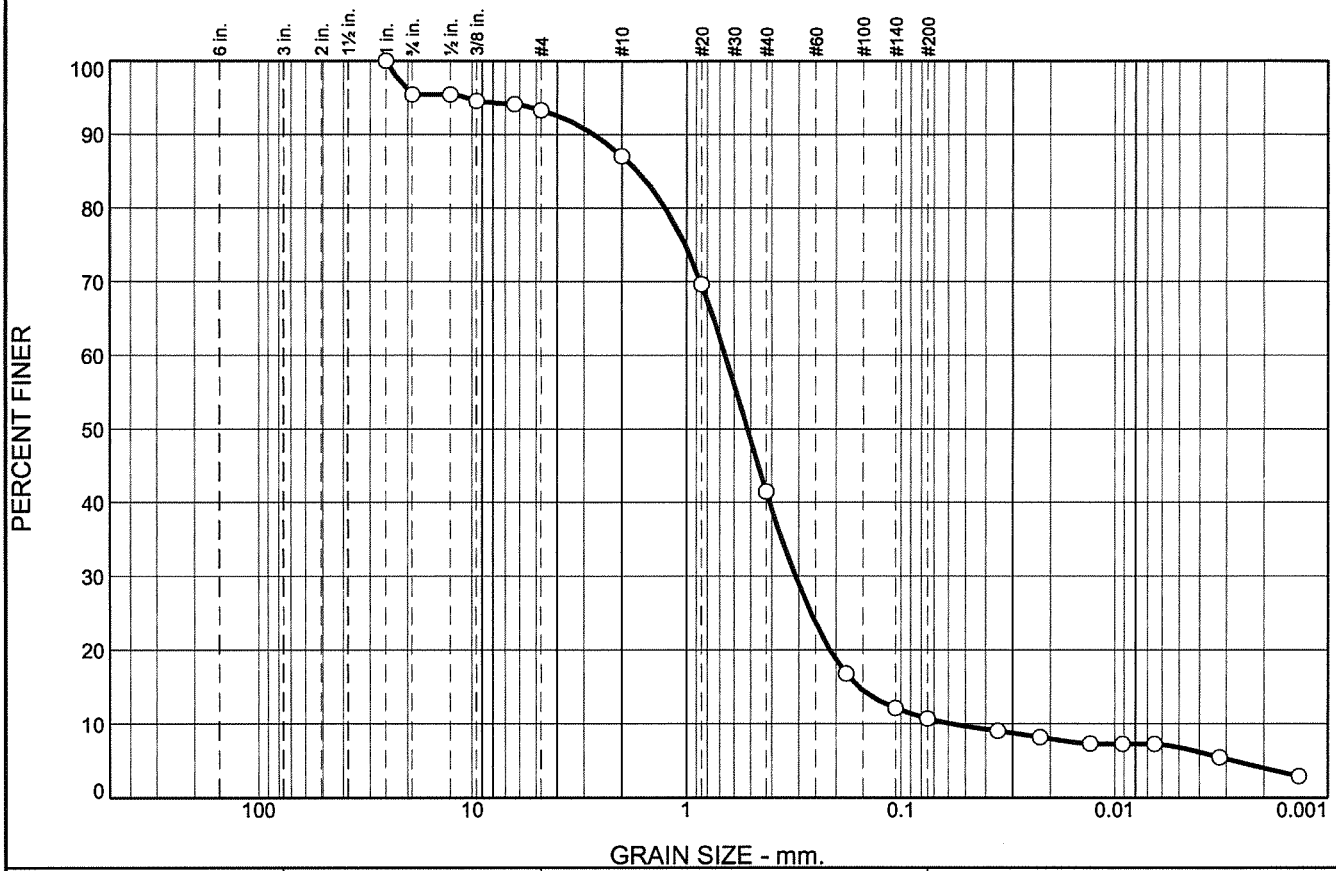
Sample No.: 2D **Source of Sample:** #14-009 (IMT - Ptld) **Date:** 5/8/2014
Location: B-106 **Elev./Depth:** 3'-4.3'

R.W. Gillespie & Associates, Inc.
Saco, Maine

Client: Schonewald Engineering Associates, Inc.
Project: Miscellaneous Testing
Project No: 1368-001 **Lab No.** 13175a

Tested By: DCH/SAP **Checked By:** JMB JMB

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	4.6	2.1	6.2	45.6	30.8	3.9	6.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	95.4		
1/2"	95.4		
3/8"	94.6		
1/4"	94.1		
#4	93.3		
#10	87.1		
#20	69.7		
#40	41.5		
#80	16.8		
#140	12.1		
#200	10.7		
0.0351 mm.	9.1		
0.0223 mm.	8.2		
0.0130 mm.	7.3		
0.0092 mm.	7.3		
0.0065 mm.	7.3		
0.0032 mm.	5.5		
0.0014 mm.	2.9		

* (no specification provided)

Soil Description

well-graded sand with silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.6908 D_{60}= 0.6591 D_{50}= 0.5209
D_{30}= 0.3102 D_{15}= 0.1572 D_{10}= 0.0586
C_u= 11.24 C_c= 2.49

