



Janet T. Mills
GOVERNOR

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

Bruce A. Van Note
COMMISSIONER

July 12, 2019
Subject: Fender System Modifications
State WINs: 023484.00 & 023823.00
Location: **Islesboro & Vinalhaven**
Amendment No. 5

Dear Sir/Ms.:

Please make the following changes to the Bid Book:

In the Bid Book:

REMOVE pages 17 – 23, Proposal Schedule of Items, 7 pages, dated 6/12/2019, and **REPLACE** with the attached, revised Proposal Schedule of Items, 8 pages, dated 7/12/2019.

REMOVE pages 85 – 89, SPECIAL PROVISION - SECTION 501 - FOUNDATION PILES - (Steel Pipe Piles) - (Pile Tips) - (Pile Splices), 5 pages, dated June 6, 2019, and **REPLACE** with the attached, revised SPECIAL PROVISION - SECTION 501 - FOUNDATION PILES - (Steel Pipe Piles) - (Pile Tips) - (Pile Splices) - (Rock Socketed Pipe Pile) - (Drilling Equipment Mobilization) - (Dynamic Loading Test), 8 pages, dated July 12, 2019.

The following questions have been received:

Question: Sheet S08 of the Vinalhaven Plans depicts modifications to the fender panels at the D3 & D4 dolphins, however no details are given for the type of fender panel required at these locations. What fender panel is required at this location? Also, is a pay item included in the schedule of items for this new / modified panel?

Response: The berthing dolphins D3 and D4 steel fender panels are not being modified but are being shimmed at the rubber conical buckling fender connection for a greater standoff from the transfer ramp at MHHW. The details for these modifications may be found on Sheet S10.

Question: The Schedule of Items includes item 507.0842 Ornamental Pedestrian Railing (LS), however I am unable to find details for this railing in either the project plans or the project special provisions. Can details on this railing be provided?

Response: Item 507.0842 is associated with the steel pipe handrail shown on Sheet S08 of the Vinalhaven Plan set and Sheet S09 of the Islesboro Plan set for modification lengths and locations.

Question: In regard to the treated timbers; Are tagged rather than branded timbers acceptable? Also, is MaineDOT willing to waive independent inspection if timbers come from a certified mill?

Response: Tagged timbers would be acceptable if in accordance with American Lumber Standard Committee marking standards. If the timbers come from a certified mill, a waiver of inspection is acceptable, as long as the mill's audit documentation is provided to MaineDOT.

In Amendment No. 1, the following question had been received but had an incorrect response:

Question: Sheet G02 states that steel pipe piles shall be driven to a minimum nominal resistance of 1,280 kips. How will steel pipe pile capacity be verified? Will testing be required? If so, how will pile capacity verification testing be paid for?

Response: ~~Note 5 on Sheet G02 of the WIN 023823.00 and WIN 023484.00 Plan sets shall be removed as noted by the above changes to the bid documents. A detailed summary of applied loads and capacities was developed directly on Sheet S03 in the plan set at the completion of the design phase. The installation procedures and requirements may be found in Special Provision 501. Please see above changes to PLAN SHEET G02, GENERAL NOTES AND DESIGN CRITERIA. Testing of the steel pipe piles is not required. Acceptance of the steel pipe piles will be based on achieving required embedment (socket) depth into bedrock. Note available boring logs and estimated pile lengths provided in the plans. Refer to Special Provision section 501.102, Installation and Excavation, for additional details.~~

Corrected Response: Note 5 on Sheet G02 of the WIN 023823.00 and WIN 023484.00 Plan sets shall be removed as noted by the above changes to the bid documents. A detailed summary of applied loads and capacities was developed directly on Sheet S03 in the plan set at the completion of the design phase. The installation procedures and requirements may be found in Special Provision 501. Please see above changes to PLAN SHEET G02, GENERAL NOTES AND DESIGN CRITERIA.

In Amendment No. 2, the following question had been received but had an incorrect response:

Question: 501.102 "the pipe piles shall be advanced into bedrock with a cutting shoe and cleaned out to competent rock" The cutting shoe shown on the plans is an open ended pile driving shoe. Is it the States intention to try to drive the pipe piles two feet into ledge?? Please clarify.

Response: ~~The intent is to advance and socket the piles into competent rock. The Plans and Specifications intended to convey one possible advancement method.~~

Corrected Response: See attached, revised SPECIAL PROVISION - SECTION 501 - FOUNDATION PILES - (Steel Pipe Piles) - (Pile Tips) - (Pile Splices) - (Rock Socketed Pipe Pile) - (Drilling Equipment Mobilization) - (Dynamic Loading Test).

