

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE OF PAGES	
			J	1	2
2. AMENDMENT/MODIFICATION NO. 0002	3. EFFECTIVE DATE 30-Jun-2004	4. REQUISITION/PURCHASE REQ. NO. W13G86-3140-0521		5. PROJECT NO.(If applicable)	
6. ISSUED BY U S ARMY ENGR DISTRICT, NEW ENGLAND 696 VIRGINIA RD CONCORD MA 01742-2751	CODE W912WJ	7. ADMINISTERED BY (If other than item 6) See Item 6		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)			X	9A. AMENDMENT OF SOLICITATION NO. W912WJ-04-B-0004	
			X	9B. DATED (SEE ITEM 11) 01-Jun-2004	
				10A. MOD. OF CONTRACT/ORDER NO.	
				10B. DATED (SEE ITEM 13)	
CODE	FACILITY CODE		11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS		
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input checked="" type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. ACCOUNTING AND APPROPRIATION DATA (If required)					
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.					
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).					
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
D. OTHER (Specify type of modification and authority)					
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) Amendment necessary to revise clarifications provided in Amendment No. 0001, revise Specification Section 02465, and to extend the bid opening date. SECTION 00010 - SOLICITATION CONTRACT FORM The required response date/time has changed from 07-Jul-2004 02:00 PM to 09-Jul-2004 02:00 PM.					
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.					
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)		
			TEL: _____ EMAIL: _____		
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
_____ (Signature of person authorized to sign)		BY _____ (Signature of Contracting Officer)		30-Jun-2004	

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

AMENDMENT NUMBER 0002 OF SOLICITATION

1.1 CHANGES TO ISSUED AMENDMENTS

Amendment No.0001, Page 14, "The following are Clarifications/Responses to questions Received:"

a. Delete answer A1 and insert the following in its place:

"A1. No."

b. Delete answer A2 and insert the following in its place:

"A2. See Specification Section 00800, Paragraph 1.1b."

c. Delete answer A5 and insert the following in its place:

"A5. Excavated material incidental to the construction of the bulkheads shall be placed in the "sand fill" area as designated on contract drawing C-2. Material may be excavated by mechanical means from the designated "sand fill" areas to backfill the bulkhead. All proposed excavation will be subject to the requirement that no additional lateral loads be imposed on the sheet piling."

1.2 CHANGES TO SPECIFICATIONS**1.2.1 Revised Sections**

The sections listed below are deleted and replaced with revised sections of the same section number as indicated. Changes in the text are indicated by additions and deletions. Underscoring identifies added text and deleted text is identified by overstrike.

DELETE SECTION:

Section 02465

REPLACE WITH SECTION (DATED):

Section 02465 06/30/04

(End of Summary of Changes)

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DIVISION 02 - SITE CONSTRUCTION

SECTION 02465

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SECTION 02465

SHEET PILE BULKHEAD CONSTRUCTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36	(1996) Carbon Structural Steel
ASTM A 123/A 123M	(1997; Rev. A) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153/A 153M	(1995) Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 307	(1994) Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
ASTM D 638	(2002) Tensile Properties of Plastics
ASTM D 256	(1997) Determining the Izod Impact Resistance of Plastics
ASTM D 790	(1998) Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D 4226	(2000) Standard Test Methods for Impact Resistance of Rigid Poly(Vinyl Chloride) (PVC) Building Products

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C2	(2001) Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes
AWPA M6	(1997) Brands Used on Forest Products

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Sheet Piling; G, DO

Detail drawings for sheet piling including fabricated sections shall show complete piling dimensions and details, splices and location of installed piling. Detail drawings shall include details and dimensions of templates and other temporary guide structures for installing piling. Detail drawings shall provide details of the method of handling piling to prevent permanent deflection, distortion or damage to piling interlocks.

Construction Sequence; G, DO; G

A detailed construction sequence of installation of the Bulkheads shall be submitted for Government approval.

Driving;

Records of the sheet piling driving operations shall be submitted after driving is completed. These records shall provide a system of identification which shows the disposition of approved piling in the work, driving equipment performance data, piling penetration rate data, piling dimensions and top and bottom elevations of installed piling. The format for driving records shall be as directed.

