

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE _____ Page
1 of 14

2. AMENDMENT/MODIFICATION NO. 0003 3. EFFECTIVE DATE 12/09/2009 4. REQUISITION/PURCHASE REQ. NO. _____ 5. PROJECT NO. (If applicable) _____

6. ISSUED BY CODE 00092 7. ADMINISTERED BY (If other than Item 6) CODE 00092
 DOT/Maritime Administration, Atlantic Division Acquisition Office of Acquisition, MRG-7200.7737 Hampton Boulevard, Building 19, Suite 300 Norfolk, VA 23505
 DOT/Maritime Administration, Atlantic Division Acquisition Office of Acquisition, MRG-7200.7737 Hampton Boulevard, Building 19, Suite 300 Norfolk, VA 23505

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and Zip Code)
 AMERICAN CONTRACTOR AND TECHNOLOGY, INC.
 108 N PAT ST
 SCOTT, LA 70583-5324

9A. AMENDMENT OF SOLICITATION NO. _____
 9B. DATED (SEE ITEM 11) _____
 (X) 10A. MODIFICATION OF CONTRACT/ORDER NO. DTMA2C09001
 (X) 10B. DATED (SEE ITEM 13) 09/04/2009

CODE * _____ FACILITY CODE _____

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended.

Offers 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)
 See Funding Detail

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS.

IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	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).
<input checked="" type="checkbox"/>	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: Mutual agreement of the parties
-	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor is not, is required to sign this document and return 1 copies to the Issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

This modification requires the substitution of fiberglass reinforced plastic composite marine fender piling in lieu of timber fender piling as originally specified in DIVISION 2 - SITE WORK Section 02450 - Piling Composite fender piling shall conform to the attached SPECIFICATION FOR FIBERGLASS REINFORCED PLASTIC COMPOSITE MARINE FENDER PILE 16" DIAMETER WITH SIXTEEN (16) EACH 1.250" DIAMETER FIBERGLASS REINFORCING ELEMENTS, and installation details are provided in the attached Sketch titled Draft Fender Pile Connection dated 9-30-2009.

CLIN 0001AL FURNISH & INSTALL FENDER SYSTEM is increased by \$306,995.14 to a new total of \$817,010.02. See Line Item Summary.

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) Jason Chanslor President	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Milton G Spears
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	16B. United States of America BY  (Signature of Contracting Officer)
15C. DATE SIGNED 12/11/09	16C. DATE SIGNED 12/11/09

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

Page
1 of 14

2. AMENDMENT/MODIFICATION NO. 0003
 3. EFFECTIVE DATE 12/09/2009
 4. REQUISITION/PURCHASE REQ. NO.
 5. PROJECT NO. (If applicable)

6. ISSUED BY CODE 00092
 DOT/Maritime Administration, Atlantic Division Acquisition
 Office of Acquisition, MRG-7200,7737 Hampton Boulevard, Building 19, Suite 300
 Norfolk, VA 23505
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 AMERICAN CONTRACTOR AND TECHNOLOGY, INC.
 108 N PAT ST
 SCOTT, LA 70583-5324
 9A. AMENDMENT OF SOLICITATION NO.
 9B. DATED (SEE ITEM 11)
 (X) 10A. MODIFICATION OF CONTRACT/ORDER NO. DTMA2C09001
 (X) 10B. DATED (SEE ITEM 13) 09/04/2009
 CODE * FACILITY CODE

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The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended.

Offers 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)

See Funding Detail

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE
 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: Mutual agreement of the parties
 D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor is not, is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

This modification requires the substitution of fiberglass reinforced plastic composite marine fender piling in lieu of timber fender piling as originally specified in DIVISION 2 – SITE WORK, Section 02450 – Piling. Composite fender piling shall conform to the attached SPECIFICATION FOR FIBERGLASS REINFORCED PLASTIC COMPOSITE MARINE FENDER PILE 16" DIAMETER WITH SIXTEEN (16) EACH 1.250" DIAMETER FIBERGLASS REINFORCING ELEMENTS, and installation details are provided in the attached Sketch titled Draft Fender Pile Connection dated 9-30-2009.

CLIN 0001AL FURNISH & INSTALL FENDER SYSTEM is increased by \$306,995.14 to a new total of \$617,010.02. See Line Item Summary.