In Amendment No. 3, the following question had been received but had an incorrect response:

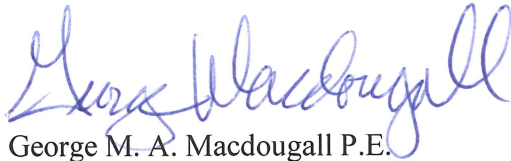
Question: Sheet S03 and Amendment No. 1 indicate the pipe pile are to be socketed into bedrock. Can items be added for Rocket Socketed Pipe Pile (501.103) or Rock Socket (501.802) as well as Drilling Equipment Mobilization (501.804)?

Response: ~~The Contractor shall advance the pipe piles into bedrock without the use of specialized pile installation equipment. Pipe piles may be driven or spun into the rock to achieve an embedment or socket which will prevent lateral movement of the pile tip. Given the quality of the bedrock, a 2-ft embedment is prescribed. Since the pipe pile installation method is a Contractor decision, we have provided only four basic pay items to capture the cost of the pipe pile installation work: Pipe Piles Delivered, Pipe Piles Installed, Pile Driving Equipment Mobilization, and Rock Anchors. The Contractors shall use these pay items to capture all costs associated with pipe pile installation.~~

Corrected Response: See attached, revised SPECIAL PROVISION - SECTION 501 - FOUNDATION PILES - (Steel Pipe Piles) - (Pile Tips) - (Pile Splices) - (Rock Socketed Pipe Pile) - (Drilling Equipment Mobilization) - (Dynamic Loading Test).

Consider these changes and information prior to submitting your bid on **July 17, 2019**.

Sincerely,



George M. A. Macdougall P.E.
Contracts & Specifications Engineer

7/12/2019

Maine Department of Transportation

Proposal Schedule of Items

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Proposal ID: 023484.00

Project(s): 023484.00, 023823.00

SECTION: 1 Project Items

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
0010	202.01 REMOVING STRUCTURES AND OBSTRUCTIONS	LUMP SUM		LUMP SUM		
0020	202.071 REMOVAL AND DISPOSAL OF CRIB WORK	1.000 LS				
0030	202.1292 REMOVE EXISTING STRUCTURAL TIMBER	LUMP SUM		LUMP SUM		
0040	202.14 REMOVING EXISTING RAILINGS (PROPERTY OF CONTRACTOR)	69.000 LF				
0050	202.2111 REMOVING, STORING, AND RESETTING OBJECTS - Chock	15.000 EA				
0060	501.201 TIMBER PILES, DELIVERED	4,050.000 LF				
0070	501.202 TIMBER PILES, IN-PLACE	4,050.000 LF				
0080	501.231 DYNAMIC LOADING TEST	3.000 EA				
0090	501.24 STEEL PIPE PILES	1,690.000 LF				
0100	501.241 STEEL PIPE PILES - IN-PLACE	1,490.000 LF				
0110	501.802 ROCK SOCKET	62.000 LF				
0120	501.804 DRILLING EQUIPMENT MOBILIZATION	LUMP SUM		LUMP SUM		

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Proposal ID: 023484.00

Project(s): 023484.00, 023823.00

SECTION: 1 Project Items

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
0130	501.90 PILE TIPS	31.000 EA	_____	_____	_____	_____
0140	501.903 PILE TIPS - ROCK INJECTOR POINT	82.000 EA	_____	_____	_____	_____
0150	501.91 PILE SPLICES	6.000 EA	_____	_____	_____	_____
0160	501.92 PILE DRIVING EQUIPMENT MOBILIZATION	LUMP SUM	LUMP SUM	_____	_____	_____
0170	502.2351 STRUCTURAL CONCRETE, PILE CAP - Dolphin	380.000 CY	_____	_____	_____	_____
0180	503.14 EPOXY-COATED REINFORCING STEEL, FABRICATED AND DELIVERED	90,200.000 LB	_____	_____	_____	_____
0190	503.15 EPOXY-COATED REINFORCING STEEL, PLACING	90,200.000 LB	_____	_____	_____	_____
0200	504.510 MISC. FABRICATION - Alum. Gangway - (40') (Islesboro)	LUMP SUM	LUMP SUM	_____	_____	_____
0210	504.510 MISC. FABRICATION - Alum. Gangway (29') (Islesboro)	LUMP SUM	LUMP SUM	_____	_____	_____
0220	504.510 MISC. FABRICATION - Alum. Gangway (29') (Vinalhaven)	LUMP SUM	LUMP SUM	_____	_____	_____
0230	504.510 MISC. FABRICATION - Aluminum Gangway (42') (Islesboro)	LUMP SUM	LUMP SUM	_____	_____	_____

