

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

The following items are applicable to this modification:

A. SPECIFICATIONS.

1. Delete SF 1442 and replace with new revised SF1442.
2. Section 00010, "BIDDING SCHEDULE", delete Section 00010 in its entirety and add new Section 00010.
3. Section 00100, 52.236-27 Site Visit Construction, change the point of contact from Mr. Alan Hunter to **Mr. Kenny Crumholt, Resident Engineer, West Bank Resident Office, 504-341-0212**

4. Section 00130, "PROPOSAL EVALUATION CRITERIA", delete in its entirety and replace with new Section 00130.

5. Section 00700:

Page 14, clause 52.211-12 LIQUIDATED DAMAGES--CONSTRUCTION (SEP 2000), subparagraph (a). Change "*** CALENDAR DAYS" to "***LIQUIDATED DAMAGES".

52.217-9 (c), total duration of contract shall not exceed "three" years, change to "**two**" years.

Page 121, clause 252.236-7001 CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000), subparagraph e. After "(End of clause)", add: "NOTE: The drawings attached to this solicitation are for information only. These drawings are representative of the work that may be performed under this Contract. The actual Construction Drawings for each project will be included in the individual Task Orders."

6. Section 01100, "GENERAL PROVISIONS", delete Section 01100 in its entirety and add new Section 01100.

7. Section 02315, "STEEL H-PILING", delete Section 02315 in its entirety and add new Section 02315.

8. Section 02320, "STRUCTURAL EXCAVATION AND BACKFILL", delete Section 02320 in its entirety and add new Section 02320.

9. Section 02355, "PILE LOAD TESTS", delete Section 02355 in its entirety and add new Section 02355.

10. Section 02365, "PRESTRESSED CONCRETE PILES", delete Section 02365 in its entirety and add new Section 02365.

11. Section 02411, "STEEL SHEET PILING", delete Section 02411 in its entirety and add new Section 02411.
12. Section 02451, "STEEL PIPE PILES", delete Section 02451 in its entirety and add new Section 02451.
13. Section 02721, "DRAIN LINES", delete Section 02721 in its entirety and add new Section 02721.
14. Section 02722, "DRAINAGE STRUCTURES", delete Section 02722 in its entirety and add new Section 02722.
15. Section 03301, "CAST-IN-PLACE STRUCTURAL CONCRETE", delete Section 03301 in its entirety and add new Section 03301.
16. Section 05500, "MISCELLANEOUS METALWORK", delete Section 05500 in its entirety and add new Section 05500.
17. Section 05520, "SWING GATES", delete Section 05520 in its entirety and add new Section 05520.
18. Section 15076, "STEEL PIPE AND FITTINGS FOR DISCHARGE PIPING", delete Section 15076 in its entirety and add new Section 15076.
19. Questions asked by contractors are answered and posted along with this amendment.

SOLICITATION, OFFER, AND AWARD <i>(Construction, Alteration, or Repair)</i>	1. SOLICITATION NO.	2. TYPE OF SOLICITATION	3. DATE ISSUED	PAGE OF PAGES
	W912P8-06-R-0183	<input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)	08/14/06	1

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO.	6. PROJECT NO.
7. ISSUED BY US ARMY CORPS OF ENGINEERS NEW ORLEANS DISTRICT ATTN: CEMVN-CT, ROOM 172 7400 LEAKE AVE NEW ORLEANS, LA 70118-0267	CODE W912P8	8. ADDRESS OFFER TO SEE ITEM 7
9. FOR INFORMATION CALL:	a. NAME ALINE SMITH	b. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) (504) 862-2883

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS (*Title, identifying no., date*)

See Letterhead page for Scope of Work

THIS IS A BEST VALUE PROCUREMENT. PROPOSALS MAY NOT BE MORE THAN 50 PAGES.

STANDARD 8.5 X 11 ONLY. RETURN BID PACKAGE ALONG WITH ORIG & 4 COPIES OF TECHNICAL PROPOSAL.

PROPOSALS ARE DUE 10 OCT 06 11:00 A.M. LOCAL TIME AND PLACE, NEW ORLEANS, LA

* PER INDIVIDUAL TASK ORDER. MINIMUM GUARANTEE IS \$50,000.00 TOTAL PERFORMANCE PERIOD IS 2 YEARS FROM DATE OF AWARD. TOTAL VALUE OF CONTRACT IS NTE \$250,000,000.00.

11. The Contractor shall begin performance* _____ calendar days and complete it within* _____ calendar days after receiving <input type="checkbox"/> award, <input checked="" type="checkbox"/> notice to proceed. This performance period <input checked="" type="checkbox"/> mandatory <input type="checkbox"/> negotiable. (See _____ .)	
12a. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? (If "YES," indicate within how many calendar days after award in Item 12b). <input type="checkbox"/> YES <input type="checkbox"/> NO	12b. CALENDAR DAYS *

13. ADDITIONAL SOLICITATION REQUIREMENTS:

- a. Sealed offers in original and 4 copies to perform the work required are due at the place specified in Item 8 1100 (hour) local time 10/10/06 (date). If this is a sealed bid solicitation, offers will be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.
- b. An offer guarantee is, is not required.
- c. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by
- d. Offers providing less than 30 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

OFFER (Must be fully completed by offeror)

14. NAME AND ADDRESS OF OFFEROR (Include ZIP Code)		15. TELEPHONE NO. (Include area code)
CAGE CODE NO. _____ DUNS NO. _____		16. REMITTANCE ADDRESS (Include only if different than Item 14)
CODE	FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. (Insert any number equal to or greater than the minimum requirement stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)

AMOUNTS 

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation - give number and date of each)

AMENDMENT NO.									
DATE									

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)	20B. SIGNATURE	20C. OFFER DATE
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AWARD (To be completed by Government)

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA
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24. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified)	ITEM 26	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO <input type="checkbox"/> 10 U.S.C. 2304(c) () <input type="checkbox"/> 41 U.S.C. 253(c) ()
26. ADMINISTERED BY CODE	27. PAYMENT WILL BE MADE BY	
NEW ORLEANS AREA OFFICE U.S. ARMY CORPS OF ENGINEERS P.O. BOX 60267 NEW ORLEANS, LA 70160-0267	USAED NEW ORLEANS C/O USACE FINANCE CENTER (UFC) ATTN: CEFC-AO-P 5720 INTEGRITY DRIVE MILLINGTON, TN 38054-5005	

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

<input type="checkbox"/> 28. NEGOTIATED AGREEMENT (Contractor is required to sign this document and return _____ copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all work requirements identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications incorporated by reference in or attached to this contract.	<input type="checkbox"/> 29. AWARD (Contractor is not required to sign this document.) Your offer on this solicitation is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.
30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN (Type or print)	31A. NAME OF CONTRACTING OFFICER (Type or print)
30B. SIGNATURE	30C. DATE
31B. UNITED STATES OF AMERICA BY	31C. AWARD DATE

SECTION 00010 - BIDDING SCHEDULE

W912P8-06-R-0183

Floodwalls and Structures Within the New Orleans District, Indefinite Delivery –
Indefinite Quantity, Single Award Task Order Contract

Item	DESCRIPTION	Estimated Quantity	Unit	Unit Price	Estimated Amount
0001	Construction Fences	20,000	LF		
0002	Government Inspector Trailer	24	MTH		
0003	Silt Fences	23,200	LF		
0004	Truck Wash-Down Racks	2	EA		
0005	Separator Geotextile	10,800	SY		
0006	Separator Geotextile - Roadways	39,800	SY		
0007	Furnish and Deliver Steel H-Pile 14 X 73	484,500	LF		
0008	Furnish and Deliver Steel H-Pile 14 X 89	459,700	LF		
0009	Drive Steel H-Pile 14 X 73	484,500	LF		
0010	Drive Steel H-Pile 14 X 89	459,700	LF		
0011	Splicing H-Piling	1,900	EA		
0012	Paint H-Piling	59,000	LF		
0013	Tension Pile Connection	3,500	EA		
0014	Excavation	83,600	CY		
0015	Levee Cut (Excavation)	9,100	CY		
0016	Inspection Trench	17,200	CY		
0017	Granular Backfill Type 1	16,100	CY		
0018	Select Backfill	5,100	CY		
0019	Clay Backfill	16,600	CY		
0020	Lightweight Fill	2,600	CY		
0021	Embankment, Compacted Fill	260,000	CY		
0022	Supply Piling, Concrete Precast, Prestressed, 14 inch	11,200	LF		

