



STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
16 STATE HOUSE STATION  
AUGUSTA, MAINE  
04333-0016

JOHN ELIAS BALDACCI  
GOVERNOR

DAVID A. COLE  
COMMISSIONER

April 09, 2009  
Subject: **Gardiner**  
Maine State Project No. BR-1263(300)X  
State Pin No.012633.00  
**Amendment No. 1**

Dear Sir/Ms:

Please make the following changes to the Bid Documents:

In the Bid Book (pages 4 - 12) **REMOVE** the "Schedule of Items" dated 090319, nine pages total, and **REPLACE** with the attached new "Schedule of Items" dated 090409, **nine** pages total.

In the Bid Book **ADD** the attached "Special Provision Section 107 Time (Sunday Work)" one page, dated April 8, 2009.

In the Bid Book (pages 77-83) **REMOVE** "Special Provision Section 501 Foundation Piles (Sheet Pile)" seven pages total, dated March 5, 2009.

In the Bid Book **ADD** the attached "Special Provision Section 501 Foundation Piles (Steel Sheet Pile-Delivered)" three pages total, dated April 9, 2009.

In the Bid Book **ADD** the attached "Special Provision section 501 Foundation Piles (Steel Sheet Pile-In Place)" six pages total, dated April 9, 2009.

In the Bid Book (page 84) **REMOVE** "Special Provision Section 502 Structural Concrete (QC/QA Acceptance Methods)" one page, dated March 12, 2009, and **REPLACE** with the attached "Special Provision Section 502 Structural Concrete (QC/QA Acceptance Methods)" one page dated April 1, 2009.

In the Plans, (sheet 2 of 50), under the **Estimated Quantities** list; **REMOVE** Item 501.30 – Steel Sheet Piling – 8210 SF and **ADD** items 501.303 Steel Sheet Piling - Delivered –8210 -Square Foot, and 501.304 Steel Sheet Piling - In Place – 8210 -Square Foot. Make this change in pen and ink.

In the Plans, (sheet 41 of 50), under the **Precast Concrete Superstructure Notes**, delete in its entirety note # 6. Make this change in pen and ink.



PRINTED ON RECYCLED PAPER

The following questions have been received:

**Question:** Page 31, Note 1 references submittals required for various sheet pile connections. Does the Contractor have to follow the general layout as shown on the plans or can he deviate? Is the sheet pile supposed to be fixed to the abutments with Nelson studs or similar? Note 3 indicates the strut elevation is assumed to be at elevation 136.00, but are to be removed after footing installation. The top footing is 136.5. How can the strut be removed if it is encased in the footing?

**Response:** *The Contractor can deviate from that shown as long as the alternate design is certified by a Professional Engineer licensed to practice in the State of Maine and is approved by Maine DOT. The sheet piles are interlocked with the concrete footings via the angle iron welded to sheet piles as indicated on Sheet 38, Details 1, 2 and 3. The concept scheme presented only has the struts required in the wingwall footing area. The top of wingwall footing is El. 135.00 below the assumed El. 136.00. Since the struts are above the footing, they can be removed.*

**Question:** Special Provision 501.06 indicated testing requirements for the sheet pile. Is this correct?

**Response:** *Please see the above changes to Special Provision 501; Sheet pile need not be tested for vertical load capacity. The goal is drive the sheets to bedrock. Sheet pile length should be predicated on the boring information provided.*

**Question:** I have developed a preliminary schedule with minimum tasks required to open the bridge and do not feel the October 1<sup>st</sup> date is achievable. Can the date be extended to reflect the work performed?

**Response:** *Bid pricing shall be based on the October 1, 2009 completion date as stated in the "Special Provision Section 107 Prosecution of Work (Limitation of Operations and Supplemental Liquidated Damages)". The Contractor shall be given the option to work on Sundays (See attached specification).*

**Question:** Could you please provide the quantity and spacing of anodes required for the cathodic protection?

**Response:** *The final quantity of anodes required shall be determined in the field during construction. The exact number of anodes needed cannot be determined now because the location of the mud line shown on the plans is very approximate. At a minimum, the Contractor should bid based on a minimum of at least 6 anodes, however, the final number of anodes needed may be more than 6. The horizontal spacing of the anodes shall be in accordance with Special Provision Section 655 Electrical work (Cathodic Protection) first paragraph.*

**Question:** Does the contractor have the option of using precast concrete deck panels?

**Response:** *Precast concrete deck panels cannot be used on this project.*

**Question:** SP Section 501, Foundation Piles (Sheet Pile), has DOT considered a pay item for Sheet Pile – Delivered? A pay item would reduce the contractor’s risk resulting in a better price for DOT.