Classification

USCS= SW-SM AASHTO= A-1-b

Remarks

Moisture Content: 11.4%

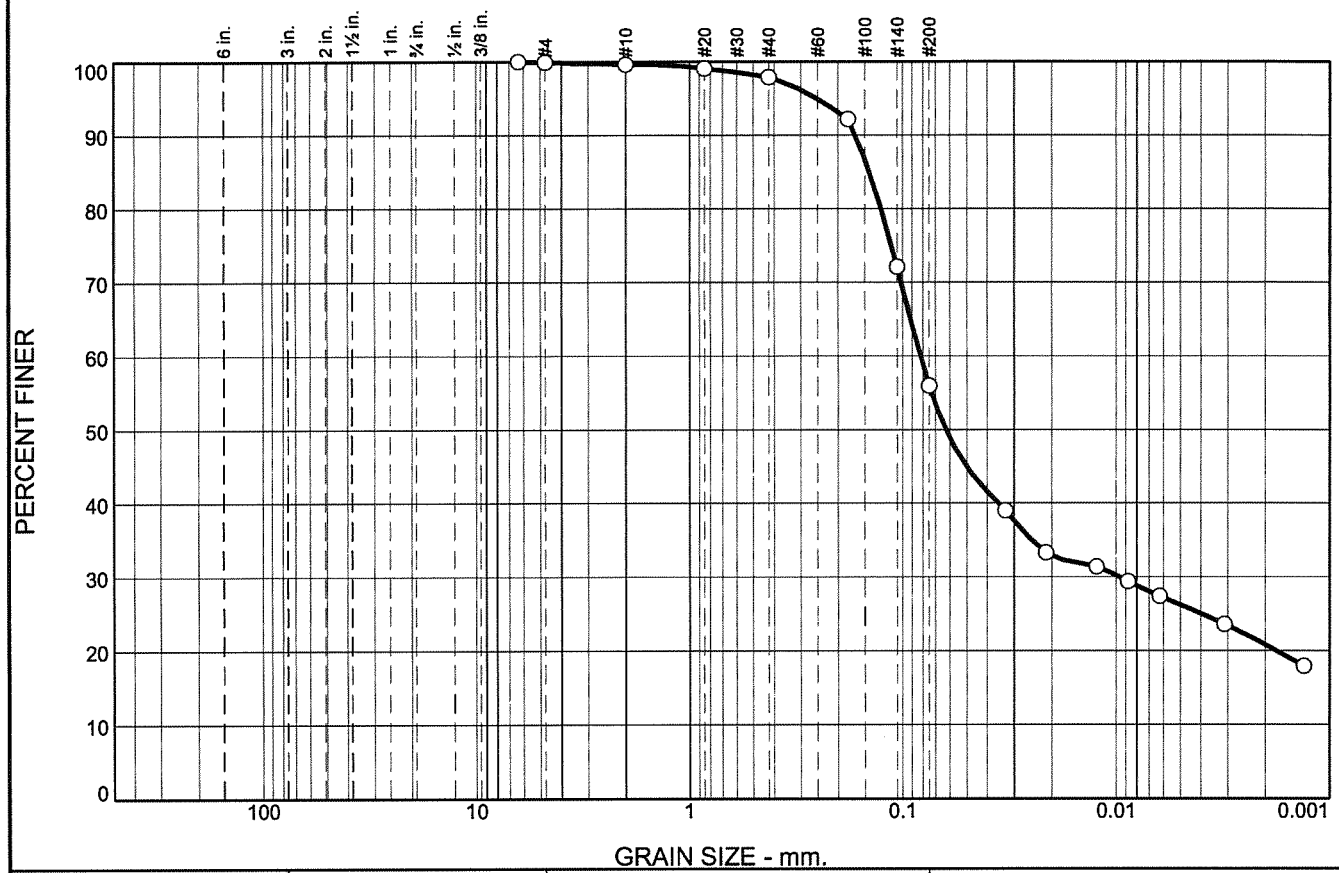
Sample No.: 1D **Source of Sample:** #14-009 (IMT - Ptld) **Date:** 5/8/2014
Location: B-107 **Elev./Depth:** 1'-3'

R.W. Gillespie & Associates, Inc.
Saco, Maine

Client: Schonewald Engineering Associates, Inc.
Project: Miscellaneous Testing
Project No: 1368-001 **Lab No.** 13175b

Tested By: DCH/SAP **Checked By:** JMB JMB

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.3	1.7	41.9	29.8	26.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/4"	100.0		
#4	99.9		
#10	99.6		
#20	99.0		
#40	97.9		
#80	92.2		
#140	72.1		
#200	56.0		
0.0330 mm.	39.0		
0.0212 mm.	33.3		
0.0123 mm.	31.4		
0.0088 mm.	29.4		
0.0063 mm.	27.4		
0.0031 mm.	23.6		
0.0013 mm.	17.9		

* (no specification provided)

Soil Description

sandy silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.1429 D_{60}= 0.0825 D_{50}= 0.0627
D_{30}= 0.0096 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

Moisture Content: 22.6%

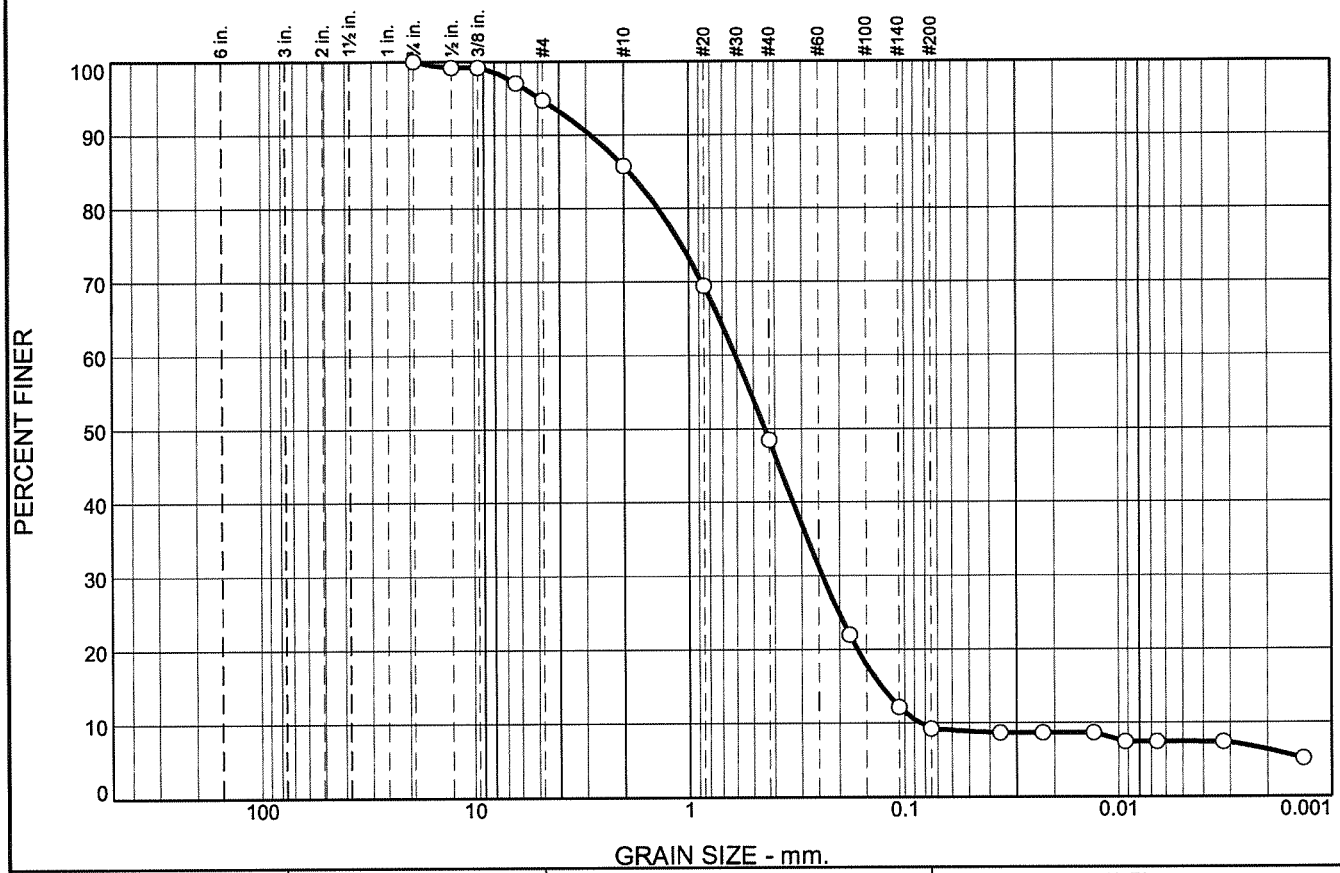
Sample No.: 2D **Source of Sample:** #14-009 (IMT - Ptld) **Date:** 5/8/2014
Location: B-108 **Elev./Depth:** 3'-5'