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W912P8-06-R-0183

Floodwalls and Structures Within the New Orleans District, Indefinite Delivery –
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Item	DESCRIPTION	Estimated Quantity	Unit	Unit Price	Estimated Amount
0023	Supply Piling, Concrete Precast, Prestressed, 16 inch	68,200	LF		
0024	Drive Piling, Concrete Precast, Prestressed, 14 inch	11,200	LF		
0025	Drive Piling, Concrete Precast, Prestressed, 16 inch	68,200	LF		
0026	14-IN PPC Tension Pile Connection	150	EA		
0027	Supply Steel Sheet Piling, Type PZ 22, (Under 65 Foot Long)	65,400	SF		
0028	Supply Steel Sheet Piling, Type PZ 27 (Under 65 Foot Long)	380,200	SF		
0029	Supply Steel Sheet Piling, Type PZC 13, (Over 65 Foot Long)	510,000	SF		
0030	Drive Steel Sheet Piling, Type PZ 22, (Under 65 Foot Long)	65,400	SF		
0031	Drive Steel Sheet Piling, Type PZ 27 (Under 65 Foot Long)	380,200	SF		
0032	Drive Steel Sheet Piling, Type PZC 13, (Over 65 Foot Long)	510,000	SF		
0033	Paint Steel Sheet Piles	264,000	SF		
0034	Sheet Pile Penetrations	25	EA		
0035	Supply 24-inch, 0.375-inch WT Pipe Piles	97,100	LF		
0036	Drive 24-inch, 0.375-inch WT Pipe Piles	104,100	LF		
0037	Paint 24-inch Steel Pipe Piles	7,000	LF		
0038	Dolphin Structure Piles	1,900	LF		
0039	24-inch, 0.375-inch WT Pipe Pile Splice	30	EA		
0040	24-IN Pipe Tension Pile Connection	15	EA		
0041	Reinforced Concrete Lined Ditch	1,505	CY		
0042	Stone Lined Ditch	300	CY		
0043	Drainage Structure Timbers	73,900	BF		

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W912P8-06-R-0183

Floodwalls and Structures Within the New Orleans District, Indefinite Delivery –
Indefinite Quantity, Single Award Task Order Contract

Item	DESCRIPTION	Estimated Quantity	Unit	Unit Price	Estimated Amount
0044	Drainage Structure Bedding	2,300	CY		
0045	Drainage Structure Geotextile	9,300	SY		
0046	12-inch RCP	200	LF		
0047	15-inch RCP	245	LF		
0048	18-inch RCP	3,300	LF		
0049	24-inch RCP	2,540	LF		
0050	30-inch RCP	602	LF		
0051	36-inch RCP	863	LF		
0052	48-inch RCP	8	LF		
0053	26 5/8" X 43 3/4" RCAP	216	LF		
0054	30-inch CMP	17	LF		
0055	12-inch Steel Drainage Pipe	490	LF		
0056	24-inch Steel Drainage Pipe	670	LF		
0057	30-inch Steel Drainage Pipe	125	LF		
0058	36-inch Steel Drainage Pipe	535	LF		
0059	48-inch Steel Drainage Pipe	5	LF		
0060	24-inch Steel Drainage Pipe Dresser Fitting	6	EA		
0061	30-inch Steel Drainage Pipe Dresser Fitting	8	EA		
0062	36-inch Steel Drainage Pipe Dresser Fitting	20	EA		
0063	Fabricated Wye 30" X 2-24"	3	EA		
0064	Fabricated Wye 36" X 2-24"	4	EA		
0065	24-inch Gate Valve	3	EA		
0066	30-inch Gate Valve	4	EA		

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W912P8-06-R-0183

Floodwalls and Structures Within the New Orleans District, Indefinite Delivery –
Indefinite Quantity, Single Award Task Order Contract

Item	DESCRIPTION	Estimated Quantity	Unit	Unit Price	Estimated Amount
0067	36-inch Gate Valve	16	EA		
0068	36-inch Knife Gate Valve	3	EA		
0069	48-inch Knife Gate Valve	1	EA		
0070	Concrete Headwalls, Manholes and Other Drainage Structures	630	CY		
0071	Precast Concrete Valve Box Lids	17	EA		
0072	Inline Drain 15" X 12"	16	EA		
0073	Grading	19,000	SY		
0074	Base Course	1,100	CY		
0075	Surfacing	10,000	CY		
0076	Temporary Detour/Access Roads, Temporary Driveways and Parking Areas	9,100	CY		
0077	Maintenance Surfacing	50	CY		
0078	8 Inch Thick Asphaltic Concrete Pavement	2,000	SY		
0079	8 Inch Thick Reinforced Concrete Pavement	3,250	SY		
0080	Concrete Curb and Gutter Bottom	5	CY		
0081	Remove Existing Fencing	3,015	LF		
0082	Temporary Chain Link Fencing and Gates	2,700	LF		
0083	Seeding and Fertilizing	20	AC		
0084	Seeding, Fertilizing and Mulching	20	AC		
0085	Reinforced Concrete Floodwall Stem	25,700	CY		
0086	Reinforced Concrete Floodwall Base	53,000	CY		
0087	Reinforced Concrete Floodwall/Bulkhead Cap	13	CY		

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W912P8-06-R-0183

Floodwalls and Structures Within the New Orleans District, Indefinite Delivery –
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Item	DESCRIPTION	Estimated Quantity	Unit	Unit Price	Estimated Amount
0088	Dolphin Pile Unreinforced Concrete Fill	60	CY		
0089	Concrete Slope Paving	710	CY		
0090	Gate Monolith Base	7,700	CY		
0091	Gate Monolith Column or Pilaster	2,300	CY		
0092	Stabilization Slab Concrete	2,400	CY		
0093	Architectural Textured Finish	13,200	SY		
0094	Grout-Cleaned Finish	193,000	SY		
0095	Reinforced Concrete Cap	400	CY		
0096	Miscellaneous Metalwork – Carbon Steel	138,000	LB		
0097	Steel Handrail	35	LF		
0098	Steel Grating	1,100	LB		
0099	Gate Miscellaneous Hardware – Swing Gate	4	EA		
0100	Gate Miscellaneous Hardware – Roller Gate	4	EA		
0101	Gate Miscellaneous Hardware – Railroad Gate	1	EA		
0102	Grout	6	CF		
0103	Miscellaneous Metalwork – Castings	1,000	LB		
0104	Swing Gates	995,500	LB		
0105	Pedestrian Gates	5,000	LB		
0106	Pipe Guard (10" Steel Pipe, Concrete Filled)	5	EA		
0107	Roller Gates	159,000	LB		
0108	Railroad Roller Gates	28,000	LB		
0109	Anodes	15	EA		

SECTION 00010 - BIDDING SCHEDULE

W912P8-06-R-0183

Floodwalls and Structures Within the New Orleans District, Indefinite Delivery –
Indefinite Quantity, Single Award Task Order Contract

Item	DESCRIPTION	Estimated Quantity	Unit	Unit Price	Estimated Amount

TOTAL:

**NOTE: FOR THE BID PROPOSAL, THE “UNIT PRICE” AND THE
“ESTIMATED AMOUNT” MUST BE INSERTED INTO THE
APPROPRIATE SPACES FOR ALL OF THE ITEMS LISTED
ABOVE.**

Quantities shown for significant construction items are provided for the purpose of giving prospective bidders a representative range to establish an order of magnitude for the item. The actual quantities will be furnished in each Task Order.