Pulling and Redriving; G, DO

The proposed method of pulling and redriving sheet piling shall be submitted and approved prior to pulling any piling.

SD-03 Product Data

Pile Driving Equipment; G, DO

Complete descriptions of sheet piling driving equipment including hammers, vibratory equipment, jetting equipment, extractors, protection caps and other installation appurtenances shall be submitted for approval prior to commencement of work.

SD-04 Samples

Sheet Pile; G, DO

Within 20 calendar days of Notice to Proceed, the Contractor shall submit samples of proposed sheet pile and corner pieces. The submitted materials shall be manufactured in accordance with the requirements of this specification and shall be standard commercial products. Additional or better features which are not specifically prohibited by this specification, but which are a part of manufacturer's standard commercial product, shall be included in the material being furnished. A standard commercial product is one that has been sold or is being currently offered for sale on the commercial market through advertisements or manufacturer's catalogs or brochures, and represents the latest production model. The submittal shall include all testing and certifications, as specified herein.

Certified materials tests reports showing that sheet piling and appurtenant materials meet the specified requirements shall be submitted for the approval of the Contracting Officer prior to ordering, shipping and installing materials. Tests, as detailed herein, shall be performed by an independent third party testing agency. Test data over one year old will not be accepted. The submitted test data will be accompanied by a notarized certificate of compliance from the manufacturer attesting that the data reflects the characteristics of their product as it is currently being produced.

SD-07 Certificates

MSDS and CIS

Provide Material Safety Data Sheets (MSDS) and Consumer Information Sheets (CIS) associated with sheet piles. Contractor shall comply with all safety precautions indicated on MSDS and CIS.

1.3 QUALITY CONTROL

The manufacturer shall have in place a Quality Assurance Program that will ensure the sheet pile is in conformance with the ASTM and other specifications cited in this document

1.3.1 Examination

Each delivered section of sheet pile shall be examined by an inspector of Contractor's designation for compliance with the appropriate requirements of this specification. This inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirements or presence of one or more major defects preventing or lessening maximum efficiency shall constitute cause for rejection.

1.4 DELIVERY, STORAGE AND HANDLING

Materials delivered to the site shall be new and undamaged and shall be accompanied by certified test reports. Sheet piling shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion or damage to the interlocks.

1.5 RECOMMENDED SEQUENCE OF WORK

The Contractor shall arrange its construction sequence in compliance with the following requirements:

- a. minimize unbalanced lateral loads on sheeting;
- b. complete construction of the West Bulkhead before starting construction of the East Bulkhead;
- c. work from the north to south when constructing each Bulkhead;
- d. and ensure that no vertical pressures on the finished surface of the Bulkhead, due to loads such as construction equipment and temporary stockpiles of materials, exceeds 100 pounds per square foot.

A recommended sequence of construction is presented below based on the above requirements. All proposed variations to the recommended sequence of

construction shall be submitted to the Contracting Officer for approval.

- a. Mobilize to start construction of the West Bulkhead at the north end, Sta. 11+00W.
- b. Drive temporary support piles and install the driving template (wales) for sheeting.
- c. Construct a length of the Bulkhead, as determined by the Contractor, and install the interior cross-wall as shown on the drawings.
- d. Connect wales and tie rods in the completed section of the Bulkhead.
- e. Place dredged sand material within the completed section of the Bulkhead to Elevation +3.5.
- f. Remove the temporary support piles and advance the pile driving operation.
- g. Repeat the above steps "b" through "f" until construction of the West Bulkhead is complete at Sta. 1+00W.
- h. Place the geogrid marine mattress at the toe of the West Bulkhead.
- i. Mobilize to start construction of the East Bulkhead at the north end, Sta. 6+60E.
- j. Remove existing rip rap at south end.
- k. Repeat the above steps "b" through "f" until construction of the East Bulkhead is complete at Sta. 1+00E.
- l. Place the geogrid marine mattress at the toe of the East Bulkhead
- m. Replace rip rap at south end.

PART 2 PRODUCTS

2.1 GENERAL

The sheet piling shall consist of either Vinyl or Fiberglass Reinforced Polymer sections. Both bulkheads shall be constructed of only one type of sheet piling. Steel sheet piling will not be accepted as a substitute for the synthetic piling specified.