R.W. Gillespie & Associates, Inc.
Saco, Maine

Client: Schonewald Engineering Associates, Inc.
Project: Miscellaneous Testing
Project No: 1368-001 **Lab No.** 13175c

Tested By: DCH/SAP **Checked By:** JMB JMB

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.3	9.0	37.2	39.3	1.8	7.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	99.2		
3/8"	99.2		
1/4"	97.0		
#4	94.7		
#10	85.7		
#20	69.4		
#40	48.5		
#80	22.0		
#140	12.2		
#200	9.2		
0.0358 mm.	8.7		
0.0226 mm.	8.7		
0.0131 mm.	8.7		
0.0093 mm.	7.5		
0.0066 mm.	7.5		
0.0032 mm.	7.4		
0.0014 mm.	5.1		

* (no specification provided)

Soil Description

well-graded sand with silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.8952 D_{60}= 0.6088 D_{50}= 0.4450
D_{30}= 0.2405 D_{15}= 0.1285 D_{10}= 0.0848
C_u= 7.18 C_c= 1.12

Classification

USCS= SW-SM AASHTO= A-1-b

Remarks

Moisture Content: 15.2%

Sample No.: 1D **Source of Sample:** #14-009 (IMT - Ptld) **Date:** 5/8/2014
Location: B-109 **Elev./Depth:** 3'-5'

R.W. Gillespie & Associates, Inc.
Saco, Maine

Client: Schonewald Engineering Associates, Inc.
Project: Miscellaneous Testing
Project No: 1368-001 **Lab No.** 13175d

Tested By: DCH/SAP **Checked By:** JMB JMB

APPENDIX D

Soil Management Plan

SOIL MANAGEMENT PLAN

FORMER PORTLAND GAS WORKS SITE
40 WEST COMMERCIAL STREET
PORTLAND, ME

Prepared for:

Northern Utilities, Inc. d/b/a Unitil
6 Liberty Lane West
Hampton, NH 03842

Prepared by:

AMEC Environment & Infrastructure, Inc.
511 Congress Street
Portland, ME 04101

Revision	Date	Description
0	Feb 2004	Initial issue
1	Mar 2007	Updated to include recent remediation activities
2	Nov 2012	Updated due to responsibility changes

ACKNOWLEDGMENT FORM

The form below must be completed and retained to acknowledge that the following Soil Management Plan has been read and understood and that the reporting requirements to Unitil will be followed.

Company Name	Printed Name/Title	Signature	Date

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A Site Worker Log

ACRONYMS AND ABBREVIATIONS

AMEC	AMEC Environment & Infrastructure, Inc.
CGRM	coal gasification-related material
ECM	Environmental Compliance Manager
HAZWOPER	Hazardous Waste Operations and Emergency Response Standard
Property	40 West Commercial Street, Portland, Maine
MEDEP	Maine Department of Environmental Protection
MGP	manufactured gas plant
NAPL	Non-Aqueous Phase Liquid
NGL	NGL Energy Partners LP
NU	Northern Utilities, Inc. d/b/a Unitil
O&M	Operations and Maintenance
OSHA	U.S. Occupational safety & Health Administration
SMP	Soil Management Plan
SSHSP	Site Specific Health and Safety Plan
VRAP	Voluntary Remedial Action Program

1.0 INTRODUCTION

This Soil Management Plan (SMP) was updated by AMEC Environment & Infrastructure, Inc. (AMEC) for Northern Utilities Inc. (d/b/a Unitil) site workers and their tenant NGL Energy Partners LP (NGL), conducting business at the 40 West Commercial Street in Portland, Maine (Property) (See Figure 1). This SMP is strictly intended the operations and maintenance (O&M) of existing subsurface features (e.g., new pipe runs, electrical lines, or similar utilities) or shallow excavations for new installations. For these types of projects, it is appropriate to return all soil removed during the O&M activities/construction back into the excavation. Excess soil remaining upon project completion will be handled as described in this SMP.

This plan is not appropriate for deep excavations below the water table, large construction projects, or projects that are expected to generate excess soil containing materials associated with the former manufactured gas plant (MGP) operations at the Property that cannot be returned to the excavation upon project completion. For these types of projects, it is required that the work be contracted to individuals properly trained to manage, transport, and treat soil containing the MGP materials in accordance with state and federal regulations.

This plan does not pertain to excavation activities conducted for investigation or remediation of site contaminants. Investigation and remediation activities must be overseen by an environmental professional conducting work under a Site Specific Health and Safety Plan (SSHSP) and by workers who are certified under the Occupational Safety & Health Administration (OSHA) Hazardous Waste Operations and Emergency Response Standard (HAZWOPER).

Note – Most subsurface excavations in Maine require 72-hour prior DIGSAFE notification (call 1-888- DIGSAFE).

1.1 Site Background

The Property consists of two parcels of land located at 40 West Commercial Street in Portland. These include an Inland and Shoreline parcel and are the location of a former manufactured gas plant operated by Portland Gas Works, which began operations in the mid-Nineteenth Century. In the mid-1960's, soon after the formation of Northern Utilities (NU), natural gas was introduced to the area and the plant ceased operation. The facility was subsequently decommissioned and demolished.

The Property currently holds an active propane storage facility and a regulator station housed in one of two remaining MGP buildings within the Inland parcel. Access to the parcel is controlled by a series of perimeter fences.

NU applied for, and in early 1999, was granted entry to the Voluntary Remedial Action Program (VRAP) for the former Portland Gas Works site. This program allows the owner to voluntarily investigate and correct environmental conditions at a site in cooperation with Maine Department of Environmental Protection (MEDEP).