SECTION 00010 - BIDDING SCHEDULE

W912P8-06-R-0183

Floodwalls and Structures Within the New Orleans District, Indefinite Delivery –
Indefinite Quantity, Single Award Task Order Contract

Item	DESCRIPTION	Estimated Quantity	Unit	Unit Price	Estimated Amount
0001	Mobilization and Demobilization	1	TBD	XXX	XXX
0002	Railroad Inspection	1	TBD	XXX	XXX
0003	Railroad Insurance	1	TBD	XXX	XXX
0004	Special Pile Driving Conditions	1	TBD	XXX	XXX
0005	Vibration Monitoring	1	TBD	XXX	XXX
0006	Videotape and Photographic Documentation	1	TBD	XXX	XXX
0007	Railroad Survey	1	TBD	XXX	XXX
0008	Site Safety and Health Plan	1	TBD	XXX	XXX
0009	Temporary Traffic Control	1	TBD	XXX	XXX
0010	Maintenance and Diversion of Storm Water	1	TBD	XXX	XXX
0011	Separator Geotextile – Underwater	1	TBD	XXX	XXX
0012	Modifications to Existing Utilities	1	TBD	XXX	XXX
0013	Temporary Flood Protection	1	TBD	XXX	XXX
0014	Selective Demolition	1	TBD	XXX	XXX
0015	Clearing and Grubbing	1	TBD	XXX	XXX
0016	Construction Unwatering	1	TBD	XXX	XXX
0017	Temporary Retaining Structures	1	TBD	XXX	XXX
0018	Drive Steel H-Piles	1	TBD	XXX	XXX
0019	Water-Based Equipment Excavation	1	TBD	XXX	XXX
0020	Crushed Stone Backfill	1	TBD	XXX	XXX
0021	Steel H-Pile, Furnish and Drive Test Pile	1	TBD	XXX	XXX

SECTION 00010 - BIDDING SCHEDULE

W912P8-06-R-0183

Floodwalls and Structures Within the New Orleans District, Indefinite Delivery –
Indefinite Quantity, Single Award Task Order Contract

Item	DESCRIPTION	Estimated Quantity	Unit	Unit Price	Estimated Amount
0022	Concrete Precast, Prestressed, Furnish and Drive Test Pile	1	TBD	XXX	XXX
0023	Steel Pipe Pile, Furnish and Drive Test Pile	1	TBD	XXX	XXX
0024	Static Tension Test - Steel H-Pile	1	TBD	XXX	XXX
0025	Static Tension Test – Steel Pipe Pile	1	TBD	XXX	XXX
0026	Static Tension Test – Piling, Concrete Precast, Prestressed	1	TBD	XXX	XXX
0027	Static Compression Test – Steel H-Pile	1	TBD	XXX	XXX
0028	Static Compression Test – Piling, Steel Pipe Pile	1	TBD	XXX	XXX
0029	Static Compression Test – Piling, Concrete Precast, Prestressed	1	TBD	XXX	XXX
0030	Dynamic Test During Initial Driving – Steel H-Pile	1	TBD	XXX	XXX
0031	Dynamic Test During Initial Driving – Steel Pipe Pile	1	TBD	XXX	XXX
0032	Dynamic Test During Initial Driving – Piling, Concrete Precast, Prestressed	1	TBD	XXX	XXX
0033	Dynamic Test During Restrike – Steel H-Pile	1	TBD	XXX	XXX
0034	Dynamic Test During Restrike – Steel Pipe Pile	1	TBD	XXX	XXX
0035	Dynamic Test During Restrike – Piling, Concrete Precast, Prestressed	1	TBD	XXX	XXX
0036	Supply Piling, Concrete Precast, Prestressed, 12 inch	1	TBD	XXX	XXX
0037	Drive Piling, Concrete Precast, Prestressed, 12 inch	1	TBD	XXX	XXX
0038	Jet Tube and Port Casing	1	TBD	XXX	XXX
0039	12-IN PPC Tension Pile Connection	1	TBD	XXX	XXX
0040	16-IN PPC Tension Pile Connection	1	TBD	XXX	XXX

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W912P8-06-R-0183

Floodwalls and Structures Within the New Orleans District, Indefinite Delivery –
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Item	DESCRIPTION	Estimated Quantity	Unit	Unit Price	Estimated Amount
0041	Stone Rip Rap, Gradation 1, Truck Delivery	1	TBD	XXX	XXX
0042	Stone Rip Rap, Gradation 2, Truck Delivery	1	TBD	XXX	XXX
0043	Stone Rip Rap, Gradation 1, Barge Delivery	1	TBD	XXX	XXX
0044	Stone Rip Rap, Gradation 2, Barge Delivery	1	TBD	XXX	XXX
0045	Supply Steel Sheet Piling, Type PZ 35	1	TBD	XXX	XXX
0046	Supply Steel Sheet Piling, Type AZ 36	1	TBD	XXX	XXX
0047	Supply Steel Sheet Piling, Type AZ 46	1	TBD	XXX	XXX
0048	Supply Steel Sheet Piling, Type AZ 48	1	TBD	XXX	XXX
0049	Supply Steel Sheet Piling, Type PZC 18	1	TBD	XXX	XXX
0050	Drive Steel Sheet Piles	1	TBD	XXX	XXX
0051	Fabricated Piles, Rolled Corners and Cover Plates	1	TBD	XXX	XXX
0052	Supply 16-inch, 0.50-inch WT Pipe Piles	1	TBD	XXX	XXX
0053	Supply 18-inch, 0.4125-inch WT Pipe Piles	1	TBD	XXX	XXX
0054	Drive Steel Pipe Piles	1	TBD	XXX	XXX
0055	Paint 16-inch Steel Pipe Piles	1	TBD	XXX	XXX
0056	Paint 18-inch Steel Pipe Piles	1	TBD	XXX	XXX
0057	16-inch, 0.50-inch WT Pipe Pile Splice	1	TBD	XXX	XXX
0058	18-inch, 0.4125-inch WT Pipe Pile Splice	1	TBD	XXX	XXX
0059	16-IN Pipe Tension Pile Connection	1	TBD	XXX	XXX
0060	18-IN Pipe Tension Pile Connection	1	TBD	XXX	XXX
0061	18-inch CMP	1	TBD	XXX	XXX

SECTION 00010 - BIDDING SCHEDULE

W912P8-06-R-0183

Floodwalls and Structures Within the New Orleans District, Indefinite Delivery –
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Item	DESCRIPTION	Estimated Quantity	Unit	Unit Price	Estimated Amount
0062	12-inch Steel Drainage Pipe Dresser Fitting	1	TBD	XXX	XXX
0063	12-inch Steel Drainage Pipe Fitting	1	TBD	XXX	XXX
0064	24-inch Steel Drainage Pipe Fitting	1	TBD	XXX	XXX
0065	30-inch Steel Drainage Pipe Fitting	1	TBD	XXX	XXX
0066	36-inch Steel Drainage Pipe Fitting	1	TBD	XXX	XXX
0067	Drainage Pipe Jacking	1	TBD	XXX	XXX
0068	Catch Basin, CB-01	1	TBD	XXX	XXX
0069	Catch Basin, CB-02	1	TBD	XXX	XXX
0070	Catch Basin, CB-01 (Brick Option)	1	TBD	XXX	XXX
0071	Catch Basin, CB-02 (Brick Option)	1	TBD	XXX	XXX
0072	4 Inch Thick Reinforced Concrete Pavement	1	TBD	XXX	XXX
0073	Permanent Chain Link Fencing and Gates	1	TBD	XXX	XXX
0074	Underwater Concrete	1	TBD	XXX	XXX
0075	Miscellaneous Concrete	1	TBD	XXX	XXX
0076	Masonry	1	TBD	XXX	XXX
0077	Miscellaneous Metalwork – Galvanized Carbon Steel	1	TBD	XXX	XXX
0078	Miscellaneous Metalwork – Stainless Steel	1	TBD	XXX	XXX
0079	Miscellaneous Metalwork – Aluminum	1	TBD	XXX	XXX
0080	Aluminum Handrail	1	TBD	XXX	XXX
0081	Aluminum Grating	1	TBD	XXX	XXX
0082	Miscellaneous Hardware	1	TBD	XXX	XXX
0083	Trash Racks	1	TBD	XXX	XXX