**Response:** *Please see above changes to Special Provision 501; Item 501.30 has been eliminated. The following two items have been added to the schedule of items 501.303 Steel Sheet Piling - Delivered –Square Foot and 501.304 Steel Sheet Piling - In Place – Square Foot.*

**Question:** There is a conflict in SP, Section 501 regarding payment to remove obstructions. SP, Section 501, Sheet 3 of 7, Removal of Obstructions will be paid for under common excavation. SP, Section 501, Sheet 7 of 7, removal of obstructions should be included in the unit price. Please Clarify.

**Response:** *Please see above changes to Special Provision 501; Special Provision Section 501 Foundation Piles (Steel Sheet Pile – In Place) states that “All rocks, timbers, or other obstructions within 5 feet of the existing ground surface which interfere with pile advance shall be removed. Excavation and removal of obstructions shall be paid for under pay item 203.20 Common Excavation.” Removal of all other obstructions 5 feet and below are paid for under item 501.304 Steel Sheet Piling - In Place.*

**Question:** SP Section 501.07, Basis of Payment. Does the DOT intend for the Contractor to carry the risk of possibly having to provide driving tips on the sheet pile or a heavier sheet pile section to obtain the specified penetration or bearing value?

**Response:** *Please see above changes to Special Provision 501, Yes, the contractor shall carry the risk of the possibility of having to provide a heavier sheet or having to provide driving tips for the sheet piling.*

**Question:** We could not find a bearing value for the sheet piling or a pile test requirement.

**Response:** *Sheet pile need not be tested for vertical load capacity. The goal is drive the sheets to bedrock. Sheet pile length should be predicated on the boring information provided.*

Consider these changes and information prior to submitting your bid on April 15, 2009.

Sincerely,



*For*

Scott Bickford  
Contracts & Specifications Engineer

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 012633.00A

PROJECT(S): BR-1263(300)X

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS

SECTION 0001 PROJECT ITEMS

0010	202.17 REMOVING EXISTING STRUCTURAL CONCRETE	LUMP		LUMP			
0020	202.202 REMOVING PAVEMENT SURFACE	SY	1690.000				
0030	203.20 COMMON EXCAVATION	CY	1500.000				
0040	203.24 COMMON BORROW	CY	500.000				
0050	203.25 GRANULAR BORROW	CY	10.000				
0060	206.082 STRUCTURAL EARTH EXCAVATION - MAJOR STRUCTURES	CY	980.000				
0070	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	CY	2290.000				
0080	403.209 HOT MIX ASPHALT 9.5 MM HMA (SIDEWALKS, DRIVES, INCIDENTALS)	T	40.000				
0090	403.210 HOT MIX ASPHALT 9.5 MM HMA	T	650.000				
0100	403.213 HOT MIX ASPHALT 12.5 MM HMA BASE	T	410.000				

MAINE DEPARTMENT OF TRANSPORTATION

PAGE: 2

DATE: 090409

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 012633.00A

PROJECT(S): BR-1263(300)X

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0110	409.15 BITUMINOUS TACK COAT - APPLIED	300.000 G				
0120	501.231 DYNAMIC LOADING TEST	4.000 EA				
0130	501.303 STEEL SHEET PILING - DELIVERED	8210.000 SF				
0140	501.304 STEEL SHEET PILING - IN PLACE	8210.000 SF				
0150	501.54 STEEL H-BEAM PILES 117 LBS/FT, DELIVERED	1000.000 LF				
0160	501.541 STEEL H-BEAM PILES 117 LBS/FT, IN PLACE	1000.000 LF				
0170	501.90 PILE TIPS	28.000 EA				
0180	501.91 PILE SPLICES	4.000 EA				
0190	501.92 PILE DRIVING EQUIPMENT MOBILIZATION	LUMP	LUMP			
0200	502.219 STRUCTURAL CONCRETE, ABUTMENTS AND RETAINING WALLS	LUMP	LUMP			
0210	502.229 STRUCTURAL CONCRETE ABUTMENTS AND RETAINING WALL UNDER WATER	LUMP	LUMP			