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)
 Milton G. Spears
 15B. CONTRACTOR/OFFEROR
 15C. DATE SIGNED
 16B. United States of America
 BY _____
 (Signature of person authorized to sign) (Signature of Contracting Officer)
 16C. DATE SIGNED

Line Item Summary	Document Number DTMA2C09001/0003	Title Composite Fender Piling	Page 2 of 14
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Total Funding: \$3,908,081.57

FYs Fund Budget Org Sub Object Class Sub Program Cost Org Sub Proj/Job No. Sub Reporting Category

See Line Item(s)

Division Closed FYs Cancelled Fund

Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
0001	BASE BID ITEM	(09/28/2009 to 09/27/2010)	0.00	NSP	\$.000	\$ 0.00
0001AA	DEMO & REPAIR OF DOCK OFFICE WHARF	(09/28/2009 to 09/27/2010)	1.00	JOB	\$278,461.220	\$ 278,461.22
	Includes driving replacement piling, clean/wrap all piles, new pile caps & subcaps, new timber stringers & deck planks, bolts, straps, fasteners, & furnish/install fender system.					
0001AB	DEMO MAIN PIER	(09/28/2009 to 09/27/2010)	1.00	JOB	\$111,165.810	\$ 111,165.81
	Includes demolition of existing main pier, wharf & finger piers, & industrial waste disposal					
0001AC	NOT USED	(09/28/2009 to 09/27/2010)	0.00		\$.000	\$ 0.00
0001AD	FURNISH MAIN PIER CONCRETE PILING	(09/28/2009 to 09/27/2010)	1.00	JOB	\$139,134.960	\$ 139,134.96

Line Item Summary	Document Number DTMA2C09001/0003	Title Composite Fender Piling	Page 3 of 14
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Total Funding: \$3,908,081.57

FYs Fund Budget Org Sub Object Class Sub Program Cost Org Sub Proj/Job No. Sub Reporting Category
See Line Item(s)
Division Closed FYs Cancelled Fund

Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
0001AE	TRANSPORT & INSTALL MAIN PIER CONCRETE PILING	(09/28/2009 to 09/27/2010)	1.00	JOB	\$127,249.170	\$ 127,249.17
0001AF	PREPARE PILING FOR INTEGRATION WITH CIP PILE CAP	(09/28/2009 to 09/27/2010)	1.00	JOB	\$15,668.720	\$ 15,668.72
	Includes any necessary pile buildup due to overdriving, removal/disposal of pile cut off, & any necessary restrrike of PS concrete piles					
0001AG	SEAWALL BULKHEAD REQUIRED FOR PIER CONSTRUCTION	(09/28/2009 to 09/27/2010)	1.00	JOB	\$377,855.650	\$ 377,855.65
	Includes furnish & install seawall and sheet pile cap necessary for new main pier					
0001AH	CIP CONCRETE FOR STAGE I PILECAP	(09/28/2009 to 09/27/2010)	1.00	JOB	\$158,192.500	\$ 158,192.50
0001AI	FURNISH MAIN PIER DECK PANELS	(09/28/2009 to 09/27/2010)	1.00	JOB	\$285,891.070	\$ 285,891.07

Line Item Summary	Document Number DTMA2C09001/0003	Title Composite Fender Piling	Page 4 of 14
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See Line Item(s)
 Division Closed FYs Cancelled Fund

Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
0001AJ	TRANSPORT & INSTALL MAIN PIER DECK PANELS	(09/28/2009 to 09/27/2010)	1.00	JOB	\$47,512.490	\$ 47,512.49
0001AK	CIP CONC DECK TOPPING, CURBS, APPROACH SLAB	(09/28/2009 to 09/27/2010)	1.00	JOB	\$144,807.720	\$ 144,807.72
0001AL	FURNISH & INSTALL FENDER SYSTEM	(09/28/2009 to 09/27/2010)	1.00	JOB	\$617,010.020	\$ 617,010.02
	Fiberglass reinforced plastic composite marine fender piling are hereby required in lieu of timber fender piling as originally specified in DIVISION 2 – SITE WORK, Section 02450 – Piling. Composite fender piling shall conform to the attached SPECIFICATION FOR FIBERGLASS REINFORCED PLASTIC COMPOSITE MARINE FENDER PILE 16" DIAMETER WITH SIXTEEN (16) EACH 1.250" DIAMETER FIBERGLASS REINFORCING ELEMENTS, and installation details are provided in the attached Sketch titled Draft Fender Pile Connection dated 9-30-2009.					
0001AM	MAIN PIER MISC APPURTENANCES	(09/28/2009 to 09/27/2010)	1.00	JOB	\$48,051.620	\$ 48,051.62
	Includes striping/pavement marking, ladder, life rings, tide gauge, salvage & reinstall existing double bits, furnish & install new double bits					
0001AN	CONSTRUCTION SURVEY	(09/28/2009 to 09/27/2010)	1.00	JOB	\$6,842.240	\$ 6,842.24