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W912P8-06-R-0183

Floodwalls and Structures Within the New Orleans District, Indefinite Delivery –
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Item	DESCRIPTION	Estimated Quantity	Unit	Unit Price	Estimated Amount
0084	Arch-Type Fender System	1	TBD	XXX	XXX
0085	Sluice Gates	1	TBD	XXX	XXX
0086	Raw Water, Ground Water and Keel Cooler Systems	1	TBD	XXX	XXX
0087	Vacuum System (Priming and Breaking)	1	TBD	XXX	XXX
0088	Fender/Mooring System	1	TBD	XXX	XXX
0089	Steel Pipe and Fittings for Discharge Piping – Pump No. 1	1	TBD	XXX	XXX
0090	Steel Pipe and Fittings for Discharge Piping – Pump No. 2	1	TBD	XXX	XXX
0091	Steel Pipe and Fittings for Discharge Piping – Pump No. 3	1	TBD	XXX	XXX
0092	Steel Pipe and Fittings for Discharge Piping – Pump No. 4	1	TBD	XXX	XXX
0093	Steel Pipe and Fittings for Discharge Piping – Pump No. 5	1	TBD	XXX	XXX
0094	Steel Pipe and Fittings for Discharge Piping – Pump No. 6	1	TBD	XXX	XXX
0095	Steel Pipe and Fittings for Discharge Piping – Pump No. 7	1	TBD	XXX	XXX
0096	Steel Pipe and Fittings for Discharge Piping – Pump No. 8	1	TBD	XXX	XXX
0097	Steel Pipe and Fittings for Discharge Piping – Pump No. 9	1	TBD	XXX	XXX
0098	Steel Pipe and Fittings for Discharge Piping – Pump No. 10	1	TBD	XXX	XXX
0099	Miscellaneous Electrical Work	1	TBD	XXX	XXX

TOTAL:

TBD – Amount shall be determined by the individual Task Order.

THE ABOVE LISTED ITEMS SHALL BE NEGOTIATED ON A TASK ORDER BASIS AND UNIT PRICES SHALL NOT BE INSERTED.

SECTION 00010 - BIDDING SCHEDULE

Bidding Schedule Line Item for "Mobilization and Demobilization" is specified in 00700, "CONTRACT CLAUSES", Paragraph 8. Included in this Bidding Schedule Line Item are the Safety Signs and Project Signs as specified in Section 01100, "GENERAL PROVISIONS", Paragraphs 3e and 5; timber bridge mats as specified in Section 01100, "GENERAL PROVISIONS", Paragraph 9e.

Bidding Schedule Line Item for "Construction Fences" is specified in Section 01100, "GENERAL PROVISIONS", Paragraph 3i.

Bidding Schedule Line Item for "Government Inspection Trailer" is specified in Section 01100, "GENERAL PROVISIONS", Paragraph 4.

Bidding Schedule Line Item for "Railroad Inspection" is specified in Section 01100, "GENERAL PROVISIONS", Paragraph 17m.

Bidding Schedule Line Item for "Railroad Insurance" is specified in Section 01100, "GENERAL PROVISIONS", Paragraph 16 and 17n.

Bidding Schedule Line Item for "Special Pile Driving Conditions" is specified in Section 01100, "GENERAL PROVISIONS", Paragraph 26.

Bidding Schedule Line Item for "Vibration Monitoring" is specified in Section 01100, "GENERAL PROVISIONS", Paragraph 27.

Bidding Schedule Line Item for "Videotape and Photographic Documentation" is specified in Section 01100, "GENERAL PROVISIONS", Paragraph 28.

Bidding Schedule Line Item for "Railroad Survey" is specified in Section 01100, "GENERAL PROVISIONS", Paragraph 17b.

Bidding Schedule Line Item for "Site Safety and Health Plan" is specified in Section 01351, "SITE SAFETY AND HEALTH PLAN".

Bidding Schedule Line Item for "Silt Fences" is specified in Section 01356, "STORM WATER POLLUTION PREVENTION PLAN".

Bidding Schedule Line Item for "Temporary Traffic Control" is specified in Section 01501, "TRAFFIC CONTROL AND COORDINATION" and Section 01100, "GENERAL PROVISIONS", Paragraph 3h.

Bidding Schedule Line Item for "Maintenance and Diversion of Storm Water" is specified in Section 01573, "MAINTENANCE AND DIVERSION OF STORM WATER".

Bidding Schedule Line Item for "Truck Wash-Down Rack" is specified in Section 01572, "TRUCK WASH-DOWN RACKS".

SECTION 00010 - BIDDING SCHEDULE

Bidding Schedule Line Item for "Separator Geotextile" is specified in Section 02075, "SEPARATOR GEOTEXTILES".

Bidding Schedule Line Item for "Separator Geotextile - Underwater" is specified in Section 02075, "SEPARATOR GEOTEXTILES".

Bidding Schedule Line Item for "Separator Geotextile - Roadways" is specified in Section 02075, "SEPARATOR GEOTEXTILES".

Bidding Schedule Line Item for "Modifications to Existing Utilities" is specified in Section 02101, "MODIFICATIONS TO EXISTING UTILITIES".

Bidding Schedule Line Item for "Temporary Flood Protection" is specified in Section 02111, "TEMPORARY FLOOD PROTECTION".

Bidding Schedule Line Item for "Selective Demolition" is specified in Section 02221, "SELECTIVE DEMOLITION".

Bidding Schedule Line Item for "Clearing and Grubbing" is specified in Section 02231, "CLEARING AND GRUBBING".

Bidding Schedule Line Item for "Construction Unwatering" is specified in Section 02242, "UNWATERING".

Bidding Schedule Line Item for "Temporary Retaining Structures" is specified in Section 02252, "TEMPORARY RETAINING STRUCTURES".

Bidding Schedule Line Items for "Furnish and Deliver Steel H-Piling 14 X 73", "Furnish and Deliver Steel H-Piling 14 X 89", "Drive Steel H-Piling 14 X 73", "Drive Steel H-Piling 14 X 89", "Splicing H-Piling", "Paint H-Piling" and "Tension Pile Connection" are specified in Section 02315, "STEEL H-PILING".

Bidding Schedule Line Items for "Excavation", "Levee Cut (Excavation)", "Inspection Trench", and "Water-Based Equipment Basin Excavation" are specified in Section 02320, "STRUCTURAL EXCAVATION AND BACKFILL".

Bidding Schedule Line Items for "Granular Backfill Type 1", "Crushed Stone Backfill", "Select Backfill", "Clay Backfill", and "Lightweight Fill" are specified in Section 02320, "STRUCTURAL EXCAVATION AND BACKFILL".

Bidding Schedule Line Item for "Embankment, Compacted Fill" is specified in Section 02332, "EMBANKMENT".

Bidding Schedule Line Items for "Steel H-Pile, Furnish and Drive Test Pile", "Concrete Precast, Prestressed, Furnish and Drive Test Pile", "Steel Pipe Pile, Furnish and Drive Test Pile" are specified in Section 02355, "PILE LOAD TESTS".

SECTION 00010 - BIDDING SCHEDULE

Bidding Schedule Line Items for "Static Tension Test - Steel H-Pile", "Static Tension Test – Steel Pipe Pile", "Static Tension Test – Piling, Concrete Precast, Prestressed", "Static Compression Test – Steel H-Pile", "Static Compression Test – Piling, Steel Pipe Pile", "Static Compression Test – Piling, Concrete Precast, Prestressed", "Dynamic Test During Initial Driving – Steel H-Pile", "Dynamic Test During Initial Driving – Steel Pipe Pile", "Dynamic Test During Initial Driving – Piling, Concrete Precast, Prestressed", "Dynamic Test During Restrike – Steel H-Pile", "Dynamic Test During Restrike – Steel Pipe Pile", and "Dynamic Test During Restrike – Piling, Concrete Precast, Prestressed" are specified in Section 02355, "PILE LOAD TESTS".

Bidding Schedule Line Items for " Supply Piling, Concrete Precast, Prestressed, 12 inch", "Supply Piling, Concrete Precast, Prestressed, 14 inch", and "Supply Piling, Concrete Precast, Prestressed, 16 inch" are specified in SECTION 02365, "PRESTRESSED CONCRETE PILES".

Bidding Schedule Line Items for " Drive Piling, Concrete Precast, Prestressed, 12 inch", "Drive Piling, Concrete Precast, Prestressed, 14 inch", and "Drive Piling, Concrete Precast, Prestressed, 16 inch" are specified in SECTION 02365, "PRESTRESSED CONCRETE PILES".

Bidding Schedule Line Item for "Jet Tube and Port Casing" is specified in SECTION 02365, "PRESTRESSED CONCRETE PILES".