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 012633.00A

PROJECT(S): BR-1263(300)X

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0220	502.2611 STRUCTURAL CONCRETE ROADWAY & SIDEWALK SLAB ON CONCRETE BRIDGE	225.000 CY				
0230	502.49 STRUCTURAL CONCRETE CURBS AND SIDEWALK	LUMP	LUMP			
0240	503.12 REINFORCING STEEL, FABRICATED AND DELIVERED	69900.000 LB				
0250	503.13 REINFORCING STEEL, PLACING	69900.000 LB				
0260	503.16 WELDED STEEL WIRE FABRIC, COMPLETE IN PLACE	140.000 LB				
0270	508.14 HIGH PERFORMANCE WATERPROOFING MEMBRANE	LUMP	LUMP			
0280	514.06 CURING BOX FOR CONCRETE CYLINDERS	1.000 EA				
0290	515.21 PROTECTIVE COATING FOR CONCRETE SURFACES	LUMP	LUMP			
0300	523.52 BEARING INSTALLATION	10.000 EA				
0310	523.5401 LAMINATED ELASTOMERIC BEARINGS, FIXED	5.000 EA				

SCHEDULE OF ITEMS

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CONTRACT ID: 012633.00A

PROJECT(S): BR-1263(300)X

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0320	523.5402 LAMINATED ELASTOMERIC BEARINGS, EXPANSION	5.000 EA				
0330	526.323 TEXAS CLASSIC RAIL	LUMP	LUMP			
0340	527.3031 ENERGY ABSORBING SYSTEM (ET-PLUS)	1.000 EA				
0350	535.61 PRESTRESSED STRUCTURAL CONCRETE I-GIRDERS	LUMP	LUMP			
0360	602.30 FLOWABLE CONCRETE FILL	345.000 CY				
0370	603.175 18 INCH REINFORCED CONCRETE PIPE CLASS III	150.000 LF				
0380	604.15 MANHOLE	1.000 EA				
0390	604.252 CATCH BASIN TYPE A5-C	7.000 EA				
0400	605.09 6 INCH UNDERDRAIN TYPE B	380.000 LF				
0410	605.11 12 INCH UNDERDRAIN TYPE C	80.000 LF				
0420	605.15 24 INCH UNDERDRAIN TYPE C	100.000 LF				

MAINE DEPARTMENT OF TRANSPORTATION

PAGE: 5

DATE: 090409

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PROJECT(S): BR-1263(300)X

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0430	606.1721 BRIDGE TRANSITION - TYPE 1	4.000 EA				
0440	606.23 GUARDRAIL TYPE 3C - SINGLE RAIL	425.000 LF				
0450	606.2301 GR TY 3C - DOUBLE RAIL	25.000 LF				
0460	606.232 GUARDRAIL TYPE 3C - OVER 15 FOOT RADIUS	50.000 LF				
0470	606.265 TERMINAL END - SINGLE RAIL - GALVANIZED STEEL	1.000 EA				
0480	606.353 REFLECTORIZED FLEXIBLE GUARDRAIL MARKER	8.000 EA				
0490	606.79 GUARDRAIL 350 FLARED TERMINAL	2.000 EA				
0500	607.17 CHAIN LINK FENCE - 6 FOOT	60.000 LF				
0510	607.294 BARRIER BOULDERS	10.000 EA				
0520	609.11 VERTICAL CURB TYPE 1	380.000 LF				
0530	609.12 VERTICAL CURB TYPE 1 - CIRCULAR	80.000 LF				



MAINE DEPARTMENT OF TRANSPORTATION

PAGE: 6

DATE: 090409

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 012633.00A

PROJECT(S): BR-1263(300)X

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0540	609.237 TERMINAL CURB TYPE 1 - 7 FOOT	5.000 EA				
0550	609.2371 TERMINAL CURB TYPE 1- 7 FT - CIRCULAR	2.000 EA				
0560	610.08 PLAIN RIPRAP	400.000 CY				
0570	613.319 EROSION CONTROL BLANKET	45.000 SY				
0580	615.07 LOAM	75.000 CY				
0590	618.1411 SEEDING METHOD NUMBER 3 - PLAN QUANTITY	12.000 UN				
0600	619.1201 MULCH - PLAN QUANTITY	12.000 UN				
0610	619.1401 EROSION CONTROL MIX	35.000 CY				
0620	620.58 NON WOVEN GEOTEXTILE	790.000 SY				
0630	621.121 SMALL DECIDUOUS TREES (5 FOOT - 6 FOOT) GROUP B	12.000 EA				
0640	621.273 LARGE DECIDUOUS TREE (2 INCH - 2.50 INCH CALIPER) GROUP A	6.000 EA				