2.2 VINYL SHEET PILING

2.2.1 General Configuration

Vinyl sheet piling shall be a "Z" Section extruded plastic manufactured from rigid, impact modified, UV-inhibited, weatherable vinyl that meets or exceeds the requirements set out in Tables I and II below. The interlocks of the sheet piling shall be free-sliding, allowing a swing angle of not less than 5 degrees when threaded, and maintain continuous interlocking when installed.

Table I - Vinyl Sheeting Mechanical Properties (minimum)

Property	ASTM Test	Value
Tensile Strength	ASTM D 638	6,300 psi
Modulus of Elasticity	ASTM D 790	380 ksi
Impact resistance	ASTM D 4226*	15,000 in-lb/in
*Procedure B, Impactor C.125.		

Table II - Vinyl Sheeting Dimensions and Weight (minimum)

Specification	Value
Width (inches)	18.00
Depth (inches)	11.00
Thickness (inches)	0.60
Weight (lbs/sq ft)	8
Section Modulus (in ³ /ft)	55

2.3 FIBERGLASS REINFORCED POLYMER SHEET PILING

2.3.1 General Configuration

Fiberglass reinforced polymer sheet piling shall be a "Z" section with ball and socket or "T" shaped interlock. The polymer resins shall be polyester, vinyl ester, or polyurethane containing stabilizers to provide long term resistance to ultraviolet light degradation. The piling shall be reinforced with a glass fiber matrix to produce a section that meets or exceeds the requirements set out in Table III and IV below. The interlocks of the sheet pilings shall be free-sliding, allowing a swing angle of not less than 5 degrees when threaded, and maintain continuous interlocking when installed.

Table III - Fiberglass Reinforced Polymer Sheeting Mechanical Properties (minimum)

Property	ASTM Test	Value
Ultimate Longitudinal Tensile Strength	ASTM D 638	60,000 psi
Ultimate Transverse Tensile Strength	ASTM D 638	10,000 psi
Longitudinal Modulus of Elasticity	ASTM D 638	4.0x10 ⁶ psi
Transverse Modulus of Elasticity	ASTM D 638	1.0x10 ⁶ psi
Longitudinal IZOD Impact	ASTM D 256	50 ft-lbs/in
Transverse IZOD Impact	ASTM D 256	15 ft-lbs/in

Table IV - Fiberglass Reinforced Polymer Sheeting Dimensions and Weight (minimum)

Specification	Value
Width (inches)	18.00
Depth (inches)	8.00
Thickness (inches)	0.25
Weight (lbs/sq ft)	5.0 <u>4.0</u>
Section Modulus (in ³ /ft)	12.5

2.4 Color Selection

The Contracting Officer's Representative will select the color of the piling from the manufacturer's standard color choices.

2.5 Manufacturers Experience Requirements

All sheet piles to be provided under this Section shall be furnished only by manufacturers having experience in the design and manufacture of the type of sheet pile product proposed. Manufacturers shall have a minimum of 5 years experience with the production of synthetic sheet piles. If requested, the manufacturers shall demonstrate an experience record of at least three (3) previous, separate, similar successful installations in the last five (5) years.

2.6 STEEL WALES

Wales shall be fabricated from ASTM A 36 steel, hot-dip galvanized after fabrication.

2.7 WOOD WALES AND BLOCKING

2.7.1 Solid Sawn

Provide solid sawn lumber and timbers for wales of stress-rated Southern Pine or Douglas Fir-Larch, and identified by the grade mark of a recognized association or independent inspection agency using the specific grading requirements of an association recognized as covering the species used. The association or independent inspection agency shall be certified by the Board of Review, American Lumber Standards Committee, to grade the species used. Use commercial grade lumber for secondary members such as decking, joists and railings.

2.7.2 Preservative Treatment

Fabricate lumber and timbers for wales before preservative treatment. Each piece of treated lumber or timber shall be branded, by the producer, in accordance with AWPA M6. Treat wood to be used in contact with salt water or salt water splash in accordance with AWPA C2. Treat wood products with water-borne preservative. The Contractor shall be responsible for the quality of treated wood products.