Line Item Summary	Document Number DTMA2C09001/0003	Title Composite Fender Piling	Page 5 of 14
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Total Funding: \$3,908,081.57

FYs Fund Budget Org Sub Object Class Sub Program Cost Org Sub Proj/Job No. Sub Reporting Category
See Line Item(s)
Division Closed FYs Cancelled Fund

Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
0001AO	CONCRETE POLES, BASES & FLOOD LIGHTS	(09/28/2009 to 09/27/2010)	1.00	JOB	\$21,522.940	\$ 21,522.94
0001AP	POLE & WEATHERHEAD, ELEC PANELS & TRANSFORMERS	(09/28/2009 to 09/27/2010)	1.00	JOB	\$27,482.530	\$ 27,482.53
0001AQ	ELEC MOUNTING RACKS Includes fittings, pad, GFCI Receptacles & Controls	(09/28/2009 to 09/27/2010)	1.00	JOB	\$13,276.860	\$ 13,276.86
0001AR	2-1/2" CONDUIT WITH WIRING	(09/28/2009 to 09/27/2010)	1.00	JOB	\$22,562.960	\$ 22,562.96
0001AS	1" CONDUIT WITH WIRING	(09/28/2009 to 09/27/2010)	1.00	JOB	\$7,278.770	\$ 7,278.77

Line Item Summary	Document Number DTMA2C09001/0003	Title Composite Fender Piling	Page 6 of 14
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See Line Item(s)
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Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
0001AT	ELECTRICAL CONTROLS	(09/28/2009 to 09/27/2010)	1.00	JOB	\$34,369.920	\$ 34,369.92
0001AU	WATER DISTRIBUTION SYSTEM	(09/28/2009 to 09/27/2010)	1.00	JOB	\$12,316.030	\$ 12,316.03
0001AV	UTILITY LOCATION SURVEY	(09/28/2009 to 09/27/2010)	1.00	JOB	\$4,105.340	\$ 4,105.34
0002	NEW FIRE PUMP SYSTEM	(09/28/2009 to 09/27/2010)	0.00	NSP	\$.000	\$ 0.00
0002AA	FIRE PUMP MANHOLE	(09/28/2009 to 09/27/2010)	1.00	JOB	\$38,421.760	\$ 38,421.76

Line Item Summary	Document Number DTMA2C09001/0003	Title Composite Fender Piling	Page 7 of 14
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FYs Fund Budget Org Sub Object Class Sub Program Cost Org Sub Proj/Job No. Sub Reporting Category
See Line Item(s)
 Division Closed FYs Cancelled Fund

Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
0002AB	FIRE PUMP/CONTROLS	(09/28/2009 to 09/27/2010)	1.00	JOB	\$189,475.330	\$ 189,475.33
0002AC	FIRE PUMP SYSTEM PIPING	(09/28/2009 to 09/27/2010)	1.00	JOB	\$60,050.070	\$ 60,050.07
0002AD	FIRE STATIONS	(09/28/2009 to 09/27/2010)	1.00	JOB	\$19,272.600	\$ 19,272.60
0002AE	COMMISSION FIRE PUMP SYSTEM	(09/28/2009 to 09/27/2010)	1.00	JOB	\$6,429.340	\$ 6,429.34
0003	PAVING & STORM WATER RUNOFF	(09/28/2009 to 09/27/2010)	0.00	NSP	\$.000	\$ 0.00

Line Item Summary	Document Number DTMA2C09001/0003	Title Composite Fender Piling	Page 8 of 14
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FYs Fund Budget Org Sub Object Class Sub Program Cost Org Sub Proj/Job No. Sub Reporting Category
See Line Item(s)
 Division Closed FYs Cancelled Fund

Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
0003AA	PREPARATORY WORK	(09/28/2009 to 09/27/2010)	1.00	JOB	\$7,655.850	\$ 7,655.85
0003AB	DEMOLITION	(09/28/2009 to 09/27/2010)	1.00	JOB	\$28,783.640	\$ 28,783.64
0003AC	STORM DRAINAGE & GRADING	(09/28/2009 to 09/27/2010)	1.00	JOB	\$50,940.850	\$ 50,940.85
0003AD	12" CONCRETE PAVEMENT FEATURES	(09/28/2009 to 09/27/2010)	1.00	JOB	\$126,088.270	\$ 126,088.27
0003AE	OTHER CONCRETE PAVEMENT FEATURES	(09/28/2009 to 09/27/2010)	1.00	JOB	\$20,897.390	\$ 20,897.39

Line Item Summary	Document Number DTMA2C09001/0003	Title Composite Fender Piling	Page 9 of 14
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See Line Item(s)