MAINE DEPARTMENT OF TRANSPORTATION

PAGE: 7

DATE: 090409

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CONTRACT ID: 012633.00A

PROJECT(S): BR-1263(300)X

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0650	621.547 DECIDUOUS SHRUBS (2 FOOT - 3 FOOT) GROUP B	EA 48.000				
0660	621.552 DECIDUOUS SHRUBS (3 FOOT - 4 FOOT) GROUP A	EA 42.000				
0670	627.18 12 " SOLID WHITE PAVEMENT MARKING	LF 125.000				
0680	627.711 WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE (PLAN QUANTITY)	LF 2185.000				
0690	627.76 TEMPORARY PVMT. MARK LINE, W OR YELLOW	LUMP LUMP				
0700	627.811 TEMPORARY BI-DIRECTIONAL YELLOW DELINEATORS	EA 25.000				
0710	629.05 HAND LABOR, STRAIGHT TIME	HR 12.000				
0720	631.12 ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	HR 12.000				
0730	631.14 GRADER (INCLUDING OPERATOR)	HR 12.000				
0740	631.15 ROLLER, EARTH AND BASE COURSE (INCLUDING OPERATOR )	HR 12.000				
0750	631.172 TRUCK - LARGE (INCLUDING OPERATOR)	HR 12.000				

MAINE DEPARTMENT OF TRANSPORTATION

PAGE: 8

DATE: 090409

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 012633.00A

PROJECT(S): BR-1263(300)X

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0760	631.18 CHAIN SAW RENTAL (INCLUDING OPERATOR)	80.000 HR				
0770	631.20 STUMP CHIPPER (INCLUDING OPERATOR)	20.000 HR				
0780	631.22 FRONT END LOADER (INCLUDING OPERATOR)	12.000 HR				
0790	637.071 DUST CONTROL	LUMP	LUMP			
0800	639.18 FIELD OFFICE TYPE A	1.000 EA				
0810	652.312 TYPE III BARRICADE	6.000 EA				
0820	652.33 DRUM	25.000 EA				
0830	652.34 CONE	25.000 EA				
0840	652.35 CONSTRUCTION SIGNS	50.000 SF				
0850	652.361 MAINTENANCE OF TRAFFIC CONTROL DEVICES	LUMP	LUMP			
0860	652.38 FLAGGER	200.000 HR				

MAINE DEPARTMENT OF TRANSPORTATION

PAGE: 9

SCHEDULE OF ITEMS

DATE: 090409

REVISED:

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PROJECT(S): BR-1263(300)X

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0870	655.50 CATHODIC PROTECTION SYSTEM	LUMP	LUMP			
0880	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP	LUMP			
0890	659.10 MOBILIZATION	LUMP	LUMP			
	SECTION 0001 TOTAL					
	TOTAL BID					

**SPECIAL PROVISION**  
**SECTION 107**  
**TIME**  
**(Sunday Work)**

Subsection 107.3.3 of the Standard Specifications is amended as follows:

The Contractor shall be allowed to work on Sunday. The Contractor shall provide the Resident with a minimum 48 hour notice before commencing work on a Sunday.

SPECIAL PROVISION  
SECTION 501  
FOUNDATION PILES  
(Steel Sheet Pile-Delivered)

501.01 Description. This work shall consist of furnishing fusion bond epoxy coated steel sheet pile of the types and dimensions specified on the contract plans and/or as specified within this specification, to the required elevation or refusal. Sheet piles shall conform to and be installed, as detailed in these specifications, in reasonably close conformity to the lines, grades, and locations shown on the plans or as authorized by the Resident.

501.02 Submittals.

- A. Shop Drawings: Submit drawings for approval prior to start of the work or ordering materials. Include details of top protection, splices, fabricated additions to plain piles. Include method of installation, type and size of pile hammer, cut-off method, and corrosion protection. Drawings for sheet piling including fabricated sections shall show complete dimensions including details of piling and the driving schedule, sequence and location of piling. Include details and dimensions of templates and other temporary guide structures for installing the piling. Provide details of the method of handling sheet piling to prevent permanent deflection, distortion or damage to interlocks.
- B. Design Calculations: The contractor shall submit a copy of the designer's calculation as part of the shop drawing submittal. 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.
- C. Certificates: Material certificates including chemical and physical test results.