Bidding Schedule Line Items for "12-IN PPC Tension Pile Connection", "14-IN PPC Tension Pile Connection", and "16-IN PPC Tension Pile Connection" are specified in SECTION 02365, "PRESTRESSED CONCRETE PILES".

Bidding Schedule Line Items for "Stone Rip Rap, Gradation 1, Truck Delivery", "Stone Rip Rap, Gradation 2, Truck Delivery", "Stone Rip Rap, Gradation 1, Barge Delivery", "Stone Rip Rap, Gradation 2, Barge Delivery" are specified in Section 02383, "STONE RIP RAP CONSTRUCTION".

Bidding Schedule Line Items for "Supply Steel Sheet Piling, Type PZ 22, (Under 65 Foot Long)", "Supply Steel Sheet Piling, Type PZ 27, (Under 65 Foot Long)", "Supply Steel Sheet Piling, Type PZ 35", "Supply Steel Sheet Piling, Type AZ 36", "Supply Steel Sheet Piling, Type AZ 46", "Supply Steel Sheet Piling, Type AZ 48", "Supply Steel Sheet Piling, Type PZC 13, (Over 65 Foot Long)", and "Supply Steel Sheet Piling, Type PZC 18" are specified in Section 02411, "STEEL SHEET PILING".

Bidding Schedule Line Items for "Drive Steel Sheet Piling, Type PZ 22, (Under 65 Foot Long)", "Drive Steel Sheet Piling, Type PZ 27, (Under 65 Foot Long)", "Drive Steel Sheet Piling, Type PZC 13, (Over 65 Foot Long)", "Drive Steel Sheet Piles", "Paint Steel Sheet Piles", and "Fabricated Piles, Rolled Corners and Cover Plates" are specified in Section 02411, "STEEL SHEET PILING".

SECTION 00010 - BIDDING SCHEDULE

Bidding Schedule Line Item for "Sheet Pile Penetrations" is specified in Section 02411, "STEEL SHEET PILING" except for utility modification work which is specified in Section 02101, "MODIFICATIONS TO EXISTING UTILITIES".

Bidding Schedule Line Items for "Supply 16-inch, 0.50-inch WT Pipe Piles", "Supply 18-inch, 0.4125-inch WT Pipe Piles", and "Supply 24-inch, 0.375-inch WT Pipe Piles" are specified in SECTION 02451, "STEEL PIPE PILES".

Bidding Schedule Line Items for "Drive 24-inch, 0.375-inch WT Pipe Piles" and "Drive Steel Pipe Piles" is specified in SECTION 02451, "STEEL PIPE PILES".

Bidding Schedule Line Items for "Paint 16-inch Steel Pipe Piles", "Paint 18-inch Steel Pipe Piles", and "Paint 24-inch Steel Pipe Piles" are specified in SECTION 02451, "STEEL PIPE PILES".

Bidding Schedule Line Item for "Dolphin Structure Piles" is specified in SECTION 02451, "STEEL PIPE PILES".

Bidding Schedule Line Items for "16-inch, 0.50-inch WT Pipe Pile Splice", "18-inch, 0.4125-inch WT Pipe Pile Splice", and "24-inch, 0.375-inch WT Pipe Pile Splice" are specified in SECTION 02451, "STEEL PIPE PILES".

Bidding Schedule Line Items for "16-IN Pipe Tension Pile Connection", "18-IN Pipe Tension Pile Connection", and "24-IN Pipe Tension Pile Connection" are specified in SECTION 02451, "STEEL PIPE PILES".

Bidding Schedule Line Item for "Reinforced Concrete Lined Ditch" and "Stone Lined Ditch" are specified in Section 02633, "CONCRETE AND STONE LINED DITCHES".

Bidding Schedule Line Items for "Drainage Structure Timbers", "Drainage Structure Bedding", and "Drainage Structure Geotextile" are specified in Section 02721, "DRAIN LINES".

Bidding Schedule Line Items for "12-inch RCP", "15-inch RCP", "18-inch RCP", "24-inch RCP", "30-inch RCP", "36-inch RCP", "48-inch RCP", "26 5/8" X 43 3/4" RCAP, "18-inch CMP", and "30-inch CMP" are specified in Section 02721, "DRAIN LINES".

Bidding Schedule Line Items for "12-inch Steel Drainage Pipe", "24-inch Steel Drainage Pipe", "30-inch Steel Drainage Pipe", "36-inch Steel Drainage Pipe", and "48-inch Steel Drainage Pipe" are specified in Section 02721, "DRAIN LINES".

Bidding Schedule Line Items for "12-inch Steel Drainage Pipe Dresser Fitting", "24-inch Steel Drainage Pipe Dresser Fitting", "30-inch Steel Drainage Pipe Dresser Fitting", and "36-inch Steel Drainage Pipe Dresser Fitting" are specified in Section 02721, "DRAIN LINES".

SECTION 00010 - BIDDING SCHEDULE

Bidding Schedule Line Items for "12-inch Steel Drainage Pipe Fitting", "24-inch Steel Drainage Pipe Fitting", "30-inch Steel Drainage Pipe Fitting", and "36-inch Steel Drainage Pipe Fitting" are specified in Section 02721, "DRAIN LINES".

Bidding Schedule Line Items for "Fabricated Wye 30" X 2-24" and "Fabricated Wye 36" X 2-24" are specified in Section 02721, "DRAIN LINES".

Bidding Schedule Line Item for "Drainage Pipe Jacking" is specified in Section 02721, "DRAIN LINES".

Bidding Schedule Line Items for "Catch Basin, CB-01", "Catch Basin, CB-02", "Catch Basin, CB-01 (Brick Option)", "Catch Basin, CB-02 (Brick Option)", "24-inch Gate Valve", "30-inch Gate Valve", "36-inch Gate Valve", "36-inch Knife Gate Valve", and "48-inch Knife Gate Valve" are specified in Section 02722, "DRAINAGE STRUCTURES".

Bidding Schedule Line Items for "Concrete Headwalls, Manholes and Other Drainage Structures", "Precast Concrete Valve Box Lids", and "Inline Drain 15" X 12" are specified in Section 02722, "DRAINAGE STRUCTURES".

Bidding Schedule Line Item for "Grading" and "Base Course" are specified in Section 02723, "PAVEMENT BASE AND GEOTEXTILE SEPARATOR".

Bidding Schedule Line Item for "Surfacing" is specified in Section 02731, "SURFACING (GRANULAR)", Section 01501, "TRAFFIC CONTROL AND COORDINATION" and Section 01100, "GENERAL PROVISIONS", Paragraph 3h.

Bidding Schedule Line Item for "Temporary Detour/Access Roads, Temporary Driveways and Parking Areas" is specified in Section 02731, "SURFACING (GRANULAR)".

Bidding Schedule Line Item for "Maintenance Surfacing" is specified in Section 02731, "SURFACING (GRANULAR)".

Bidding Schedule Line Item for "8 Inch Thick Asphaltic Concrete Pavement" is specified in Section 02740, "ASPHALTIC CONCRETE PAVEMENT".

Bidding Schedule Line Items for "8 Inch Thick Reinforced Concrete Pavement", "4 Inch Thick Reinforced Concrete Pavement" and "Concrete Curb and Gutter Bottom" are specified in Section 02754, "PORTLAND CEMENT CONCRETE FOR PAVEMENT AND CURB AND GUTTER BOTTOM".

Bidding Schedule Line Items for "Remove Existing Fencing", "Temporary Chain Link Fencing and Gates", and "Permanent Chain Link Fencing and Gates" are specified in Section 02830, "CHAIN LINK FENCING AND GATES".

SECTION 00010 - BIDDING SCHEDULE

Bidding Schedule Line Items for "Seeding and Fertilizing" and "Seeding, Fertilizing and Mulching" are specified in Section 02922, "FERTILIZING, SEEDING AND MULCHING."

Bidding Schedule Line Items for "Reinforced Concrete Floodwall Stem", "Reinforced Concrete Floodwall Base", "Reinforced Concrete Floodwall/Bulkhead Cap", "Dolphin Pile Unreinforced Concrete Fill", "Concrete Slope Paving", "Gate Monolith Base", "Gate Monolith Column or Pilaster", "Underwater Concrete", "Stabilization Slab Concrete", "Architectural Textured Finish", "Grout-Cleaned Finish", and "Miscellaneous Concrete" are specified in Section 03301, "CAST-IN-PLACE STRUCTURAL CONCRETE".