Division Closed FYs Cancelled Fund

Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
0004	BULKHEAD WORK NOT IN BASE BID ITEM	(09/28/2009 to 09/27/2010)	0.00	NSP	\$.000	\$ 0.00
0004AA	SEAWALL	(09/28/2009 to 09/27/2010)	1.00	JOB	\$292,659.600	\$ 292,659.60
0004AB	SHEET PILE CAP	(09/28/2009 to 09/27/2010)	1.00	JOB	\$27,826.070	\$ 27,826.07
0005	OFFICE & TRAINING BLDG	(09/28/2009 to 09/27/2010)	0.00	NSP	\$.000	\$ 0.00
0005AA	SITWORK	(09/28/2009 to 09/27/2010)	1.00	JOB	\$13,345.690	\$ 13,345.69

Line Item Summary	Document Number DTMA2C09001/0003	Title Composite Fender Piling	Page 10 of 14
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 Division Closed FYs Cancelled Fund

Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
0005AB	CONCRETE WORK	(09/28/2009 to 09/27/2010)	1.00	JOB	\$28,329.270	\$ 28,329.27
0005AC	HANDRAILS	(09/28/2009 to 09/27/2010)	1.00	JOB	\$3,336.420	\$ 3,336.42
0005AD	WOOD & PLASTICS	(09/28/2009 to 09/27/2010)	1.00	JOB	\$39,309.140	\$ 39,309.14
0005AE	THERMAL & MOISTURE PROTECTION	(09/28/2009 to 09/27/2010)	1.00	JOB	\$2,778.330	\$ 2,778.33
0005AF	DOORS & WINDOWS	(09/28/2009 to 09/27/2010)	1.00	JOB	\$33,121.590	\$ 33,121.59

Line Item Summary	Document Number DTMA2C09001/0003	Title Composite Fender Piling	Page 11 of 14
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Total Funding: \$3,908,081.57

FYs Fund Budget Org Sub Object Class Sub Program Cost Org Sub Proj/Job No. Sub Reporting Category
See Line Item(s)
 Division Closed FYs Cancelled Fund

Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
0005AG	FINISHES	(09/28/2009 to 09/27/2010)	1.00	JOB	\$65,515.230	\$ 65,515.23
0005AH	SPECIALTIES	(09/28/2009 to 09/27/2010)	1.00	JOB	\$3,457.750	\$ 3,457.75
0005AI	EQUIPMENT	(09/28/2009 to 09/27/2010)	1.00	JOB	\$4,852.980	\$ 4,852.98
0005AJ	WINDOW BLINDS	(09/28/2009 to 09/27/2010)	1.00	JOB	\$4,367.680	\$ 4,367.68
0005AK	METAL BLDG SYSTEM	(09/28/2009 to 09/27/2010)	1.00	JOB	\$78,023.330	\$ 78,023.33

Line Item Summary	Document Number DTMA2C09001/0003	Title Composite Fender Piling	Page 12 of 14
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Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
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0005AL	MECHANICAL	(09/28/2009 to 09/27/2010)	1.00	JOB	\$157,236.550	\$ 157,236.55
	Includes HVAC, plumbing, fire protection					

0005AM	ELECTRICAL	(09/28/2009 to 09/27/2010)	1.00	JOB	\$105,148.300	\$ 105,148.30
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Previous Total: \$3,601,086.43
 Modification Total: \$306,995.14
Total Cost: \$3,908,081.57

Contract Level Funding Summary	Document Number DTMA2C09001/0003	Title Composite Fender Piling	Page 13 of 14
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2009 - - X4303 - RRF - 9 - 7080 - - FAC0 - - 70 - 096170 - 80 - FAC0 - 32020 - 1740 - 6000 -
\$538,822.26

2009 - - X4303 - RRF - 9 - C5DG - - 70FAC0 - 700561 - C5 - DG70FAC - - - 32270 - 1740 - 6000 -
\$165,000.00

2009 - - X4303 - RRF - 9 - C7DG - - 70FAC0 - 700761 - C7 - DG70FAC - - - 32270 - 1740 - 6000 -
\$45,000.00

2009 - - X4303 - RRF - 9 - IKE - - 70FAC0 - 700761 - IK - E70FAC - - - 32270 - 1740 - 6000 -
\$1,138,827.49

2009 - - X4303 - RRF - 9 - 7080 - - FAC0 - - 70 - 096170 - 80 - FAC0 - 32270 - 1740 - 6000 -
\$1,705,377.74

2009 - - X4303 - RRF - 9 - 7076 - - FAC00 - - 70 - 096170 - 76 - FAC0 - 32270 - 6100 - 6600 -
\$8,058.94

**Contract Level
Funding Summary**

Document Number
DTMA2C09001/0003

Title
Composite Fender Piling

Page
14 of 14

2010 - - X4303 - RRF - 9 - C7DG - 70 - IKE70 - 0761 - C7 - DGO70IKE - - - 32270 - 1740 - 6000 -
\$306,995.14

Previous Total: \$3,601,086.43
Modification Total: \$306,995.14
Total Funding: \$3,908,081.57