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Proposal ID: 023484.00

Project(s): 023484.00, 023823.00

SECTION: 1 Project Items

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
0240	504.510 MISC. FABRICATION - Dolphin Ladder (Vinalhaven)	LUMP SUM	LUMP	SUM	_____	_____
0250	504.510 MISC. FABRICATION - Fender Block (Islesboro)	LUMP SUM	LUMP	SUM	_____	_____
0260	504.510 MISC. FABRICATION - Fender Block (Vinalhaven)	LUMP SUM	LUMP	SUM	_____	_____
0270	504.510 MISC. FABRICATION - Pad Eye (Islesboro)	LUMP SUM	LUMP	SUM	_____	_____
0280	504.510 MISC. FABRICATION - Pad Eye (Vinalhaven)	LUMP SUM	LUMP	SUM	_____	_____
0290	504.510 MISC. FABRICATION - Remove Line Guard (Islesboro)	LUMP SUM	LUMP	SUM	_____	_____
0300	504.510 MISC. FABRICATION - Remove Line Guard (Vinalhaven)	LUMP SUM	LUMP	SUM	_____	_____
0310	504.510 MISC. FABRICATION - Shim (Vinalhaven)	LUMP SUM	LUMP	SUM	_____	_____
0320	504.510 MISC. FABRICATION - Spacer Plate (Islesboro)	LUMP SUM	LUMP	SUM	_____	_____
0330	504.510 MISC. FABRICATION - Spacer Plate (Vinalhaven)	LUMP SUM	LUMP	SUM	_____	_____

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Proposal ID: 023484.00

Project(s): 023484.00, 023823.00

SECTION: 1 Project Items

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
0340	504.601 RUBBER FENDERS - Leg Type II (Vinalhaven)	LUMP SUM	LUMP	SUM	_____	_____
0350	504.601 RUBBER FENDERS - Arch (Islesboro)	LUMP SUM	LUMP	SUM	_____	_____
0360	504.601 RUBBER FENDERS - Conical (Vinalhaven)	LUMP SUM	LUMP	SUM	_____	_____
0370	504.601 RUBBER FENDERS - Leg Type 3 (Islesboro)	LUMP SUM	LUMP	SUM	_____	_____
0380	504.601 RUBBER FENDERS - Leg Type I (Vinalhaven)	LUMP SUM	LUMP	SUM	_____	_____
0390	504.642 SUPPORT CHAIN	14.000 EA	_____	_____	_____	_____
0400	504.6422 SHEAR CHAIN	28.000 EA	_____	_____	_____	_____
0410	504.6423 TENSION CHAIN	28.000 EA	_____	_____	_____	_____
0420	504.65 STEEL FENDER PANEL, CLOSED BOX, WITH UHMW WEARING SURFACE - Type 2	1.000 EA	_____	_____	_____	_____
0430	504.651 STEEL FENDER PANEL, CLOSED BOX, WITH UHMW WEARING SURFACE - TYPE 1	6.000 EA	_____	_____	_____	_____

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Proposal ID: 023484.00

Project(s): 023484.00, 023823.00

SECTION: 1 Project Items

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
0440	504.653 STEEL FENDER PANEL, CLOSED BOX, W/ UHMW WEARING SURFACE - EXTENSIONS	3.000 EA	_____	 _____	_____	 _____
0450	504.845 1 INCH DIAMETER SHACKLE	170.000 EA	_____	 _____	_____	 _____
0460	504.846 U BOLT DOGBONE	105.000 EA	_____	 _____	_____	 _____
0470	504.9051 ROCK ANCHOR	31.000 EA	_____	 _____	_____	 _____
0480	504.999 REMOVE AND DISPOSE FENDER PANEL	3.000 EA	_____	 _____	_____	 _____
0490	506.9106 FUSION BONDED EPOXY COATING	LUMP SUM	LUMP SUM	 _____	_____	 _____
0500	507.0841 STEEL PIPE HAND RAILING	LUMP SUM	LUMP SUM	 _____	_____	 _____
0510	507.0842 ORNAMENTAL PEDESTRIAN RAILING	LUMP SUM	LUMP SUM	 _____	_____	 _____
0520	514.06 CURING BOX FOR CONCRETE CYLINDERS	2.000 EA	_____	 _____	_____	 _____
0530	515.20 PROTECTIVE COATING FOR CONCRETE SURFACES	450.000 SY	_____	 _____	_____	 _____
0540	518.50 REPAIR OF UPWARD FACING SURFACES - TO REINFORCING STEEL < 8 IN.	10.000 SF	_____	 _____	_____	 _____