Bidding Schedule Line Item for "Masonry" is specified in Section 04200, "MASONRY".

Bidding Schedule Line Items for "Miscellaneous Metalwork – Carbon Steel", "Miscellaneous Metalwork – Galvanized Carbon Steel", "Miscellaneous Metalwork – Stainless Steel", "Miscellaneous Metalwork – Aluminum", "Steel Handrail", "Aluminum Handrail", "Steel Grating", "Aluminum Grating", "Gate Miscellaneous Hardware – Swing Gate", "Gate Miscellaneous Hardware – Roller Gate", "Gate Miscellaneous Hardware – Railroad Gate", "Grout", and "Miscellaneous Hardware" are specified in Section 05500, "MISCELLANEOUS METALWORK".

Bidding Schedule Line Item for "Miscellaneous Metalwork – Castings" is specified in Section 05500, "MISCELLANEOUS METALWORK" and in Section 02722, "DRAINAGE STRUCTURES".

Bidding Schedule Line Item for "Swing Gates" and "Pedestrian Gates" are specified in Section 05520, "SWING GATES".

Bidding Schedule Line Item for "Pipe Guard (10" steel pipe, concrete filled)" is specified in Section 05523, "PIPE GUARDS".

Bidding Schedule Line Items for "Roller Gates" and "Railroad Roller Gates" are specified in Section 05540, "ROLLER GATES".

Bidding Schedule Line Item for "Trash Racks" is specified in Section 05920, "TRASH RACKS (BAR SCREENS)".

Bidding Schedule Line Item for "Arch-Type Fender System" is specified in Section 11165, "MOLDED RUBBER MARINE FENDERS".

Bidding Schedule Line Item for "Sluice Gates" is specified in Section 11285, "SLUICE GATES".

Bidding Schedule Line Item for the "Raw Water, Ground Water and Keel Cooler Systems" is specified in Section 11316, "RAW WATER, GROUNDWATER AND KEEL COOLER SYSTEMS".

SECTION 00010 - BIDDING SCHEDULE

Bidding Schedule Line Item for "Vacuum System (Priming and Breaking)" is specified in Section 11317, "VACUUM SYSTEMS: PRIMING AND BREAKING".

Bidding Schedule Line Item for "Fender/Mooring System" is specified in Section 13122, "FENDER/MOORING SYSTEM".

Bidding Schedule Line Items for "Steel Pipe and Fittings for Discharge Piping – Pump No. 1", "Steel Pipe and Fittings for Discharge Piping – Pump No. 2", "Steel Pipe and Fittings for Discharge Piping – Pump No. 3", "Steel Pipe and Fittings for Discharge Piping – Pump No. 4", "Steel Pipe and Fittings for Discharge Piping – Pump No. 5", "Steel Pipe and Fittings for Discharge Piping – Pump No. 6", "Steel Pipe and Fittings for Discharge Piping – Pump No. 7", "Steel Pipe and Fittings for Discharge Piping – Pump No. 8", "Steel Pipe and Fittings for Discharge Piping – Pump No. 9", and "Steel Pipe and Fittings for Discharge Piping – Pump No. 10" are specified in Section 15076, "STEEL PIPE AND FITTINGS FOR DISCHARGE PIPING".

Bidding Schedule Line Item for "Miscellaneous Electrical Work" is specified in all sections of the "16000" series of these specifications.

Bidding Schedule Line Item for "Anodes" is specified in Section 16640, "CATHODIC PROTECTION".

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SECTION 00130 – PROPOSAL EVALUATION CRITERIA

1.1 SCOPE

This is a Request for Proposal (RFP). Proposals will be evaluated by a Source Selection Evaluation Board (SSEB) comprised of representatives of the Corps of Engineers. Award will be made to that offeror, determined by the Government, who can accomplish the requirements set forth in the RFP in a manner most advantageous to the Government considering both cost and non-cost factors. The Government reserves the right to award this contract to other than the lowest price offeror after consideration of all factors.

1.2 SOURCE SELECTION USING THE TRADE-OFF PROCESS

The Government will select the offer that represents the best value to the Government by using the trade-off process described in FAR Part 15. This process permits tradeoffs between price and technical merit/quality and allows the Government to accept other than the lowest priced offer. The award decision will be based on a comparative assessment of proposals against all source selection criteria in the solicitation.

1.3 RELATIVE IMPORTANCE OF PRICE TO THE TECHNICAL EVALUATION FACTORS

All non-cost (i.e., technical) evaluation factors, when combined are approximately equal to price.

The Government is concerned with striking the most advantageous balance between Technical Merit (i.e., quality) and cost to the Government (i.e., price). Where competing technical proposals are determined to be substantially equal, price could become the controlling factor.

1.4. TECHNICAL/QUALITY EVALUATION

The Government will evaluate each of the six non-cost factors and rate the proposals. Non-cost factors are not all equal in importance. The following terminology is used to describe the relative importance of each non-cost factor:

MOST SIGNIFICANT. The criterion is two times or greater in value than another criterion.

MORE SIGNIFICANT. The criterion is greater in value than another criterion, but less than two times greater.

COMPARATIVELY EQUAL. The criterion is nearly the same in value as another criterion; any difference is very slight, and unimportant.

1.5 EVALUATION FACTORS

Selection will be based on the following criteria, which are listed in descending order of importance. Factor 1 and 2 are the most significant. Factors 3, 4 and 5 are comparatively equal and are more significant when compared to Factor 6. Price will not be scored, but will be a factor in establishing the competitive range prior to making the best value determination for award.

1. Past Performance which includes Safety

Contractors will be evaluated on the quality of similar work performed, as a prime contractor, in the last Five (5) years, using the evidence provided by the offeror. Performance on projects similar in scope, complexity, magnitude and schedule will provide a basis to assess strengths, weaknesses, and the overall performance risk associated with award to a particular contractor. The Government reserves the right to verify supplied information and references and further assess owner satisfaction. The Government may also use any other past performance information, from other sources, outside of the offerors proposal in their evaluation.

Contractors shall provide a listing of all exposure and accident experienced incidental to work for the past two years (as a minimum these records shall include exposure work-hours and a log of occupational injuries and illnesses).

2. Technical Approach

The Offeror shall provide processes and methodology to be used in accomplishing the construction of a flood protection system, and the number of crews capable of working concurrently. The Offeror shall provide the type and quantity of equipment that will be used to construct the flood protection system.

3. Personnel Qualifications

Contractors shall provide the qualifications and experience of key corporate personnel, officers, and staff identified for participation in projects under this contract. Offerors will be evaluated on the capability possessed to meet or provide the expertise requirements of proposed work under the contract.

4. Project Management

The Contractor shall provide details of their project management philosophy and what tools they will use to ensure the project stays on schedule. Submissions should also provide strategies for regaining schedules in the face of unforeseen delays. The contractor's project management plan should address strategies for managing multiple projects concurrently.

5. Small/Small Disadvantage Participation

The Offeror shall provide a narrative plan or evidence indicating extent of Small/Small Disadvantage Businesses. At a minimum, the narrative shall discuss:

Goals for subcontracting with small and small disadvantaged businesses in sufficient detail to allow evaluators to determine that these goals are realistic, and in accordance with the Government's policy to maximize opportunities for these types of businesses, and

The Offeror's past and present commitment to providing subcontracting opportunities and encouragement to small and small disadvantage businesses.

6. Familiarity with Local Area and Conditions

The Contractor shall provide details of his familiarity with the local area and the unique conditions of the soils in the Southeastern Louisiana region.

7. Price

The Contractor shall provide unit prices and extended amounts for all items of work listed in the bid schedule. The price will be evaluated for reasonableness. Pricing judged to be above or below the limits of reasonableness may be used as a basis to eliminate proposals from further consideration when determining the competitive range.

1.6 RFP SUBMITTALS

Offerors submitting proposals for this project should limit submissions to data essential for evaluation of proposals so that a minimum of time and monies will have been expended in preparing information required herein. However, in order to be effectively and equitably evaluated, the proposals must include information sufficiently detailed to clearly describe the Offeror's past performance, technical approach, personnel experience, management, small/small disadvantage participation and familiarity with local area and conditions to successfully complete the project.