SPECIFICATION FOR
FIBERGLASS REINFORCED PLASTIC COMPOSITE MARINE FENDER PILE
16" DIAMETER WITH SIXTEEN (16) EACH 1.250" DIAMETER FIBERGLASS
REINFORCING ELEMENTS

1. SCOPE

1.1 Scope. This specification covers a fiberglass reinforced plastic composite marine fender piling to be used for protection of ships, barges, harbor craft, wharves, bridges and piers from damage between the interface of vessel to pier.

2. APPLICABLE DOCUMENTS

2.1 Publications. The following documents form a part of this specification to the extent specified herein.

ASTM D543	-	Resistance of Plastics to Chemical Reagents
ASTM D570	-	Water Absorption of Plastics
ASTM D638	-	Tensile Properties of Plastics
ASTM D695	-	Compressive Properties of Rigid Plastics
ASTM D746	-	Brittleness Temperature of Plastic and Elastomers by Impact
ASTM D792	-	Specific Gravity (Relative Density) and Density of Plastics by Displacement
ASTM D1761	-	Method of Testing Mechanical Fasteners in Wood (Section 102)
ASTM D2240	-	Rubber Property-Durometer Hardness
ASTM D4060	-	Abrasion Resistance of Organic Coatings by the Taber Abraser
ASTM D4329	-	Operating Light and Water Exposure Apparatus (Fluorescent UV Condensation Type) for Exposure of Plastics (UVA-340)
ASTM D4476	-	Flexural Properties of Fiber Reinforced Pultruded Plastic Rods
ASTM E12	-	Density and Specific Gravity of Solids, Liquids and Gases
ASTM F489	-	Static Coefficient of Friction

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications or specification sheets), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

2.3 Submittals. The manufacturer shall submit to the purchasing authority one (1) copy each of his standard and most recent product brochure and Technical Manual for the product covered by this specification. Copies of material test reports and performance test data which support compliance with the specification requirements shall be submitted to the purchasing authority as required by the procurement documents.

3. REQUIREMENTS

3.1 Standard commercial product. The fiberglass reinforced plastic composite marine fender piling shall be in accordance with the requirements of this specification and shall be the manufacturer's standard commercial product. 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 piling 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. Manufacturer shall provide documentation that it has manufactured the product for a minimum of 4 years.

3.2 Drawings. The purchaser is responsible for preparing his own shop drawings. Where tolerances prescribed may cumulatively result in incorrect fits, the contractor shall provide tolerances within those prescribed herein to insure correct fit, assembly, and operations of the items. No deviation from the prescribed dimensions or tolerances is permissible without prior approval of the purchaser.

3.3 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice.

3.3.1 Plastic. The plastic shall be a mixture of one or more of the following recycled post consumer or post industrial thermoplastics: High density polyethylene, medium density polyethylene, low density polyethylene, and polypropylene. This plastic shall be mixed with the appropriate colorants, UV inhibitors and antioxidants, so that the resulting plastic portion of the product shall conform to the characteristics as listed in Table I.

3.3.2 Reinforcing. The plastic composite marine fender pile shall be reinforced with fiberglass elements. The reinforcing elements shall conform to the characteristics found in Table II.

3.4 Design. The fiberglass reinforced plastic composite marine fender pile shall be designed as described herein.

3.4.1 General Configuration. The plastic composite marine fender pile shall have a round cross section with a chisel point cut on the driven end and the other end cut flat. It shall be seamless with a smooth outer skin.

TABLE I PLASTIC (TYPICAL PROPERTIES)

Density (ASTM D792)	Skin	Unblown plastic - 55-63 lb./cu. ft
Density (ASTM E12)	Core/Annulus	34-50 lb./cu. ft
Water Absorption (ASTM D570)	Skin	24 hr.: < 3.0% wt. Increase 2 hr.: < 1.0% wt. Increase
Brittleness (ASTM D746)	Skin	No break at -40°F
Impact Resistance (ASTM D746 modified)	Skin	Greater than 4 ft-lb./in.
Hardness (ASTM D2240)	Skin	45-55 (Shore D)
Ultraviolet (ASTM D4329 UVA-340)	Skin/Core/Annulus	No more than 10% change in Shore D durometer hardness after 500 hours exposure
Abrasion (ASTM D4060)	Skin	Weight Loss:< 0.5 g Wear Index: 2.5 to 3.0 Cycles = 10,000 Wheel = CS17 Load = 1 kg
Chemical Resistance (ASTM D543 modified, Procedure I)	Skin/Core/Annulus Sea Water Gasoline No. 2 Diesel	< 1.5% weight increase < 7.5% weight increase < 6.0% weight increase
Tensile Properties (ASTM D638)	Skin/Core/Annulus	Minimum 500 psi at break
Compressive Modulus (ASTM D695)	Skin/Core/Annulus	Minimum 40,000 psi
Coefficient of Friction (ASTM F489)	Skin	Maximum 0.25, wet or dry
Nail Pull Out (ASTM D1761 Section 102)	Skin/Core/Annulus	Minimum 60 lb.