NU completed a Phase I Site Investigation of environmental conditions at the Property in 1999. NU met with MEDEP in September 1999 and reported the results of the Phase I Site Investigation indicated the presence of gas-manufacturing by-products. It was agreed that further site characterization was warranted. At that time, NU recommended, and MEDEP concurred, that the site be fenced to prevent further trespassing. In 2000, NU obtained permission from Guilford Transportation (an abutter) to erect a security fence around the Property and to conduct a supplemental investigation on the abutter's property to determine whether coal gas residues may have migrated onto its parcel.

The fieldwork for NU's Phase II Site Investigation was completed in 2002 and a report was submitted to MEDEP in November 2002. MEDEP reviewed the report and some limited supplemental field data collection activities were implemented during 2003 to address MEDEP comments.

Based on the results of investigations conducted at the Property between 1999 and 2003, six primary source areas of coal gasification-related material (CGRM) were identified. These source areas included:

- A gravel mound underlain by CGRM;
- A subsurface Non-Aqueous Phase Liquid (NAPL)/seep area;
- A former tar well/gas holder;
- A former tar processing area;
- Tar scabs along the shoreline of the Fore River; and
- Purifier box waste.

The results of the investigations, characterization, conceptual model, and risk evaluation were summarized in an Investigation Summary Report dated April 2003. The Gravel Mound was addressed in a study dated May 12, 2004 and under went remediation in June 2004. To address the remediation of the other five areas, technologies were identified and remedies were selected based on the findings of a Focused Feasibility Study/Response Action Plan dated July 2004.

Remediation activities were executed on four of the source areas during the winter of 2006/2007. These activities included:

- Containment and minimization of NAPL migration from the upgradient source area to the seep area and groundwater by installing a NAPL collection and storage system;
- Removal of 400 tons of liquid tar from the tar well and subsequent backfill and stabilization of the well;
- Removal of shoreline tar scabs and debris and installation of a rip-rap revetment on the shoreline; and
- Removal of approximately 5,700 tons of tar impacted soil and debris in the tar processing area.

Further remediation of the seep area and the purifier box waste area were to be addressed in future remedial actions under the VRAP program. These were subsequently noted in the current No Action Assurance letter issued by the MEDEP in May 2012.

Property ownership changed in December 2008 when Unitil acquired Northern Utilities, Inc. from NiSource – the then parent company of NU - in a common stock sale.

Additional investigations related to contamination in the seep area have been conducted in the spring of 2012 and remain ongoing. Information from these investigations will be used to develop remedial designs plans which will likely be implemented in 2013 through 2014 as part of a third-party redevelopment of the Property.

1.2 Duration of Site Worker Activities

NU, Unitil, and NGL workers on the Property (i.e., site workers) may perform limited excavation activities and manage site soil up to a maximum of 40 hours per year using standard work attire (e.g., boots, long pants, shirts, gloves) that will minimize contact with soil. This work must be completed in accordance with Unitil's standard work practices.

Any project or combination of projects, in excess of 40 hours per year for an individual is not allowed. The duration of excavation activities by an individual will be tracked via a worker log detailed in Appendix A. Any work in excess of 40 hours must be conducted by individuals with the required training and certifications specified by U.S. OSHA regulations at 29 CFR 1910.120. Activities expressly intended to excavate MGP-impacted soil for off-site disposal or treatment cannot be conducted by site workers, but must be conducted by OSHA-trained individuals.

1.3 Points of Contact

Any work requiring soil excavation with hand tools or heavy equipment or work requiring the removal of pavement to expose the soil surface must be cleared with:

- Gas Systems Operations Supervisor– Keith Lincoln – Unitil
  Phone 207-541-2537 | Mobile 207-272-8772

If it is expected that excess soil will remain upon completion of the work, the Gas Systems Operations Supervisor must contact the following person such that the handling of excess oil is properly planned:

- Environmental Compliance Manager (ECM) – Thomas Murphy – Unitil
  Phone 603-379-3829 | Mobile 603-498-3333

In the event that soil containing excessive amounts of tar or oily debris are exposed, first call the Environmental Compliance Manager, and if needed call:

- Environmental Consultant - Peter Thompson – AMEC
  Phone 207-775-5401 | Mobile 207-552-7171

2.1 EXCAVATION AND SEGREGATION

The goal of excavation and segregation activities is to return stockpiled soil back into the excavation, as close as possible to the point of origin. Criteria for soil segregation at the point of excavation are based on depth and visual inspection. Details of the excavation and segregation criteria are described below.

This SMP focuses only on the requirements of handling Property soil, and does not address other worker safety requirements. A SSHSP must be prepared and implemented, as needed, to address applicable state and federal regulatory requirements.

Excavations may encounter soil containing significant amounts of tar and/or oily debris, and may include, but is not limited to, the following:

- excavated material containing a greater percentage of tar than soil;
- pooling of oily material within, or draining from, the stockpile; or
- tar or oily material flowing into the excavation from the sidewalls.

If soil containing significant amounts of tar or oily debris is encountered or excess soil must be stockpiled for off-site treatment and disposal at a licensed facility, OSHA-trained individuals must be hired, and soils must be managed in accordance with applicable state and federal regulations. I f such conditions are encountered, the appropriate points of contact should be immediately notified (See Section 1.3 above).

2.1 Excavation Protocol

If the excavation occurs in an area of pavement or crushed rock, this material is first removed and stockpiled for reuse. Soil removed from the excavation shall be initially-separated based on visual inspection of the soil. Soil removed from the ground surface to a depth where soils are visually impacted with MGP materials shall be placed to one side of the excavation. S oils excavated from the point of visual staining to the bottom of the excavation shall be placed on the opposite side of the excavation (See Figure 2).

Site workers shall employ dust control measures, as needed, to minimize the creation of airborne dust during the excavation process.

2.2 Segregation Activities

To the extent necessary and possible, excavated material shall be grouped into one of three categories: (1) soil containing ash and clinkers; (2) soil containing visible tar or oily debris and/or wood chips (purifier box waste); and (3) oversized debris. Each is described in more detail below.

2.2.1 Soil Containing Ash and Clinkers

Most soil excavated above the water table at the site is expected to be visually clean, or mixed with ash and/or clinkers. This type of soil may be temporarily stockpiled right next to the excavation. These soils can be returned to any depth in the excavation, but should be reserved for backfilling the upper 24 inches.