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SECTION 01100 - GENERAL PROVISIONS

1. TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

a. This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with the Contract Clause in Section 00700 entitled, *Default (Fixed Price Construction) (FAR 52.249-10)*. In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied.

(1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY WORK DAYS
BASED ON (7) DAY WORK WEEK

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
9	4	6	4	4	6	5	4	3	1	5	4

c. Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for fifty percent (50%) or more of the Contractor's scheduled work day.

d. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph b, above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in

accordance with the Contract Clause in Section 00700 entitled, “*Default (Fixed Price Construction) (FAR 52.249-10)*”.

2. DAMAGE TO WORK

The responsibility for damage to any part of the permanent work shall be as set forth in the Contract Clause in Section 00700 entitled, “*Permits and Responsibilities (FAR 52.236-7)*”. However, if, in the judgment of the Contracting Officer, any part of the permanent work performed by the Contractor is damaged by flood, earthquake, hurricane, or tornado which damage is not due to the failure of the Contractor to take reasonable precautions or to exercise sound engineering and construction practices in the conduct of the work, the Contractor shall make the repairs as ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable contract unit price or lump sum prices as fixed and established in the contract. If, in the opinion of the Contracting Officer, there are no contract unit or lump sum prices applicable to any part of such work, an equitable adjustment shall be made pursuant to the Contract Clause in Section 00700 entitled, “*Changes (FAR 52.243-4)*”. Except as herein provided, damage to all work (including temporary construction), utilities, materials, equipment and plant shall be repaired to the satisfaction of the Contracting Officer at the Contractor's expense, regardless of the cause of such damage.

3. SAFETY PROVISIONS

The safety provisions specified herein refer to the Nov 2003 edition of EM 385-1-1.

a. Accident Investigations and Reporting. Refer to EM 385- 1-1, Section 01.D. Accidents shall be investigated and reports completed by the immediate supervisor of the employee(s) involved and reported to the Contracting Officer or his/her representative within one working day after the accident occurs. All data reported must be complete, timely and accurate. A follow-up report shall be submitted when the estimated lost time days differs from the actual lost time days.

b. Accident Prevention Program. (See the Contract Clause in Section 00700 entitled, “*Accident Prevention (FAR 52.236-13)*”.) Within fifteen (15) days after receipt of Notice of Award of the each Task Order, and at least seven (7) days prior to the prework conference, four (4) copies of the Accident Prevention Program shall be submitted to the Contracting Officer for review and acceptance. The Accident Prevention Plan must include a statement that describes the: Description, Magnitude, Major Scope of Work and Location(s). This Description, Magnitude, Major Scope of Work and Location(s) information shall also be identified on the referenced MVN Form 385-43 (Aug 05) (ACCIDENT PREVENTION PROGRAM ADMINISTRATIVE PLAN). The program shall be prepared in the following format:

- (1) An executed MVN Form 385-43/1 (Aug 05), Accident Prevention Plan Checklist Administrative Section, see Appendix A of EM 385-1-1.
- (2) Executed MVN 385-6-R and Form 385-43/2 (Aug 05), Accident Prevention Plan, Contractor Activity Hazard Analysis, see Figure 1-1 of EM 385-1-1.
- (3) A copy of company policy statement regarding accident prevention.
- (4) When marine plant and equipment are in use under a Task Order, the method of fuel oil transfer shall be included on MVN Form 385-10 (Aug 05), Fuel Oil Transfer – Floating Plant. (Refer to 33 CFR 156).
- (5) An executed Accident Prevention Program Administrative Plan, MVN Form 385-43 (Aug 05), (Refer to EM 385-1-1, App. A).
- (6) The Accident Prevention Plan shall address EM 385-1-1, Section 06E requirements for Moisture Density devices and other nondestructive testing devices having a radioactive source, as a component material are to be introduced on the worksite at any time during the life of the Task Order.

The Contractor shall not commence physical work at the site until the program has been accepted by the Contracting Officer, or his authorized representative. At the Contracting Officer's discretion, the Contractor may submit its Activity Hazard Analysis only for the first phase of construction provided that it is accompanied by an outline of the remaining phases of construction. All remaining phases shall be submitted and accepted prior to the beginning of work in each phase. Also refer to Section 1 of EM 385-1-1.

c. Comprehensive Hazard Communication Program. The Contractor shall develop, implement, and maintain at the workplace a written, Comprehensive Hazard Communication Program (see Section 01.B.04 of EM 385-1-1) that includes identification of potential hazards as prescribed in 29 CFR Part 1910.1200 and/or 1926.59, effects of exposure and control measures to be used for chemical products and physical agents that may be encountered during the performance of work on this Task Order, provisions for container labeling, Material Safety Data Sheets, and employee training program, and other criteria in accordance with 29 CFR Part 1910.1200 and/or 1926.59. Training shall include communication methods and systems to be used (i.e., voice, hand signals, radios or other means), and training in the use and understanding of material safety data sheets and chemical product hazard warning labels. Prior to bringing hazardous substances, as defined in 29 CFR 1910.1200 and/or 1926.59, onto the job site, a copy of the Hazard Communication Program and the Material Safety Data Sheets of each substance shall be submitted to the Contracting Officer and made available to the Contractor's employees as part of its Accident Prevention Program.

d. Daily Inspections. The Contractor shall perform daily safety inspections and record them on the forms approved by the Contracting Officer. Reports of daily inspections shall be maintained at the jobsite in accordance with Section 01451, "CONTRACTOR QUALITY CONTROL". The reports shall be records of the daily inspections and resulting actions. Each report shall include, as a minimum, the following:

- (1) Phase(s) of construction underway during the inspection.
- (2) Locations of areas where inspections were made.
- (3) Results of inspections, including nature of deficiencies observed and corrective actions taken, or to be taken, date, and signature of the person responsible for its contents.

e. Safety Sign. The Contractor shall furnish, erect, and maintain a safety sign at the site where indicated by the Contracting Officer. The sign shall conform to the requirements of this paragraph and the drawing included at the end of this section. The lettering shall be black, the safety circle and cross green, and the background white. When placed on a floating plant, the sign may be half size. The sign shall be erected as soon as practicable, but not later than fifteen (15) calendar days after the date established for commencement of work. The data required shall be current. The sign coordinator is Ronald Olsen at (504) 862-2325. No measurement will be made for the safety sign. Payment for the fabrication, installation and removal of the safety signs shall be included in the Bidding Schedule Line Item for "Mobilization and Demobilization" and the price will be determined for each Task Order.

f. Ground Fault Protection. Electrical equipment used on this Task Order shall be equipped with ground fault circuit interrupters in accordance with EM 385-1-1, Section 11.C.05.

g. Haul Roads. Whenever practical, one-way haul roads shall be used on this Task Order. Haul roads built and maintained for this work shall comply with the following:

- (1) One-way haul roads for off-the-road equipment; e.g., belly dumps, scrapers, and off-the-road trucks shall have a minimum usable width of twenty-five (25) feet. One-way haul roads for over-the-road haulage equipment only (e.g., dump trucks, etc.) may be reduced to a usable width of fifteen (15) feet. When the Contracting Officer determines that it is impractical to obtain the required width for one-way haul roads (e.g., a road on top of a levee), a usable width of not less than ten (10) feet may be approved by the Contracting Officer, provided a positive means of traffic control is implemented. Such positive means shall be signs, signals, and/or signalmen and an effective means of speed control.

(2) Two-way haul roads for over-the-road haulage equipment only shall have a minimum usable width of thirty (30) feet.

(3) Haul roads shall be graded and otherwise maintained to keep the surface free from potholes, ruts, and similar conditions that could result in unsafe operation.

(4) Grades and curves shall allow a minimum sight distance of 200-feet for one-way roads and three hundred (300) feet for two-way roads. Sight distance is defined as the centerline distance an equipment operator (4.5-feet above the road surface) can see an object 4.5-feet above the road surface. When conditions make it impractical to obtain the required sight distance, a positive means of traffic control shall be implemented.

(5) Dust abatement shall permit observation of objects on the roadway at a minimum distance of three hundred (300) feet.