TABLE II REINFORCING

For Fiberglass Reinforcing Elements:

Flexural Strength (ASTM D4476)	Flexural Strength	70,000 psi
Compressive Properties (ASTM D695)	Compressive Strength	40,000 psi

3.4.2 Dimensions. Dimensions for the fiberglass reinforced plastic composite marine fender piling shall be as shown in Table III.

TABLE III DIMENSIONS

Fender Pile	Dimension	Tolerance
Length	Per order (105 feet maximum)	+/-6" inches
Overall Diameter	16.250 inches	+/-0.375" inches
Outer Skin Thickness	3/16 inches	+/-0.125 inches
Distance from outer surface to rebar elements	1.125 inches	0.75"+/-0.375 inches
Straightness (gap, bend or bulge inside while lying on a flat surface)		< 1.5 inches per 10 feet of length

3.4.3 Repairability. The outer skin must be repairable if chipped or spalled by using a commercially available roofing compound.

3.5 Construction. The plastic composite marine fender piling shall be manufactured in a continuous process that will result in it having no joints. The plastic composite marine fender piling shall have a coextruded outer skin of dense, unblown plastic, an inner core of foamed plastic manufactured prior to the manufacture of the piling, and an annulus of foamed plastic encapsulating the reinforcing elements. The plastic composite marine fender piling shall conform to the design requirements of Section 3.4 of the specification.

3.5.1 Colored Outer Skin. The outer skin shall be black. It shall contain hindered amine light stabilizers to provide sufficient resistance to ultra violet light degradation as to meet the requirements in Table I. The outer skin of the plastic composite marine fender piling shall be continuous and homogenous throughout the entire length and circumference of the piling. It shall be formed by coextruding a plastic material at the same time that the annulus material is extruded. It shall conform to those applicable Sections of Table I.

3.5.2 Annulus. The annulus of the piling shall be a continuous foamed structure throughout the entire length of the piling. It shall conform to those applicable Sections of Table I, and shall be black in color. The annulus shall be melt fused to the inner core in such a manner that the joint between the inner core and the annulus develops the full strength of the plastic.

3.5.3 Reinforcing. The reinforcing elements shall be arranged in a concentric pattern, as described in Table III, within the annulus of the plastic composite marine fender piling. Each plastic composite marine fender piling shall have a quantity of sixteen (16) fiberglass reinforcing elements, 1.250" in diameter. Each individual element shall typically run the entire length of the piling, terminating flush with the ends, with the rebar exposed. No plastic, fiberglass or metal elements or supports for the reinforcing element shall be used in the piling.

3.5.4 Inner Core. The inner core of the plastic composite marine fender piling shall be a continuous foamed structure throughout the entire length of the piling. It shall conform to those applicable Sections of Table I, and shall be black in color. Butt joints as required for manufacturing may be utilized provided the full strength of the plastic is developed in the joint.

3.5.5 Owners Field Guide. With the shipment of the first plastic composite marine fender piling, the manufacturer shall provide one copy of its owners field guide. This guide shall include information and diagrams describing and illustrating the recommended means for handling, placing, driving, and finishing the plastic composite marine fender piling.

3.6 Performance. The plastic composite marine fender piling shall be designed to provide the following structural characteristics when using the material properties shown in Tables I and II.

Flexural Modulus of Elasticity	>856,541 psi
Stiffness (EI)	>2.76 x 10 ⁹ lb·in ²
Yield Stress in Bending	>6,785 psi
Weight	64-78 lb./ft.

An independent laboratory report verifying the Modulus of Elasticity of a full size test specimen is to be included in the submittal package. The Modulus is to be taken at a strain of 0.01 inches per inch, where strain equals (6) x (depth of cross section) x (deflection) / (span length squared) and where Modulus of Elasticity equals (load) x (span length cubed) / [(48) x (deflection) x (moment of inertia)].