501.03 Materials.

- A. Sheet piles shall be hot-rolled steel meeting the chemical and mechanical requirements of ASTM A 572 Grade 50. The interlock of sheet piling shall be free-sliding, and maintain continuous interlocking when installed. Sheet piling including special fabricated sections shall be full-length sections of the dimensions shown. Fabricated sections shall conform to the requirements herein and the piling manufacturer's recommendations for fabricated sections. Provide sheet piling with standard pulling holes. Any metalwork fabrication for sheet pile sections shall conform to the requirements of Section 504, Structural Steel

- B. The steel sheet piling shall be coated with a fusion bond epoxy coating using Federal Color Standard 595 Color FS 20059 (i.e. brown). The fusion bonded epoxy coating shall be applied in accordance with supplemental specification Section 506 Protective Coating – Steel Dated June 5, 2006 subsection 506.40
- C. Sheet Pile Connectors – Where sheet pile changes direction, connectors shall be equivalent to those manufactured by PilePro LLC or Skyline Steel LLC or LB Foster Company. Connectors shall be of the same material as the sheet pile.
- C. Certification: Contractor shall certify that all component materials, manufacturing operations, and/or furnished products conform to all MaineDOT requirements pertinent to the project plans, special provisions and specifications for the contract items indicated.

501.04 Design Requirements The sheet pile system shall be designed in accordance with the following:

- A. The sheet pile wall system shall be designed in accordance with the AASHTO Standard Specifications for Highway Bridges, 17<sup>th</sup> Edition, 2002 with interims (ASD design), or the current edition of AASHTO LRFD Bridge Design Specifications (LRFD design)
- B. The contractor shall submit design calculations as described in section 501.02, Submittals.
- C. The contractor shall perform a wave equation analysis for review and acceptance by the Project Geotechnical Engineer. The analysis shall consider the proposed driving equipment. The contractor must limit pile driving stresses to allowable levels of less than  $0.9 F_y$ . Ultimate pile capacity will not be a consideration for equipment acceptance.
- D. The Contract Plans
- E. The requirements specified herein
- F. The manufacturer's requirements

501.06 Method of Measurement. The accepted quantity of steel sheet piling-delivered will be measured by the number of square feet of surface area delivered and accepted.

501.07 Basis of Payment. The accepted quantity of steel sheet piling-delivered will be paid for at the contract unit price per square foot, furnished, and accepted. The price

Gardiner  
PIN 12633.00.00  
April 9, 2009

shall be full compensation for furnishing including coating, transporting, unloading, storing and handling.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
501.330      Steel Sheet Piling-Delivered	SF



SPECIAL PROVISION  
SECTION 501  
FOUNDATION PILES  
(Steel Sheet Pile-In Place)

501.01 Description. This work shall consist of driving/installing fusion bond epoxy coated steel sheet pile of the types and dimensions specified on the contract plans and/or as specified within this specification, to the required elevation or refusal. Sheet piles shall conform to and be installed, as detailed in these specifications, in reasonably close conformity to the lines, grades, and locations shown on the plans or as authorized by the Resident.

501.02 Submittals.

- A. Records: Pile driving records

501.04 Construction Methods.

- A. Earthwork

1. Any excavation and backfill shall be performed in accordance with Section 203 Excavation and Embankment
2. Obstructions encountered in pile locations shall be dealt with as follows:
  - a. All rocks, timbers, or other obstructions within 5 feet of the existing ground surface which interfere with pile advance shall be removed. Excavation and removal of obstructions shall be paid for under pay item 203.20 Common Excavation.
  - b. In the case of an apparent obstruction below the level in (a), but above anticipated full depth, which prevents appreciable penetration of a pile (s), the abnormal condition will receive further consideration by the Resident. Depending on depth and resistance of the obstruction, the Resident will decide whether to consider the pile (s) acceptable or order the obstruction removed. The decision may be deferred until the driving of adjacent piles indicates the obstruction to be isolated or extending over the area of several piles.
  - c. Jetting shall be done only with permission of the Resident and must be addressed in the Contractor's SEWPCP. When water jets are

used, the number of jets and the volume and pressure of the water at the nozzle shall be sufficient to erode freely them material adjacent to the piles. The plant shall have sufficient capacity to deliver at all times at least 100 psi pressure at two ¾ inch jet nozzles. Before the design penetration is reached, the jets shall be with drawn and the piles shall be driven with the hammer to the required penetration or bearing capacity.