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Proposal ID: 023484.00

Project(s): 023484.00, 023823.00

SECTION: 1 Project Items

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
0550	518.51 REPAIR OF UPWARD FACING SURFACES - BELOW REINFORCING STEEL < 8 IN.	10.000 SF	_____	_____	_____	_____
0560	518.60 REPAIR OF VERTICAL SURFACES < 8 IN.	20.000 SF	_____	_____	_____	_____
0570	528.08 STRUCTURAL TIMBER - Wave Screens (5300' tot.) - Vinalhaven	LUMP SUM	LUMP	SUM	_____	_____
0580	528.08 STRUCTURAL TIMBER - Wave Screens (5900' total) - Islesboro	LUMP SUM	LUMP	SUM	_____	_____
0590	629.05 HAND LABOR, STRAIGHT TIME	120.000 HR	_____	_____	_____	_____
0600	631.36 FOREPERSON	120.000 HR	_____	_____	_____	_____
0610	634.1812 1" LIQUID-TIGHT FLEXIBLE CONDUIT	120.000 LF	_____	_____	_____	_____
0620	634.189 1" PVC COATED RIGID STEEL CONDUIT	375.000 LF	_____	_____	_____	_____
0630	634.2074 REMOVE AND RELOCATE DOLPHIN LIGHTING	1.000 EA	_____	_____	_____	_____
0640	634.2075 REMOVE AND RELOCATE NAVIGATION LIGHTING	2.000 EA	_____	_____	_____	_____
0650	634.2076 DOLPHIN LIGHTING	8.000 EA	_____	_____	_____	_____

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Proposal ID: 023484.00

Project(s): 023484.00, 023823.00

SECTION: 1 Project Items

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
0660	634.2311 STAINLESS STEEL EXTERIOR PULL BOX	34.000 EA	_____	 _____	_____	 _____
0670	634.2312 TRANSFORMER WORK	1.000 LS	_____	 _____	_____	 _____
0680	634.316 #10 AWG COPPER WIRE	1,300.000 LF	_____	 _____	_____	 _____
0690	634.3161 #12 AWG COPPER WIRING	695.000 LF	_____	 _____	_____	 _____
0700	634.730 REMOVE EXISTING ELECTRICAL COMPONENTS	LUMP SUM	LUMP SUM		_____	 _____
0710	639.20 FIELD OFFICE TYPE C	2.000 EA	_____	 _____	_____	 _____
0720	645.265 NAVIGATION SIGN	1.000 EA	_____	 _____	_____	 _____
0730	655.501 CATHODIC PROTECTION BY SACRIFICIAL ANODE	39.000 EA	_____	 _____	_____	 _____
0740	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP SUM	LUMP SUM		_____	 _____
0750	659.10 MOBILIZATION	LUMP SUM	LUMP SUM		_____	 _____
0760	841.55 MOORING BOLLARD - Double Bitt	5.000 EA	_____	 _____	_____	 _____
0770	841.56 MOORING CLEAT - Chock	20.000 EA	_____	 _____	_____	 _____

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Proposal ID: 023484.00

Project(s): 023484.00, 023823.00

Section: 1

Total:

_____!

Total Bid:

_____!

SPECIAL PROVISION
SECTION 501
FOUNDATION PILES
(Steel Pipe Piles)
(Pile Tips)
(Pile Splices)
(Rock Socketed Pipe Pile)
(Drilling Equipment Mobilization)
(Dynamic Loading Test)

All work and materials shall conform to the Contract Drawings and the provisions of the State of Maine Department of Transportation Standard Specifications, November 2014, SECTION 501 – FOUNDATION PILES, with the following modifications:

501.01 Description

Add the following paragraphs:

This work shall consist of furnishing and installing pipe piles, including socketing the pipe piles into bedrock; cleaning out pipe piles; and furnishing concrete and filling pipe piles with concrete in accordance with the plans and specifications.

Drilling, furnishing, installing, testing and tensioning rock anchors in pipe piles shall be in accordance with Special Provision 504, Rock Anchors.

501.02 Materials

This Subsection is amended with the following:

Pipe pile material shall meet the requirements of ASTM A252, Grade 3 with minimum yield strength of 45 ksi per MaineDOT Standard Specification 711.01.

Pipe pile tips shall support open-ended drilling operations and shall meet or exceed the strength requirements of ASTM A148, Grade 90-60 for steel casings.

Pipe pile splice backup ring material shall be any steel listed in AWS Structural Steel Welding Code D1.1, Table 3.1 with the exception of 100 ksi minimum yield strength steels.

Concrete for Steel Pipe pile shall be Class A and shall meet the requirements of Section 502 - Structural Concrete.

Steel pipe pile material shall be coated with a Fusion Bonded Epoxy Coating as specified in SECTION 506 – SHOP APPLIED PROTECTIVE COATING – STEEL. The limit of fusion bonded epoxy coating applied to the steel pipe piles shall be the entire length of the pile.

Turbidity control measures shall be designed to prevent entanglement or entrapment of ESA-listed species. Pile installation shall occur within a turbidity curtain.