3.6.1 Cyclic performance. The plastic composite marine fender piling shall exhibit recoverable deflection. Plastic composite marine fender piling shall not exhibit more than a 5% reduction in bending stiffness (EI) when cyclically load tested as follows. Upon request, the manufacturer of the plastic composite marine fender piling shall provide cyclical, flexural load test results from an independent test laboratory. Cyclical load testing shall be conducted on either the specified 13"O.D. or 16"O.D. plastic composite marine fender piling. The test shall be for a minimum of 200 load cycles. The test shall be a four point load condition with a 30.5' clear span and a 15' shear span. The applied load shall represent a minimum of 40% of the plastic composite marine fender piling's "design allowable bending moment".

3.7 Interchangeability. All units of the same classification furnished with similar options under a specific contract shall be identical to the extent necessary to insure interchangeability of component parts, assemblies, accessories, and spare parts.

3.8 Identification Markings. Each individual plastic composite marine fender piling shall be clearly marked with the manufacturers name and distinct serial number near each end of the product.

3.9 Workmanship.

3.9.1 Outer Skin. The dense outer skin of the plastic composite marine fender piling shall be generally smooth but may contain blisters, pockmarks and blemishes.

3.9.2 Annulus and Inner Core. The foamed inner core should be homogenous and reflect a consistent cell structure when viewed across the grain. It shall be uniform in color. The product shall contain no singular void in excess of 3% of the total foamed cross sectional area and greater than 3” in length.

3.9.3 Reinforcing. The reinforcing elements shall be those of standard industry make and appearance, and free from kinks and sharp bends.

4. QUALITY ASSURANCE PROVISIONS

4.1 Quality Assurance. The manufacturer shall have in place a Quality Assurance Program that will ensure the plastic composite marine fender piling is manufactured to the specifications noted in Sections 3.4, 3.5, 3.6, 3.9.

4.2 Examination. Each complete plastic composite marine fender piling shall be examined by an inspector of purchaser's designation for compliance with the appropriate requirements of Section 3 of this specification. This inspection shall encompass all visual examinations and dimensional measurements. Records maintained by the manufacturer shall be inspected to ensure that the materials used in construction of all contract items conform to the requirements. In particular, it shall be verified that the material requirements of Tables I and II, and manufacturing tolerances found in Table III are met. Noncompliance with any specified requirements or presence of one or more major defects preventing or lessening maximum efficiency shall constitute cause for rejection.

4.3 Tests. Manufacturer shall provide documentation showing that the tests described in 4.3.1 and 4.3.2 have been performed and have met the test criteria. Such tests shall be performed on a standard commercial, of at least 50 ft. length, by an independent testing laboratory supervised by a testing engineer. The manufacturer shall also provide documentation showing that the physical property tests described in Table I have been performed by an independent testing laboratory, who must certify the physical property values as noted in Table I. A copy of all test data must be available for inspection by the purchaser or his agent.

4.3.1 Bending Test. The plastic composite marine fender piling of manufacturer's standard commercial type shall be placed horizontally in a clamping device so that 6 feet of the piling will be firmly fixed and unable to move. The free end shall be simply supported. A vertical (downward) load shall be gradually applied at a point 12 feet from the simply-supported end. Deflection along the length of the piling is measured at the load point, and 3 equidistant locations. Load and deflection data shall be used to calculate the flexural modulus of elasticity and maximum outer fiber stress.

4.3.2 Load and deflection data acquired during the test shall be used to calculate the stiffness (EI), and the bending stress. The flexural modulus of elasticity is calculated by dividing EI by the moment of inertia of the cross section of the product.

4.3.3 Calculations of the properties in 4.3.2 shall be made utilizing standard elastic beam flexure formulas (as found in references such as Machinery's Handbook; and Formulas for Stress and Strain, by Roark and Young). Stiffness (EI) shall be reported as the average of the stiffness at all measurement locations, between zero load and half the load corresponding to the specification yield stress. The specified minimum yield stress in bending shall be reached before failure of the product. Stress shall be calculated at the load point, on the tension side of the plastic composite marine piling.

4.3.4 As stated in 4.3.1, the tests shall be conducted on a full-scale product of the specified size. The results of these tests may be extended through engineering calculations, to a product of another size only if the other size has the same or smaller cross section than the tested product. Smaller cross sections shall not be used to predict the performance of larger cross sections.

4.3.5 Crush Test. A four foot long piece of manufacturer's standard product is placed laterally on a steel plate, and a force of 140,000 lb. is gradually applied over the entire length. The sample shall show no signs of cracking or crazing.

5. ACCESSORIES

5.1 Pile Cap. The manufacturer can provide a pile cap to be field installed following driving to provide a finished appearance to the driven pile.