2.8 APPURTENANT METAL MATERIALS

Metal plates, shapes, bolts, nuts, tie rods, turn buckles, and other appurtenant fabrication and installation materials shall be as specified on the drawings. All materials shall be hot-dip galvanized after fabrication.

2.8.1 Hardware

Unless otherwise specified on the drawings, bolts with necessary nuts and washers shall conform to ASTM A 307. Provide hot-dip galvanize hardware as shown.

2.8.1.1 Zinc-Coating

Galvanize steel specified or indicated by the hot-dip process in accordance with ASTM A 123/A 123M or ASTM A 153/A 153M, as applicable.

2.8.2 Steel Tiebacks

Steel tiebacks shall conform to ASTM A 307, hot-dip galvanized after fabrication. Thread series shall be UNC (coarse) and thread class shall be

2A.

PART 3 EXECUTION

3.1 REMOVAL AND REPLACEMENT OF STONE RIP RAP AT EAST BULKHEAD WALL

The existing rip rap located where the end of the East Bulkhead will be constructed shall be removed to allow driving of the sheeting. The rip rap may be stockpiled below the high water line adjacent to the Bulkhead wall construction. Following construction of the East Bulkhead, the rip rap shall be relocated against the end of the Bulkhead as directed.

3.2 INSTALLATION

3.2.1 Pile Driving Equipment

Pile driving equipment shall conform to the following requirements.

3.2.1.1 Driving Hammers

Hammers shall be steam, air, or diesel drop, single-acting, double-acting, differential-acting, or vibratory type, and of sufficient size as recommended by the sheet pile manufacturer. The driving energy of the hammers shall be as recommended by the manufacturer for the piling weights and subsurface materials to be encountered.

3.2.1.2 Jetting Equipment

Jetting equipment may be necessary in order to facilitate the installation of the sheet piles, as soil conditions warrant. The jet shall have not less than two removable or fixed jets of the water or combination air-water type. Water jets shall be designed so that the discharge volume and pressure are sufficient to freely erode the material under and adjacent to the piling. When jetting is utilized, all displaced material shall be backfilled to the original elevation after final installation of the sheets. All work associated with the jetting and backfilling shall be at no cost to the Government.

3.2.2 Placing and Driving

3.2.2.1 Placing

Any excavation required within the area where sheet pilings are to be installed shall be completed prior to placing sheet pilings. Pilings shall be picked up and completely threaded to demonstrate that they slide freely in interlock. Pilings shall be carefully located as shown. Pilings shall be placed plumb with out-of-plumbness not exceeding 1/8 inch per foot of length and true to line. Temporary bracing, templates, current deflectors or guide structures shall be provided to insure that the pilings are placed and driven to the correct alignment. Pilings properly placed and driven shall be interlocked throughout their length with adjacent pilings to form a continuous diaphragm throughout the length or run of piling wall.

3.2.2.2 Driving

Prior to driving pilings in water a horizontal line shall be painted on both sides of each piling at a fixed distance from the bottom so that it shall be visible above the water line after installation. This line shall indicate the profile of the bottom elevation of installed pilings so that