- d. Preaugering When necessary to obtain the specified pile penetration and when authorized by the Resident, The Contractor shall furnish the necessary drilling apparatus and drill holes, not greater then the least dimension of the pile top, to the proper depth and driver the piles therein. When specified in the contract documents, the Contractor shall prebore holes at pile locations and to the depths shown on the plans. Preaugered holes shall be of a size smaller than the diameter of diagonal of the pile cross section. If subsurface obstructions, such as boulder or rock layers are encountered, the hole diameter may be increased to the least dimension needed for pile installation. Any void space remaining around any type pile after driving shall be completely filled with sand or other approved material. The use of spuds, which are driven and removed to make a hole for inserting a pile, shall not be permitted in lieu of preboring.

## B. Installation

### 1. Pile Hammer

For steel sheet piles, both a vibratory and an impact hammer shall be available to the Contractor to install the sheet piles. Use a pile hammer having a delivered force or energy suitable for the total weight of the pile and the character of subsurface material to be encountered. Operate hammer at the rate (s) recommended by the manufacturer throughout the entire driving period. Repair damage to piling caused by use of a pile hammer with excess delivered force or energy.

For steel H-piles, piles shall be furnished and driven in accordance with Section 501 Foundation Piles. A vibratory hammer shall not be used. Piles shall be spaced as required by the designer and shown on the submittal plans and driven to the elevations shown on the submittal plans.

### 2. Pile Protection

Use a protective cap during driving to prevent damage to the top of the piles. The contractor shall use care during driving operations so as not to damage the

coating on the steel sheet piling. Any coating damaged during driving operations shall be repaired by the contractor in accordance with the manufacturer's recommendations.

### 3. Templates for Sheet Piles

Prior to driving, provide template or driving frame suitable for aligning, supporting, and maintaining sheet piling in the correct position during setting and driving. Use a system of structural framing sufficiently rigid to resist lateral and driving forces and to adequately support the sheet piling until design tip elevation is achieved. Provide at least two levels of support, at third points. Templates shall not move when supporting sheet piling. Fit templates with wood blocking to bear against the web of each alternate sheet pile and hold the sheet pile at the design location alignment. Provide outer template straps or other restraints as necessary to prevent the sheets from warping or wandering from the alignment. Mark template for the location of the leading edge of each alternate sheet pile. If in view, also mark the second level to assure to that the piles are vertical and in position. If two guide marks cannot be seen, other means must be used to keep the sheet pile vertical along its leading edge. The surfaces of the driving template shall be covered with a material that will not mar or damage the coating on the steel sheet piling.

### 4. Pile Driving

Drive sheet pile to the indicated tip elevations. Maintain piling vertical during driving. Drive piles in such a manner as to prevent damage to the piles and to provide a continuous closure.

Where possible for sheet piles, drive Z-pile with the ball end leading. If an open socket is leading, a bolt or similar object placed in the bottom of the interlock will minimize packing material into it and ease driving for the next sheet. Incrementally sequence the driving of individual piles such that the tip of any sheet pile shall not be more than 4 feet below that of any adjacent sheet pile.

Piles that have heaved more than  $\frac{1}{4}$  inch during the driving of other piling shall be resealed to the required penetration or bearing capacity at the Contractor's expense.

### 5. Cutting and Splicing

Piles driven to refusal or the point where additional penetration cannot be attained and are extending above the required top elevation in excess of the specified tolerance shall be cut off to the required elevation. Piles driven

below the required top elevation and piles damaged by driving and cut off to permit further driving shall be extended as required to reach the top elevation by splicing when directed by the Resident. One splice per pile will be permitted. Not splices are permitted when they will be visible at or above the water surface. Piles adjoining spliced piles shall be full length unless otherwise approved. Welding of splices shall conform to the requirements of Section 504, Structural Steel. Ends of piles to be spliced shall be squared before splicing to eliminate dips or camber. Splice piles with concentric alignment of the interlocks so that there are no discontinuities, dips or camber at the abutting interlocks. Spliced piles shall be free sliding and able to obtain the maximum swing with contiguous piles. Trim the tops of piles excessively battered during driving, when directed at no cost. Use a straight edge in cutting by burning to avoid abrupt nicks. Bolt holes shall be drilled or may be burned and reamed by approved methods which will not damage the surrounding metal. Holes other than bolt holes shall be smooth and the proper size for rods or other items to be inserted. Do not use explosives for cutting. Any cuts shall be coated with zinc rich paint applied in accordance with the manufacturer's recommendations.