501.042 Equipment for Driving Piles

The last sentence of the fourth paragraph is amended as follows:

The Contractor may use a close ended or open-ended diesel hammer. Any piledriving hammers used for the project shall be calibrated within 90 days of use. For close ended diesel hammers the contractor shall provide a chart showing the calibration of the bounce chamber pressure which equates to equivalent energy or stroke.

The last sentence of the fifth paragraph is amended as follows:

In addition, the Contractor shall provide the Resident with a chart, calibrated within the 90 days prior to use, of the actual hammer performance.

501.043 Installation Procedures and Tolerances

The following paragraph is added:

Pile driving shall be limited to the hours of 7:00 AM to 7:00 PM. Preparation for and clean-up of pile driving activities shall be limited to the hours of 6:00 AM to 8:00 PM in accordance with the Terminal Manager.

Add the following paragraphs:

The following construction tolerances apply:

(a) The pipe pile shall be within 2 inches of the plan position in the horizontal plane at the plan elevation for the top to the pile. Pulling of pipe piles into position will not be permitted.

(b) Vertical alignment of a pipe pile shall not vary from the plan alignment by more than ¼ inch per foot of length. The alignment of a battered pile shall not vary by more than ½ inch per foot of length from the prescribed batter.

(c) The rock anchor shall be drilled and installed to the depth shown on the plans in accordance with Special Provision 504, Rock Anchors.

Pipe piles not constructed within the required tolerances are unacceptable. The Contractor shall be responsible for correcting all unacceptable pipe pile installations to the satisfaction of the Resident. Materials and work necessary, including work to correct pipe piles that are out of tolerance shall be furnished without either cost to the Department or an extension of the completion dates of the project.

For all coated pipe piling the Contractor is required to provide HDPE lining on the drilling/driving frames for plumb piles to protect the coating from incidental contact with the frame. For battered piling the frame should have the sides parallel with the batter, perpendicular to the centerline of construction, lined with HDPE sheets, and the sides perpendicular to the batter should have HDPE rollers which may be fabricated out of HDPE pipe over a pipe strut. Any bolts through the HDPE must be countersunk below the surface or located in such a manner that incidental contact between the piling and the bolt head is not possible. Alternate provisions may be made by the Contractor to protect the coating but must in the opinion of the Department provide an equivalent protection to the pipe pile coating as the HDPE system described here.

The Contractor shall handle the coated piles in a manner that does not cause impact or abrasive damage by the pile leads, installation equipment, or pile installation frame. The installation frame shall be cushioned or coated to prevent damage to the coating during pile installation. If the fusion bonded coating is damaged during the pile installation operation, the Contractor shall cease pile installation and have the damage evaluated by the manufacturer's representative and repaired as per the submitted and approved field repair plan or as directed by the Resident. Do not continue advancing the repaired pile until the coating has cured. Coating that has been damaged by thermal cutting but will be embedded in the concrete pile cap need not be repaired.

Coating damaged during installation due to pile installation, cutting, welding, or other operation shall be repaired as per the submitted and approved field repair plan or as directed by the Resident and the manufacturer's representative. When necessary, coated pipe pile shall be cut in accordance with submitted and approved field process plan using an abrasive cut-off wheel suitable of cutting 5/8" minimum thickness ASTM A252, Grade 3 steel or other method approved by the Resident and the manufacturer's representative. A heat sink comprised of wet fabric in contact with the coating or as required by the manufacturer, will be required adjacent to areas that will be thermal cut to minimize heat damage to the coating. The Contractor shall assure that repair personnel are available in a reasonable time period for any necessary repairs.

501.044 Special Requirements for Steel Pipe Piles

The first sentence of the first paragraph shall be modified to read:

Pipe piles shall be installed open ended. The pipe piles shall be socketed into bedrock to the depths indicated on the plans, cleaned out, and tested prior to installing rock anchors.

501.046 Driven Pile Resistance, Pile Testing, and Acceptance

The following paragraph is added after the first paragraph:

A dynamic pile load test shall be performed on the first pipe pile installed in each dolphin. The test pile shall be installed to the required depth into bedrock (socketed) and cleaned out prior to testing. The dynamic pile load test shall be used to drive the pipe pile to $0.70 F_y$ (pile yield strength) and to develop the criteria for testing the production piles. The wave equation analysis shall be submitted to the Resident for review and approval, and shall identify the blow count associated with $0.70 F_y$ and determine an appropriate stopping criteria so as not to overstress the pile. The pipe piles shall not be overstressed during the dynamic pile load test or production pile testing. The dynamic pile load test shall be conducted in the presence of the Geotechnical Consultant, if required by the Resident.