2.2.2 Soil Containing Tar, Oil, and/or Wood Chips

Soil containing limited amounts of tar, oily debris, and/or wood chips can be temporarily stockpiled near the excavation, as long as it will be returned to the excavation. To the extent feasible, soil containing limited amounts of tar and/or oily debris should be stockpiled away from the cleaner material described above.

If the excavation ceases because heavy tar and/or oil are found in the soil, stockpiled material should be immediately returned to the excavation. If it is not feasible to return this material to the excavation, the stockpiled material must be secured to the extent feasible (to minimize exposure to this material) by covering the pile completely with a single layer of polyethylene sheeting (minimum 6 mil thickness) until OSHA-trained individuals arrive on site.

2.2.3 Oversized Debris

Oversized debris includes material such as pieces of concrete, refractory, abandoned piping, or lumber, which may be coated with tar or oily debris. If a large amount of oversized debris coated with such material is excavated and cannot be returned to the excavation, the material must be moved to a short-term storage area and secured to the extent feasible (to minimize exposure to this material) by covering the pile completely with a single layer of polyethylene sheeting (minimum 6 mil thickness) until OSHA-trained individuals arrive on site.

2.3 Backfilling

Visually-impacted soil (e.g., tar, oil, wood chips) shall be returned to the deeper portions of the excavation, whereas visually ‘clean’ soil shall be returned to the upper portion of the excavation (See Figure 3).

In the event that imported fill is used to backfill excavations, excess clean soil that does not contain tar, oily debris, and/or wood chips can be spread out at the ground surface near the excavation and covered with gravel. Excess soil that cannot be spread on the ground surface (because of pavement or other restriction) must be moved to a short-term storage area (See Section 3.4). Soil containing tar, oily debris, and/or wood chips shall be returned to the deeper portions of the excavation.

2.4 Restoration of Land Surface

If paving was removed to conduct the excavation, it should be replaced to its original condition and grade upon completion of the project. If gravel or topsoil was removed to access the underlying soil, it must be replaced over the area of the excavation to a thickness of three to six (3-6) inches.

3.0 STORAGE AND STOCKPILING

This section describes storage and stockpiling requirements for the Property. Stockpiling shall be conducted in a manner to prevent rain infiltration, erosion, and dust generation.

3.1 General Requirements

Excavated soil containing MGP residuals and debris shall be handled and stored as follows:

- Soil containing MGP residuals shall be stored in a secure manner to prevent exposure to humans and the environment, immediately adjacent to the excavation, where possible.
- Soil will be covered, as necessary, to minimize infiltration of precipitation, to limit dust, to control odors, and/or to prevent erosion of the stockpile. Cover materials shall be properly secured and possess the necessary physical strength to resist tearing by the wind.
- As needed during periods of heavy rain, hay bales shall be placed around the stockpiled material to prevent erosion of materials to nearby catch basins or other stormwater drainage structures.

3.2 Temporary Storage

During excavation, soil shall be p laced next to the excavation. For most excavations it is expected that the material will be returned to the excavation the same day or within one or two days. Soil containing limited amounts of tar and oily debris or oversized debris affected by tar and oil can also be stored adjacent to the excavation, provided it is returned to the excavation.

3.3 Interim Storage

Interim storage procedures shall be used when excavated soil is held outside of the excavation for an extended period of time (e.g., over a weekend). Interim storage may be located adjacent to or near the excavation. Stockpiled soil shall be covered with polyethylene sheeting, and hay bales shall be positioned to prevent runoff, if necessary.

3.4 Short-Term Storage

Short-term storage is only required for excess soil that cannot be returned to the excavation or spread out at the ground surface adjacent to the excavation areas. The short-term storage area shall be located in a low traffic area on the Property. Stockpiled soils in the short-term storage area shall be placed on, and covered with, polyethylene sheeting. Hay bales shall be positioned around the stockpile to prevent runoff. Material moved to the short-term storage area must be characterized for either off-site disposal or on-site reuse, and s hall be coordinated with the ECM. Federal and state regulations specify time limits for stockpiling materials, once characterized.

4.0 ON-SITE REUSE OR OFF-SITE DISPOSAL

Excavated soil will either be reused on-site or transported off-site for disposal. Soil reused on-site may be managed by site workers. Activities associated with off-site disposal must be conducted by OSHA- trained individuals.

4.1 On-Site Reuse

Excess soil located in short-term storage that is visibly clean (i.e., contains no staining, tar, or oily material) may be appropriate for on-site reuse. Any plan for on-site reuse of soil must be developed in consultation with the ECM. A reuse plan will likely include chemical analysis of soil. On-site re-use of soil must not occur within the 75 feet of the shoreline.

If determined appropriate for on-site reuse, the excess soil can be relocated to other areas of the Property that are covered by crushed rock. At the chosen location, the crushed rock must be scraped away for placement of the excess soil. Care must be taken not to significantly alter site topography and drainage patterns. Once spread out, the excess soil must be recovered with crushed rock.

4.2 Off-Site Disposal

Excess soil containing tar, oil, and/or wood chips that has been moved to a short-term storage area requires off-site disposal. This material must be characterized in accordance with state and federal regulations and the requirement of the receiving facility. This work must be conducted by OSHA-trained personnel. Under no circumstances should soil leave the Property unless it is destined for the appropriate receiving facility as determined by the ECM.

5.0 NEW CONDITION DISCOVERY

Excavation activities at the Property may expose subsurface conditions, such as the presence of oily liquids or the discovery of a buried structure containing MGP wastes. If such conditions are discovered, the related work shall stop, as necessary, and the appropriate points of contact shall be notified of the finding.

6.0 UPDATING THE SOIL MANAGEMENT PLAN

This SMP will be updated as necessary based on changes at the site such as remedial actions or changes in ownership. Revisions to the plan shall be noted on the cover page.