potential problem areas can be identified by abrupt changes in its elevation. The Contractor shall also keep a log of sheet cutoffs to figure the embedment of each pile. Pilings shall be driven with the proper size hammer and by approved methods so as not to subject the pilings to damage and to ensure proper interlocking throughout their lengths. Driving hammers shall be maintained in proper alignment during driving operations by use of leads or guides attached to the hammer. Caution shall be taken when a hard driving condition is encountered to avoid interlock-melt or damage. A protecting cap shall be employed in driving to prevent damage to the tops of pilings. The protection caps and other installation appurtenances shall be as recommended by the sheet pile manufacturer. Pilings damaged during driving or driven out of interlock shall be removed and replaced at the Contractor's expense. Jetting, when employed, shall be performed on both sides of the pilings simultaneously and must be discontinued at least 2 feet before final seating of pilings. Adequate precautions shall be taken to insure that pilings are driven plumb. If at any time the forward or leading edge of the piling wall is found to be out-of-plumb in the plane of the wall the piling being driven shall be driven to the required depth and tapered pilings shall be provided and driven to interlock with the out-of-plumb leading edge or other approved corrective measures shall be taken to insure the plumbness of succeeding pilings. The maximum permissible taper for any tapered piling shall be 1/8 inch per foot of length. Pilings in each run or continuous length of piling wall shall be driven alternately in increments of depth to the required depth or elevation. No piling shall be driven to a lower elevation than those behind it in the same run except when the pilings behind it cannot be driven deeper. If the piling next to the one being driven tends to follow below final elevation it may be pinned to the next adjacent piling. If obstructions restrict driving a piling to the specified penetration the obstructions shall be removed or penetrated with a chisel beam. If the Contractor demonstrates that removal or penetration is impractical the Contractor shall make changes in the design alignment of the piling structure as directed to insure the adequacy and stability of the structure. Pilings shall be driven to depths shown and shall extend up to the elevation indicated for the top of pilings. A tolerance of 1 inch above the indicated top elevation will be permitted.

3.2.3 Cut-Offs

All piles shall be driven to the indicated elevations. Should piles encounter difficulty or refusal above the indicated elevations, the Contractor shall employ whatever means necessary to drive the piles to the indicated elevation. Pilings driven to final elevation which are extending above the required top elevation in excess of the specified tolerance shall be cut off to the required elevation at no additional cost to the Government. Piling cut-offs shall become the property of the Contractor and shall be removed from the site. The tops of all fiberglass reinforced polymer piles that are cut off shall be sealed with a material as recommended by the pile manufacturer and approved by the Contracting Officer's Representative.

3.2.4 Hole Cutting in Piling

The Contractor shall cut holes in pilings for bolts, rods, and drains as shown or as directed. All cutting shall be done in a neat and workmanlike manner. Bolt holes in piling shall be drilled and reamed by approved methods which will not damage the surrounding material. Holes other than bolt holes shall be reasonably smooth and the proper size for rods and other items to be inserted. All holes shall be located in the flange of the

sheets, centered between the corner and the knuckle joint, and not in the web. Anchor and tieback locations shall be locally and nominally adjusted by the Contractor to meet this requirement. Holes shall be of the minimum size that will allow the bolts, rods, and drains to be installed. Oversized holes will not be permitted.

3.2.5 Inspection of Driven Piling

The Contractor shall inspect the interlocked joints of driven pilings extending above ground. Pilings found to be out of interlock shall be removed and replaced at the Contractor's expense.

3.2.6 Pulling and Redriving

In the pulling and redriving of piles as directed, the Contractor shall pull selected pilings after driving to determine the condition of the underground portions of pilings. Any piling so pulled and found to be damaged to the extent that its usefulness in the structure is impaired shall be removed and replaced at the Contractor's expense. Pilings pulled and found to be in satisfactory condition shall be redriven when directed. Piles whose ends have been damaged shall be trimmed before redriving in order to reduce the likelihood of cracks propagating up the sheets. total trimming shall not exceed two inches so as not to reduce the effective length of the piles.

3.3 REJECTION OF SHEETS DUE TO DAMAGE

Crushing or shearing of sheets and the interlocks in any area due to excessive clamp pressure or driving equipment shall be unacceptable. Cracks propagating through the sheet piles as well as hairline cracks longer than 1 inch in any area of the sheet piling shall be unacceptable.

The Contractor may elect, at its own cost, to supply sheet piles longer than those identified in the contract documents in order to avoid the total rejection of sheet piles due to damage which may occur locally at the top or bottom few inches of the piles. All costs associated with this additional length, cut-off of damaged areas, cut-off to obtain final elevation, additional driving, and disposal shall be included in the the Contractor's original bid and shall be at no cost to the Government.

3.4 WALE AND TIEBACK CONSTRUCTION

3.4.1 Bolts, Hardware, Wales, Tiebacks

As shown on the drawings.

3.4.2 Wales

Steel wales shall be provided as shown on the drawings.

3.4.3 Framing

Cut and frame wales so that joints will fit over contact surface. Secure wales in alignment. Open joints are unacceptable. Shimming is not allowed.

-- End of Section --