Add the following Sections:

501.101 Qualifications

The Contractor performing the work described in this specification shall have installed socketed piles of both the diameter and length similar to those shown on the plans for a minimum of three (3) years prior to the bid date for this project. At the time of bid, the Contractor shall submit both a list containing at least three (3) projects completed in the last three years on which the Contractor installed socketed piles of a diameter and length similar to those shown on the plans, and a signed statement that the Contractor has inspected both the project site and all the subsurface information including any soil or rock samples made available in the contract documents. The list of projects shall contain names and phone numbers of owner's representatives who can verify the Contractors participation on those projects.

No later than 30 days prior to constructing socketed piles, the Contractor shall submit an installation plan for review by the Resident. This plan shall provide information on the following:

- (1) Name and experience record of the socketed pile superintendent in charge of socketed pile operations for this project. Name and experience record of the Contractor's Socketed Pile QC Personnel. Socketed pile construction and testing shall be inspected by the Contractor's Socketed Pile QC Personnel, who shall be a qualified, geotechnical engineering inspector, experienced in shaft construction inspection.
- (2) List of proposed equipment to be used including cranes, drills, baling buckets, final cleaning equipment, desanding equipment, or concrete pumps, casing, etc.
- (3) Details of template construction to assure proper position and plumbness of the piles.
- (4) Details of overall socketed pipe pile and rock anchor construction operation sequence.

501.102 Submittals and Construction Methods

No later than 30 days prior to installing the concrete filled pipe piles with rock anchors, the Contractor shall submit an installation plan for review by the Department. This plan shall provide information on the following:

- (1) List of proposed installation equipment to be used including equipment to drill the pipe piles to competent bedrock; drill into bedrock to form the rock socket; drive the pipe piles to be seated into the socket; and clean the pipe piles;

(2) Details of overall construction operation methods and sequence;

(3) Pile Driving and Dynamic Loading Test Equipment

- a. Manufacturer's literature, including technical and performance literature for pile driving hammer(s), cushions, hoses, and other equipment for the piles.
- b. Qualifications and experience of the Contractor's Professional Engineer performing the PDA testing and CAPWAP analyses.
- c. Description of dynamic testing equipment and procedures.

(4) Wave Equation (WEAP) Analyses

- a. Qualifications and experience of the Contractor's Professional Engineer performing the WEAP analyses.
- b. The Contractor shall propose driving criteria (blow count) as the minimum number of hammer blows for each inch of the final 6 inches of pile penetration in the bearing stratum. The proposed criteria shall be submitted to Resident, Engineer, and/or Geotechnical Consultant for review and acceptance. Piles shall not be installed prior to acceptance by the Resident, Engineer, and/or Geotechnical Consultant.
- c. Results of WEAP analyses performed and stamped by a licensed Professional Engineer in the State of Maine, which demonstrate that the equipment, cushions and cap are capable of obtaining the minimum required ultimate capacity in accordance with AASHTO LRFD without damage to the pile due to driving stresses. The WEAP analyses shall model bearing conditions in rock sockets and the anticipated pile lengths. The submittal shall also include any additional applicable assumptions used in the analyses.

(5) PDA and CAPWAP Results:

- a. The Contractor shall provide complete reports of PDA measurements/analyses and CAPWAP analyses performed by the Contractor's Engineer during the dynamic pile test. In this report, the Contractor shall propose the final driving criteria (number of hammer blows per inch over the last 6 inches of pile advancement) based on the results of the PDA and CAPWAP analyses. The final driving criteria may or may not be different than the criteria developed from the WEAP evaluation.

(6) Details of cleaning methods in soils and rock, including methods of removing any obstruction such as boulders or cobbles from the pipe piles;

(7) Details of methods to check the cleanliness and soundness of the rock/pipe pile interface and bearing surface;

(8) Details of concrete placement; and

(9) Details of attachments for angles and anodes.

Submittals for drilling and installing rock anchors within pipe pile encasements shall be in accordance with Special Provision 504 - Rock Anchors. The Department will evaluate the pipe pile installation plan, and all procedural approvals given by the Resident shall be subject to trial in the field and shall not relieve the Contractor of the responsibility to satisfactorily complete the work as detailed in the plans and specifications. Failure by the Contractor to demonstrate adequate methods and equipment shall be reason for the Resident to require alterations in equipment and/or method by

the Contractor to eliminate unsatisfactory results. Any altered methods or construction equipment shall be at the Contractors expense and incidental to this item.

501.103 Drilling Equipment

Drilling equipment shall have adequate capacity including power, torque and down thrust to drill a hole of both the diameter and to a depth 20 percent beyond the depth indicated on the plans.

501.104 Installation and Excavation

The Contractor shall maintain a log during pile installation through overburden and into bedrock, cleaning, testing, and preparation for rock anchor installation activities. The log shall include but is not limited to the following: installation methods, advancement rates, obstructions, cleaning methods, and rock socket drilling rates, etc.