FIGURES

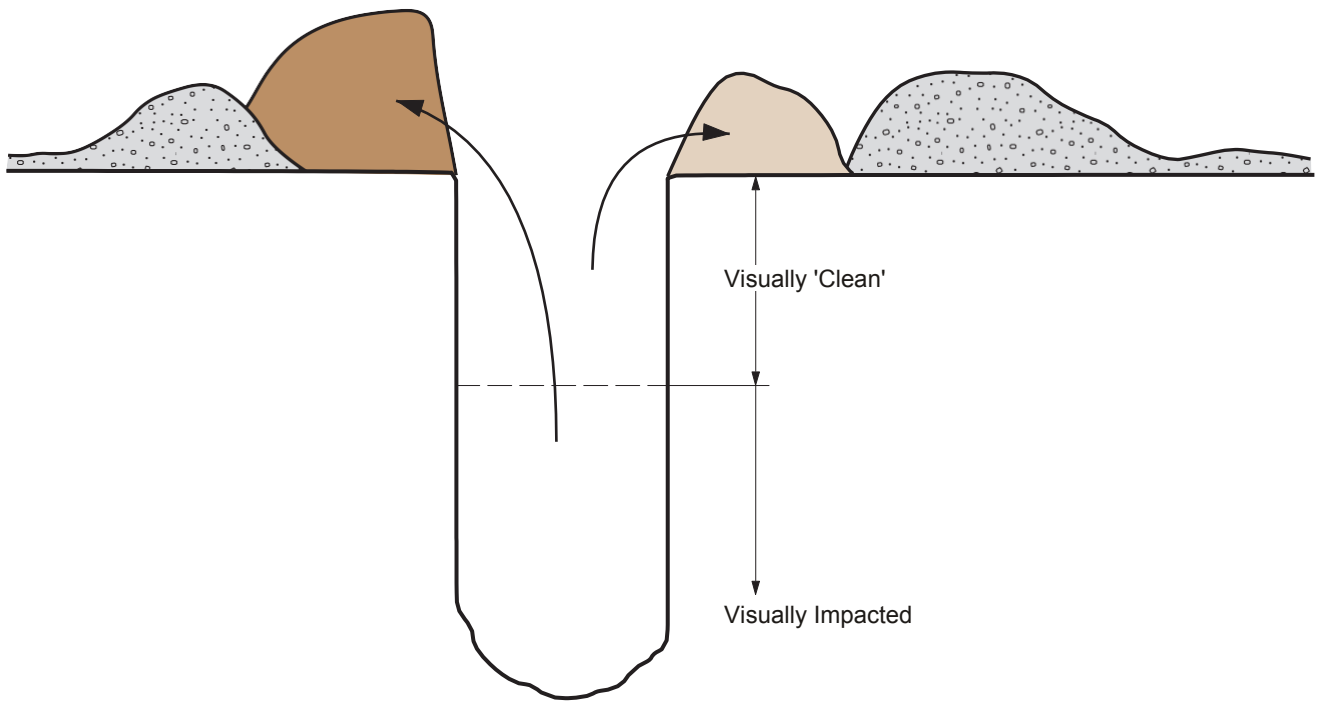
Document: P:\Projects\Unitil 40WestComm-3612122236\4.0_Deliverables\4.5_Databases\GIS\Map Documents\Unitil_11x17LS.mxd PDF: P:\Projects\Unitil 40WestComm-3612122236\4.0_Deliverables\4.2_Work_Plans\Soil Management Plan Update\Figure 1 - Site Plan.pdf 11/1/2012 3:00 PM michael.washburn

0 50 100 Feet

Unitil Service Corporation
40 West Commercial Street
Portland, Maine

amec

Former Portland Gas Works
Soil Management Plan
Site Plan
Project 3612112236.02.08 Figure 1

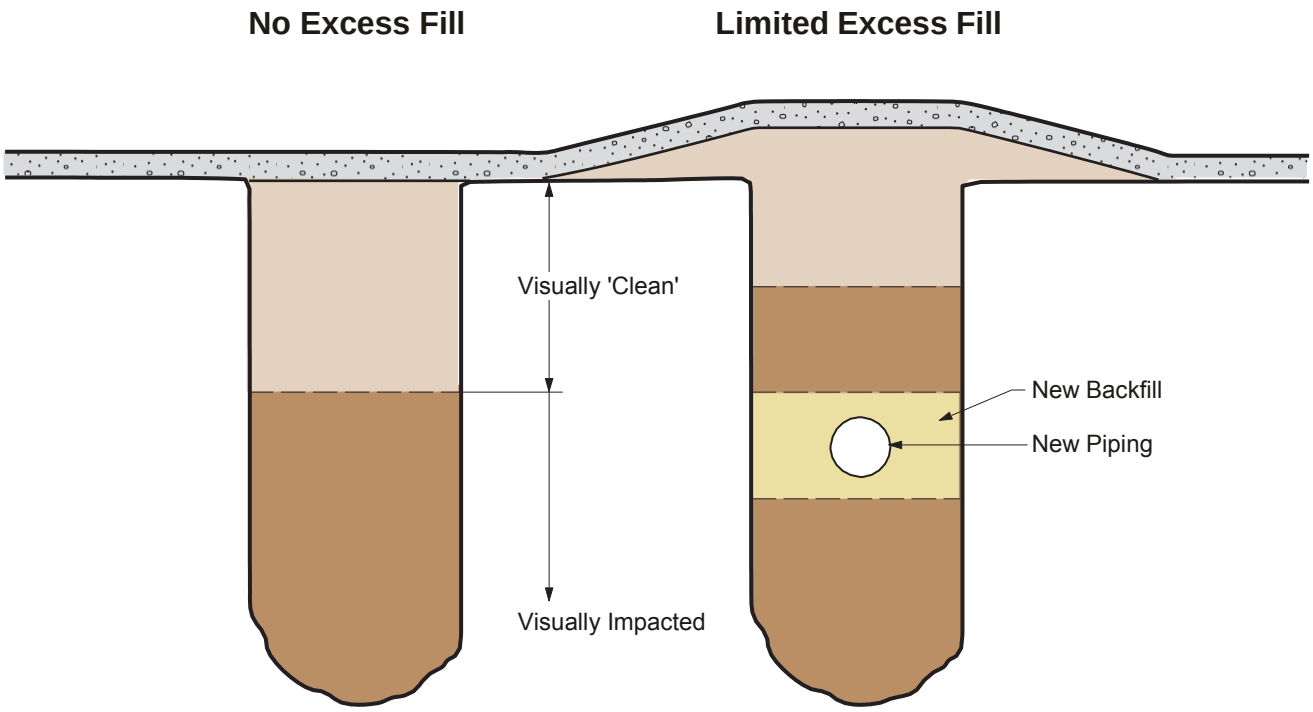


LEGEND

- Visually 'Clean' Soil
- Visually Impacted ('stained') Soil
- Gravel Cover Material

Figure 2
Excavation Protocol
Unitil Service Corporation
40 West Commercial Street
Portland, ME

AMEC E&I, Inc.



LEGEND

- Visually 'Clean' Soil
- Visually Impacted ('stained') Soil
- Imported Backfill
- Gravel Cover Material

Figure 3
Backfilling Protocol
Unitil Service Corporation
40 West Commercial Street
Portland, ME

AMEC E&I, Inc.