#### 6. Welding

Shop and field welding, qualifications of welding procedures, welders, and welding operators shall be in accordance with AWS D1.1.

#### 7. Tolerances in Driving

##### Sheet Piles

Drive all piles with a variation from vertical of not more than ¼ inch per foot. Place the pile so the face will not be more than 6 inches from vertical alignment at any point over the entire length of the earth retention system. Top of pile at elevation of cut-off shall be within 2 in. horizontally and 2 in. vertically of the location indicated. Manipulation of piles to force them into position will not be permitted. Check all piles for heave. Redrive all heaved piles to the required tip elevation.

### C. Inspection

Perform continuous inspection during pile driving by frequent optical surveying of the pile alignment relative to an established reference base line. Inspect all piles for compliance with tolerance requirements regarding horizontal and vertical alignment. Bring any unusual problems which may occur to the attention of the Resident.

#### 1. Inspection of Driven Piling

The Contractor shall inspect the interlocks of the portion of driven sheet piles that extend above ground. Remove and replace piles found to be out of interlock.

2. Pulling and Redriving

The Contractor may be required to pull selected piles after driving to bring into location tolerance, or to determine the condition of the underground portions of piles. The pile pulling method must be approved by the Resident. Remove and replace at the Contractor's expense any pile pulled and found to be damaged to the extent that its usefulness in the structure is impaired. Redrive piles pulled and found to be in satisfactory condition.

3. Installation Records

Maintain a pile driving record for each pile. Indicate on the installation record installation dates and times, type and size of hammer, rate of operation, total driving time, dimensions of driving helmet and cap used, blows or time required per foot for each foot of penetration, driving resistance in blows for final 6 in. of penetration, pile locations, tip elevations, ground elevations, and cut-off elevations. Record any unusual pile driving problems. Submit complete records to the Resident.

501.05 Defective Pile and Corrective Measures The procedure incident to the driving of pile shall not subject the piles to excessive and undue abuse causing deformation. Any pile damaged due to internal defects, improper driving, or driven below cutoff elevation shall be consider defective and shall be corrected by and at the expense of the Contractor by a method approved by the Resident.

501.06 Driven Pile Capacity, Pile Testing, and Acceptance Pile testing and acceptance shall be done in accordance with Maine DOT Standard Specification subsection 501.07

501.06 Method of Measurement. The accepted quantity of steel sheet piling will be measured by the number of square feet of surface area completed in place.

501.07 Basis of Payment. The accepted quantity of steel sheet piling will be paid for at the contract unit price per square foot, complete in place. The price shall be full compensation for installation including handling, driving, placing or erecting the material specified including installing sheet piles and all related hardware, installation and removal of any temporary bracing, installation and removal of pile driving

template, removal and disposal of any obstructions, coating repairs and any pile testing as specified by the plans and described in these specifications.

Full compensation for all jetting, drilling, providing special driving tips or heavier sections for steel piles or other work necessary to obtain the specified penetration and bearing value of the piles, for drilling holes through embankment and fill the space remaining around the pile with sand or pea gravel, for disposing of material resulting from frilling holes, and for all excavation and backfill involved in construction concrete extension as shown on the plans, and as specified in these specification and the special provision and as direct by the Resident shall be considered as included in the contract unit price paid for steel sheet piling and no additional compensation will be allowed therefore.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
501.304 Steel Sheet Piling-In Place	SF

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

CLASS OF CONCRETE	ITEM NUMBER	DESCRIPTION	P	METHOD
A	502.219	Structural Conc. Abut. and Retaining Walls	\$425	A
S	502.229	Structural Concrete Abutments & Retaining Walls (Placed under water)		C
A	502.2611	Structural Concrete Roadway and Sidewalk Slabs on Concrete Bridges	\$425	A
LP	502.49	Structural Concrete Curbs and Sidewalk	\$425	A
LP	526.323	Texas Class Rail	\$425	A

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