Excavated materials which are removed from pipe piles shall be disposed of by the Contractor in accordance with the applicable specifications for disposal of excavated materials.

The Contractor shall deploy the turbidity curtain prior to pile installation. Upon commencement of the pile installation activities, the Contractor shall begin with a “soft-start” to allow animals within the immediate vicinity an opportunity to leave the area before sound pressure increases.

The pipe piles shall first be drilled through overburden and to the top of competent bedrock, using methods that permit the pipe pile to subsequently be socketed to the required depth into competent bedrock. The rock socket shall be drilled, and the pipe pile advanced the required depth into competent bedrock. The Contractor shall perform the necessary cleaning and excavation for the pipe pile as incidental to the related Contract items. No separate payment will be made for either cleaning out/excavation of materials of different densities or employment of special tools and procedures necessary to accomplish the excavation and in an acceptable fashion. If after cleaning it is determined by the Resident that the pile is not socketed the required depth into bedrock, the pile shall be advanced further by drilling and cleaned out again.

After drilling the pile into competent rock to the required depth and cleaning out the pipe pile, each pipe pile shall be driven to the stopping criteria established by way of the dynamic pile load test PDA data and CAPWAP analyses completed on the first pile installed in each dolphin. During installation, the Contractor shall closely monitor the driving operation to confirm the allowable pile stress has been achieved (as noted above) without damaging or overstressing the pile.

Upon installation, all piles shall be inspected and any pipe piles showing bends, crushing, kinks or other deformations that would impair the strength, efficiency, or axial capacity of the completed piles shall be replaced or repaired in a manner satisfactory to the Resident. Repairing or replacing any such damaged pipe pile as ordered by the Resident will be at no additional expense to the Department.

501.105 Pile/Bedrock Seal and Preparation for Rock Anchor Installation

If after removal of the overburden and rock from within the pipe pile, it is determined that overburden has contaminated the rock socket, it may be necessary to drill the pipe pile deeper into bedrock and re-install the pile as required and as directed by the Resident to ensure the finished pile is socketed into bedrock and sealed against the entry of overburden. The inside surface of the pipe pile shall be cleaned free of extraneous material prior starting rock anchor drilling. Rock anchors shall not be constructed until the pipe pile has been checked for plumbness and the pile is accepted.

Rock anchor installation shall be in accordance with Special Provision 504 – Rock Anchors. During rock anchor drilling, overcutting of the bedrock surface into which the pipe pile is socketed will not be permitted. If it occurs, the pipe pile shall be re-set into bedrock at no additional cost to the

Department. The Contractor shall bear all costs associated with reinstalling the pipe pile if over-breakage occurs during airlifting operations or rock anchor installation operations.

During rock anchor installation, the Contractor shall maintain a positive seal of pipe pile in the bedrock to prevent entry of overburden, or piping in of overburden into the anchor drill hole or pile by installing a grout plug at no additional cost. Over-breakage of the rock surface shall be avoided so as to not destroy the seal at the bottom of the steel pipe pile and not to undercut the pipe pile tip. Pipe piles shall maintain intimate contact with bedrock after installation to preserve the axial load carrying capacity achieved by end bearing on bedrock over the entire pile tip surface area. In the event that the pile/bedrock contact is disturbed during pile installation or cleanout, the pile shall be reinstalled in accordance with project requirements at no additional cost to the department.

501.106 Obstructions

Surface and subsurface obstructions at the pipe pile locations, both internal and external, shall be removed by the Contractor. Such obstructions may include but are not limited to cobbles and boulders. Special procedures and/or tools shall be employed by the Contractor after the pipe pile cannot be advanced including, but not limited to, augers, chisels, boulder breakers, core barrels, air tools, etc. Excavating and cleaning steel pipe piles and steel casings, furnishing and placing reinforcing and steel templates in steel pipe piles and casings will not be paid for separately, but will be considered as incidental to the related pay items. Pre-boring, jetting, or other methods used to facilitate the installation of pipe piles will not be paid for separately but will be considered incidental to the contract pay item for pile in place. Full compensation for all jetting drilling providing special driving tips or heavier sections for steel piles or shells, or other work necessary to obtain the specified penetration and bearing value of the piles, and as directed by the Resident shall be considered as included in the contract unit price paid for pipe pile, and therefore no additional compensation will be allowed.

501.107 Inspection

The Contractor shall keep a daily construction record which shall be submitted to the Resident each day. The Contractor shall provide access and equipment for checking the alignment of each pipe pile and for checking the dimension, alignment and cleanliness of installation. The base of each pipe pile shall have no sediment at the time of placement of the concrete. Pipe pile cleanliness will be demonstrated by the Contractor to the satisfaction of the Resident. Concrete placement shall not begin until the Resident's approval has been obtained. The Resident shall be allowed unrestricted access.