APPENDIX A
SITE WORKER LOG

APPENDIX A SITE WORKER LOG

The following log sheet is provided to document the total number of hours that each Unitil employee conducts subsurface construction work or utility repair at the 40 West Commercial Street facility in Portland, Maine. No individual is to conduct subsurface construction work or utility repair for more than 40 hours per annum unless specifically trained in accordance with OSHA HAZWOPER standards (29 CFR 1910.120). This page is to be photocopied for tracking each individual's daily hours for an entire year. Completed forms must be kept on site with the Soil Management Plan.

Year:_____ Page_____of _____

Employee No.:_____Employee Name: _____

Date	Nature of Project	Daily Total (hours)	Cumulative Hours

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
203(03)	Backslope Rounding	1/29/08
502(03)	Concrete Curb - Bituminous Wearing Surface	8/08/11
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	10/28/09
502(12)A	Precast Concrete Deck Panels - Notes	2/2/09
504(15)	Diaphragms	5/19/11
504(21)	Tension Flange Connection for Diaphragm and Cross Frames	10-11-12
504(22)	Diaphragm & Crossframe Notes	10/11/12
504(23)	Hand-Hold Details	12/08/05
502(24)	Hand-Hold Details	10/11/12
507(04)	Steel Bridge Railing	2/05/03
507(04A)	Steel Bridge Railing	7/3/13
507(09)	Steel Bridge Railing	5/19/11
507(09)A	Steel Bridge Railing	5/19/11

526(06)	Permanent Concrete Barrier	2/2/09
526(08)	Permanent Concrete Barrier – Type IIIA	10/07/10
526(08)A	Permanent Concrete Barrier – Type IIIA	12/07/10
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(29A)	Concrete Transition Barrier	5/1/13
526(29B)	Concrete Transition Barrier	5/1/13
526(29C)	Concrete Transition Barrier	5/1/13
526(33)	Concrete Transition Barrier	5/1/13
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
535(01)	Precast Superstructure - Shear Key	10/12/06
535(02)	Precast Superstructure - Curb Key & Drip Notch	5/20/08
535(03)	Precast Superstructure - Shear Key	12/5/07
535(04)	Precast Superstructure - Shear Key	12/05/07
535(05)	Precast Superstructure - Post Tensioning	5/20/08
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	12/05/07
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
604(18)	Utility Structures	03/18/14
606(02)	Multiple Mailbox Support	11/16/05
606(03)	Guardrail Standard Detail	9/19/12
606(07)	Reflectorized Beam Guardrail Delineator Details	11/16/05
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(03)	Curb Type 3	6/27/06
609(06)	Vertical Bridge Curb	2/12/09
609(07)	Curb Type 1	6/27/06
609(08)	Precast Concrete Transition Curb	2/2/09

610(02)	Stone Scour Protection	8/9/11
610(03)	Stone Scour Protection	5/19/11
610(04)	Stone Scour Protection	5/19/11
620(05)	Geotextile Placement for Protection of Slopes Adjacent to Stream & Tidal Areas	5/19/11
626(09)	Electrical Junction Box for Traffic Signals and Lighting	8/27/10
645(06)	H-Beam Posts – Highway Signing	7/21/04
645(09)	Installation of Type II Signs	7/21/04
801(01)	Drives on Sidewalk Sections	12/13/07
801(02)	Drives on Non-Sidewalk Sections	12/13/07

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."

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	Up to and	Amount of Liquidated

More Than	Including	Damages per Calendar Day
$0	$100,000	$225
$100,000	$250,000	$350
$250,000	$500,000	$475
$500,000	$1,000,000	$675
$1,000,000	$2,000,000	$900
$2,000,000	$4,000,000	$1,000
$4,000,000	and more	$2,100

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: "Adjustments will be established by mutual Agreement based upon Unit or Lump Sum Prices. These agreed Unit or Lump Sum prices will be full compensation and no additions or mark-ups are allowed. 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 Delete this Section entirely.

109.7.4 Non-Compensable Items Replace with the following: "The Contractor is not entitled to compensation or reimbursement for any of the following items:

A. Total profit or home office overhead in excess of 15%,
B. ……."

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. If the Department does not accept the Subcontractor quote, then the Subcontractor work will be subject to the Force Account provisions with a 5% markup for profit & overhead.."

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.

110 - Indemnification, Bonding and Insurance
Add the following to the end of Section 110, Indemnification, Bonding and Insurance:

Nothing in these Standard Specifications constitutes a waiver of any defense, immunity or limitation of liability that may be available to the Department, or its officers, agents or employees under the Maine Tort Claims Act (Title 14 M.R.S.A. 8101 et seq.), and shall not constitute a waiver of other privileges or immunities that may be available to the Department.

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. Used as the top 3" of gravel. Recycled Asphalt Pavement (RAP) shall be process to 1½" minus and blending will not be allowed. When this method is utilized, a surcharge will not be required

3. Stockpiled at commercial or approved sites for commercial or MaineDOT use.

4. 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…”

Change a. in the list of requirements to: “a. The name, telephone number, and other contact numbers (cellular phone, pager, if any) of the Contractor's Traffic Control Supervisor (the person with overall responsibility for following the TCP), who has received Work Zone Traffic Control Training commensurate with the level of responsibility shown in the requirements of

the Contract, and who is empowered to immediately resolve any work zone traffic control deficiencies or issues. Provide documentation that the Traffic Control Supervisor has completed a Work Zone Traffic Control Training Course (AGC, ATSSA, or other industry-recognized training), and a Supervisory refresher training every 5 years thereafter. Submit the course name, training entity, and date of training.

Traffic Control Training Course curriculum must be based on the standards and guidelines of the MUTCD and must include, at a minimum, the following:

1. Parts of Temporary Traffic Control Zone
2. Appropriate use and spacing of signs
3. Use and spacing of channelizing devices
4. Flagging basics
5. Typical examples and applications

The Traffic Control Supervisor, or designee directly overseeing physical installation, adjustment, and dismantling of work zone traffic control, will ensure all personnel performing those activities are trained to execute the work in a safe and proper manner, in accordance with their level of decision-making and responsibility."

Add the follow to the list of requirements: "k. The plan for unexpected nighttime work along with a list of emergency nighttime equipment available on-site."

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 107-2004 Class 2 risk exposure that clearly identifies the wearer as a person, and is visible at a minimum distance of 300 m [1000 ft], and shall wear a hardhat with 360° retro-reflectivity. For nighttime conditions, Class 3 apparel, meeting ANSI 107-2004, shall be worn along with a hardhat with 360° retro-reflectivity. Retro-reflective or flashing SLOW/STOP paddles shall be used, and the flagger station shall be illuminated to assure visibility in accordance with 652.6.2."