6. SHIPPING

6.1 Shipping. The plastic composite marine fender piling shall be shipped in a manner to minimize any scratching or damage to the outer surface.

7. INSTALLATION

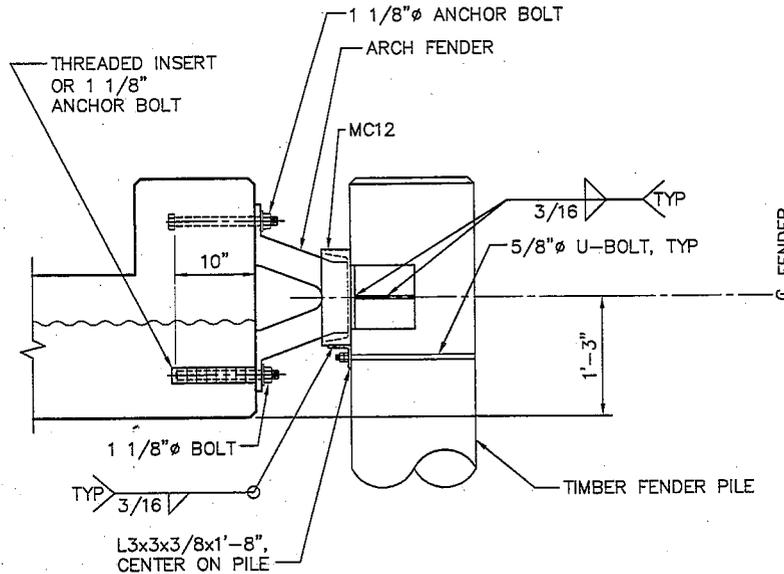
7.1 Installation. Installation shall be in accordance with manufacturer's guidelines as noted in its owners field guide. Unless otherwise specified, installation of the plastic composite marine piling is not included as part of manufacturer's responsibility under this purchase order.

8. PURCHASING

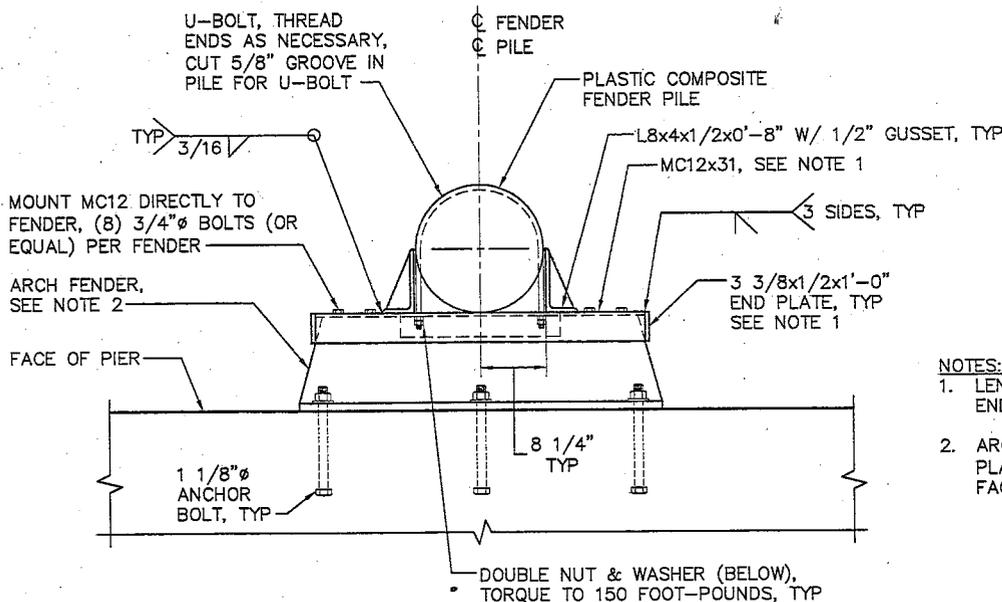
8.1 Requirements. The following items must be included in any purchase orders:

- Length of piles
- Outer color (Black, unless otherwise specified)
- Quantity
- Required accessories

- F.O.B. point



A
SECTION - FENDER SYSTEM
 S-14 | S-14 SCALE: 1"=1'-0"



NOTES:

1. LENGTH OF MC12 SHALL BE DETERMINED SO END PLATES FIT TIGHTLY AGAINST FENDER.
2. ARCH FENDER SHALL HAVE EMBEDDED STEEL PLATE IN FACE W/ THREADED HOLES TO FACILITATE ATTACHMENT OF MC12.

2
DETAIL - TYPICAL FENDER SYSTEM
 S-14 | S-14 SCALE: 1"=1'-0"