501.108 Concrete

Concrete for Steel Pipe Piles shall be Class A and shall meet the requirements of Section 502 - Structural Concrete. Concrete shall be placed as soon as possible after reinforcing bar placement is complete, if reinforcement is used. Concrete placement shall also meet the requirements of Subsection 501.05. Concrete placement shall be continuous from the bottom to the top elevation of the pipe pile. Concrete shall be placed through a tremie or concrete pump. The tremie discharge end shall be immersed at least 5 feet in concrete at all times after starting the flow of concrete. Any voids occurring in the top portion of the pile concrete shall be filled with dry pack mortar.

501.11 Method of Measurement

Add the following paragraphs to Paragraph (c):

Steel Pipe Piles, Delivered shall include full compensation for the delivery and on-site storage of the pipe pile prior to its installation.

Steel Pipe Piles, In-Place shall include full compensation for installing pipe pile to the top of competent bedrock, concrete pile fill, and pipe pile and hole cleaning, including temporary casings

and centralizers (if used) augers, drilling equipment, air lifting equipment, jetting equipment, and special tools to clean the pipe pile to the depth indicated on the plans. The pay item shall also include removal and disposal of excavated materials, and furnishing all other labor, materials, and equipment necessary to complete this work.

Installation of rock anchors in pipe piles shall be paid under Pay Item 504.905.

No separate payment shall be made for the removal of obstructions, such as cobbles, timbers, riprap or boulders. No separate payment shall be paid for earth or rock excavation, drilling, pre-augering, or other methods to clean inside the pile.

Rock Socketed Pipe Pile shall include full compensation for drilling the rock socket to the required diameter and depth in competent bedrock and advancing the pipe pile to the bottom of the rock socket. Cleaning out of the pipe pile and the grout plug shall be incidental to the Rock Socketed Pipe Pile pay item.

Pile Tips shall be measured under the Contract item unit.

No separate measurement will be made for pile splices which occur within the estimated length of the pile. Pile splices will only be measured for payment, at the Contract item unit, when said splices are required to achieve a pile length greater than the estimated pile length shown on the Plans due to unforeseen site conditions that warrant an additional length.

No separate measurement will be made for installation, maintenance, and removal of temporary turbidity curtains and debris booms. These items shall be incidental to the Contract.

No separate measurement will be made for surveys required to locate existing timber piles or cribs; layout the proposed piles; or monitor pile heave. Surveys shall be incidental to the Steel Pipe Pile In-Place pay item.

501.12 Basis of Payment:

The sixth paragraph is amended as follows:

Wave equation analyses submittals and any subsequent wave equation analyses re-submittal, required to demonstrate the appropriateness of the driving system, will be incidental to the Pile Driving Equipment Mobilization pay item.

Add the following paragraphs:

The accepted quantities of Pipe Piles, Delivered and In-Place will be paid for at the contract price per linear foot, for the measure of work completed and accepted by the Resident. Such payment shall constitute full compensation for providing all labor, materials and equipment and for all incidental items necessary for the completion of the work, as described in the paragraphs above.

Rock Socket Pipe Pile shall be paid at the contract unit price per linear foot of rock socket of the diameter specified. Such payment shall be full compensation for all labor, materials, equipment, tools, and drilling equipment.

Drilling Equipment Mobilization shall be paid at the lump sum price for the mobilization of all equipment, tools and drilling equipment.

The accepted quantities of Pile Tips will be paid for at the contract unit price for work completed and accepted by the Resident. Such payment shall constitute full compensation for providing all labor, materials and equipment and for all incidental items necessary for the completion of the work, as described in the paragraphs above.

Pile splices which occur within the estimated pile length shown on the Plans will not be paid for separately, but shall be incidental to the Steel Pipe, Pile In-Place pay item. Pile splices required to

achieve a pile length greater than the estimated pile length shown on the Plans, shall be paid for at the Contract unit price.

Fusion bonded epoxy coating shall be paid for separately under Pay Item 506.9106, Fusion Bonded Epoxy Coating.

Anodes will be paid for separately under Pay Item 655.501, Cathodic Protection by Sacrificial Anodes.

The last line and table of pay items shall be deleted and replaced with the following:

Payment will be made under:

<u>Pay Items</u>	<u>Description</u>	<u>Pay Unit</u>
501.231	Dynamic Loading Test	Each
501.24	Steel Pipe Piles (16" dia.), Delivered	Linear Foot
501.241	Steel Pipe Piles (16" dia.), In-Place	Linear Foot
501.802	Rock Socketed Pipe Pile	Linear Foot
501.804	Drilling Equipment Mobilization	Lump Sum
501.90	Pile Tips	Each
501.91	Pile Splices	Each
501.92	Pile Driving Equipment Mobilization	Lump Sum

END OF SECTION