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. If the flaggers are receiving the appropriate breaks, breaker flagger(s) shall be paid starting 2 hours after the work begins and ending 2 hours before the work ends. A maximum of 1 breaker per 6 flaggers will be paid. (1 breaker flagger for 2 to 6 flaggers, 2 breaker flaggers for 7 to 12 flaggers, etc)"

Add the following:
"652.5.1 Rumble Strip Crossing When lane shifts or lane closures require traffic to cross a permanent longitudinal rumble strip for 7 calendar days or less, the Contractor shall install warning signs that read "RUMBLE STRIP CROSSING" with a supplemental Motorcycle Plaque, (W8-15P).

When lane shifts or lane closures require traffic to cross a permanent longitudinal rumble strip for more than 7 calendar days, the Contractor shall pave in the rumble strips in the area that traffic will cross, unless otherwise directed by the Resident. Rumble strips shall be replaced prior to the end of the project, when it is no longer necessary to cross them."

652.6 Nightwork Delete this section entirely and replace with the following:
"652.6.1 Daylight Work Times Unless otherwise described in the Contract, the Contractor is allowed to commence work and end work daily according to the Sunrise/Sunset Table at: http://www.sunrisesunset.com/usa/Maine.asp . If the Project town is not listed, the closest town on the list will be used as agreed at the Preconstruction Meeting. Any work conducted before sunrise or after sunset will be considered Night Work.

652.6.2 Night Work When Night Work occurs (either scheduled or unscheduled), the Contractor shall provide and maintain lighting on all equipment and at all work stations.

The lighting facilities shall be capable of providing light of sufficient intensity to permit good workmanship, safety and proper inspection at all times. The lighting shall be cut off and arranged on stanchions at a height that will provide perimeter lighting for each piece of equipment and will not interfere with traffic, including commercial vehicles, approaching the work site from either direction.

The Contractor shall have available portable floodlights for special areas.

The Contractor shall utilize padding, shielding or other insulation of mechanical and electrical equipment, if necessary, to minimize noise, and shall provide sufficient fuel, spare lamps, generators, etc. to maintain lighting of the work site.

The Contractor shall submit, as a subset of the Traffic Control Plan, a lighting plan at the Preconstruction Conference, showing the type and location of lights to be used for night work. The Resident may require modifications be made to the lighting set up in actual field conditions.

Prior to beginning any Night Work, the Contractor shall furnish a light meter for the Residents use that is capable of measuring the range of light levels from 5 to 20 foot-candles.

Horizontal illumination, for activities on the ground, shall be measured with the photometer parallel to the road surface. For purposes of roadway lighting, the photometer is placed on the pavement. Vertical illumination, for overhead activities, shall be measured with the photometer perpendicular to the road surface. Measurements shall be taken at the height and location of the overhead activity.

Night Work lighting requirements:

Mobile Operations: For mobile-type operations, each piece of equipment (paver, roller, milling machine, etc) will carry indirect (i.e. balloon type) lights capable of producing at least 10 foot-candles of lighting around the work area of the equipment.

Fixed Operations: For fixed-type operations (flaggers, curb, bridge, pipes, etc.), direct (i.e. tower) lighting will be utilized capable of illuminating the work area with at least 10 foot-candles of light.

Hybrid Operations: For hybrid-type operations (guardrail, sweeping, Inslope excavation, etc.), either direct or indirect lighting may be utilized. The chosen lights must be capable of producing at least 10 foot-candles of light around the work area of the equipment
Inspection Operations: Areas required to be inspected by the Department will require a minimum of 5 foot-candles of lighting. This may be accomplished through direct or indirect means.

All workers shall wear safety apparel labeled as meeting the ANSI 107-2004 standard performance for Class 3 risk exposure.

The Contractor shall apply 2- inch wide retro-reflective tape, with alternating red and white segments, to outline the front back and sides of construction vehicles and equipment, to define their shape and size to the extent practicable. Pickup trucks and personal vehicles are exempt from this requirement. The Contractor shall furnish approved signs reading "Construction Vehicle - Keep Back" to be used on trucks hauling to the project when such signs are deemed necessary by the Resident. The signs shall be a minimum of 30 inches by 60 inches, Black and Orange, ASTM D 4956 - Type VII, Type VIII, or Type IX (prismatic).

All vehicles used on the project, including pickup trucks and personal vehicles, shall be equipped with amber flashing lights, visible from both front and rear, or by means of single, approved type, revolving, flashing or strobe lights mounted so as to be visible 360º. The vehicle flashing system shall be in continuous operation while the vehicle is on any part of the project.

The 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. Failure to follow the approved Lighting Plan will result in a Traffic Control violation.

Payment for lighting, vehicle mounted signs and other costs accrued because of night work will not be made directly but will be considered incidental to the related contract items."

652.8.2 Other Items Replace the first paragraph with the following: "The accepted quantities of flagger hours will be paid for at the contract unit price per hour for each flagging station occupied excluding lunch breaks, and for each approved breaker flagger. Overtime hours, as reported on the certified payrolls, will be paid an additional 30% of the bid price for 652.38. The computation and additional payment for overtime hours will occur during the project close-out process and will be paid as additional hours of 652.38 to the nearest ¼ hour. The contract unit price shall be full compensation for hiring, transporting, equipping, supervising, and the payment of flaggers and all overhead and incidentals necessary to complete the work." 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 Water Pollution Control Plan (SEWPCP) will result in a violation letter and a reduction in payment as shown in the schedule below. 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.

ORIGINAL CONTRACT AMOUNT

From	Up to and	Amount of Penalty Damages per Violation		
More Than	Including	1st	2nd	3rd & Subsequent
$0	$1,000,000	$250	$500	$1,250
$1,000,000	$2,000,000	$500	$1,000	$2,500
$2,000,000	$4,000,000	$1,000	$2,000	$5,000
$4,000,000	and more	$2,000	$4,000	$10,000"

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 (January 2009 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."

703.18 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 its' entirety, the last sentence which begins "This pipe and resins…" and replace with the following; "Manufacturers of corrugated polyethylene pipe must participate in, and maintain compliance with, AASHTO's National Transportation Product Evaluation Program (www.ntpep.org) which audits producers of plastic pipe. A certificate of compliance must be provided with each shipment."

SECTION 708
PAINTS AND PERSERVATIVES

708.03 Pavement Marking Paint Change the first sentence from "…AASHTO M248" to "…the Maine DOT Maintenance Fast-Dry Water-Based Traffic Paint on file at the Traffic Section in Augusta". Delete, in its' entirety, the last sentence.

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."