(6) Haul roads shall have the edges of the usable portion marked delineators at intervals of fifty (50) feet. Such markers shall extend six (6) feet above the road surface and, for nighttime haulage, be provided with reflectors in both directions.

h. Site Access. The site access(es) and staging areas shall be provided with each Task Order. Contractor shall access the construction area using a haul/access road driveway. Haul roads shall be constructed as specified in subparagraph 3.g above. The Contractor shall reduce the width of the haul road at the direction of the Contracting Officer where horizontal distance between existing structures and the railroad tracks is limited. The Contractor shall provide adequate drainage to prevent the haul road from obstructing drainage plans. The Contractor shall coordinate and construct temporary driveway and temporary parking areas with facility owners as required by the Contracting Officer.

No sidewalk, private property, or property adjacent to the jobsite will be allowed for storage of equipment or materials without written, legal, prior approval from the property owner. A copy of all agreements between the Contractor and property owners shall be forwarded to the Contracting Officer. The Contractor shall maintain the project site free of debris, plant overgrowth, unnecessary equipment or materials, and shall provide a safe means of access to businesses located within the work area.

The Contractor shall provide signs, flagmen, an effective means of speed control and traffic controls at all times to direct and control traffic. The Contractor shall furnish flagging and traffic control services at all times that trucks are hauling during the course of this Task Order. The flagmen shall wear a specially designed, high visibility-orange and reflective-white vest. The flagmen's sign shall be octagonal, at least fifteen (15) inches across, mounted on a short

handle, with the word "STOP" printed in bold white letters at least five (5) inches high with a red background. The sign may be fabricated from sheet metal or other lightweight, semi-rigid material.

There shall be no measurement for safety requirements and traffic controls. Payment for this work shall be included in the Bidding Schedule Line Item for "Temporary Traffic Control" and the price will be determined for each Task Order. Surfacing material and geotextile fabric used for the construction of the haul and access roads, temporary driveways, parking areas shall be included in the applicable Bidding Schedule Line Item specified in Sections 02075, "SEPARATOR GEOTEXTILE" and 02731, "SURFACING (GRANULAR)". Upon completion of the construction of all haul access roads, temporary driveways, parking areas and staging areas, there shall be no further measurement and payment under Section 02731, "SURFACING (GRANULAR)". Any culverts required shall be included in the applicable Bidding Schedule Line Item specified in Section 02721, "DRAIN LINES".

Payment for maintenance surfacing material placed and compacted as required in accordance with Section 02731, "SURFACING (GRANULAR)" will be included in the Bidding Schedule Line Item for "Maintenance Surfacing". Price and payment will constitute full compensation for furnishing all plant, labor, equipment and material and performing all operations necessary for satisfactory placement, compaction and maintenance of the surfacing material.

i. Safety Fence. The Contractor shall provide, erect, and maintain a temporary safety fence around the limits of work. The fabric for the safety fence shall be zinc coated hog wire mesh at least forty-seven (47) inches high. Posts shall be round untreated wood posts or steel t-posts and shall be at least seven (7) feet long, 3 1/2 inches in diameter, and may be untreated. Posts shall extend at least forty-eight (48) inches above ground and shall be spaced at ten (10) feet on center. Swing gates shall be at least twelve (12) feet wide by forty-seven (47) inches high. The swing gate frame shall be fabricated of either 1-3/8-inch O.D. tubular steel, or 1/4-inch angle iron brace with an adjustable brace wire to prevent sagging. Gates shall be fitted with hinges and shall be supported by 1-3/8- inch O.D. tubular steel posts embedded in three (3) feet of concrete. The fabric from the gates shall be the same as that for the fence. All gates shall be closed and padlocked at the end of each work day. When necessary, an owner of a facility located within the limits of work will obtain keys from the levee district. The Contractor shall provide and maintain on the fence "KEEP OUT" signs every one hundred (100) feet facing out from the work. Details of the safety fencing and location shall be submitted to the Contracting Officer for approval. Measurement for this work shall be per linear foot of construction fence and gates installed. Payment for all work associated with the safety fence shall be included in the Bidding Schedule Line Item for "Construction Fences".

j. Means of Escape for Personnel Quartered, or Working on Floating Plant. Two (2) means of escape shall be provided for assembly, sleeping, and messing

areas on floating plants. For areas involving ten (10) or more persons, both means of egress shall be through standard size doors opening to different exit routes. Where nine (9) or fewer persons are involved, one (1) of the means of escape may be a window (minimum dimensions 24-inches by 36-inches) which leads to a different exit route. Refer to Section 19 of EM 385-1-1.

k. Emergency Alarms and Signals

(1) Alarms. Emergency alarms shall be installed and maintained on all floating plant requiring a crew where it is possible for either a passenger or crewman to be out of sight or hearing from any other person. The alarm system shall be operated from the primary electrical system with standby batteries on trickle charge that will automatically furnish the required energy during an electrical-system failure. A sufficient number of signaling devices shall be placed on each deck so that the sound can be heard distinctly at any point above the usual background noise. All signaling devices shall be so interconnected that actuation can occur from at least one strategic point on each deck.

(2) Signals

(a) Fire Alarm Signals. The general fire alarm signal shall be in accordance with 46 CFR Ch. I; Subpart E.109.503 of the Coast Guard Rules and Regulations for Cargo and Miscellaneous Vessels, Sub-Chapter I & Ia.

(b) Abandon Ship Signals. The signal for abandon ship shall be in accordance with paragraph 109.503(b) of the reference cited in (a) above.

(c) Man-Overboard Signal. Hail and pass the word to the bridge. All personnel and vessels capable of rendering assistance shall respond.

I. Hurricane Plan. A detailed plan for protection and evacuation of personnel and the Contractor's plant, in the event of an impending hurricane or storm, is required as an enclosure to the Contractor's Accident Prevention Program. This plan shall be submitted to the Contracting Officer, or his/her representative, for review prior to the preconstruction conference. The plan shall include at least the following:

(1) The time each phase of the plan will be put in effect. The time shall be the number of hours remaining for the storm to reach the worksite if it continues at the predicted speed and direction.

(2) The safe harbor for personnel and plant specifically identified.

(3) The name of the boat which will be used to move the plant, its type, capacity, speed, and availability.

(4) The estimated time necessary to move the plant to the safe harbor after movement is started.

See Section 02111, "TEMPORARY FLOOD PROTECTION" for additional requirements.

m. Hazardous Energy Protection. The Contractor shall develop, implement and maintain at the workplace, a written Control of Hazardous Energy (Lockout/Tagout) System. Refer to Section 12 of EM 385-1-1.

n. Handling Sheet Piling: The Contractor's personnel shall not sit or place themselves on top of the sheet piling during the handling, installation, and removal of the piling.

o. Cranes. The Contractor (including subcontractors) shall have cage boom guards, insulating links, or proximity warning devices on cranes that will be working adjacent to power lines. These devices shall not alter the requirements of any other regulation of this part - even if such device is required by law or other regulation. Insulating links shall be capable of withstanding a 1-minute dry low frequency dielectric test of 50,000 volts, alternating current (EM 385-1-1, Section 11.E.07). Calibration records or stamped date of required manufacturer inspection of proximity warning devices shall be kept on the crane. Additionally, prior to any work commencing an Activity Hazard Analysis (EM 385-1-1, Fig.1-1) identifying and satisfying EM 385-1-1, Section 11.A.02, 11.E.03, 11.E.04 and 11.E.05 requirements shall be submitted and accepted by the Contracting Officer.

4. INSPECTOR'S FIELD OFFICE

a. The Contractor shall furnish, throughout the Task Order duration, for the exclusive use of the Government employees, a temporary waterproof building, or trailer, to be utilized as a field office. The inspector's field office shall be mobilized to the work site and functional including electric, water, phone and toilet facilities within thirty (30) days of the NTP or prior to the start of work. It shall be conveniently located at the site of construction and shall be independent of any building, or trailer, used by the Contractor. Toilet facilities and potable water shall be provided within the Inspector's office. It shall be equipped with approved electrical wiring, private telephone service, a telephone answering machine, at least one (1) ceiling lamp receptacle, at least one (1) double convenience outlet, and the required switches and fuses, to provide 110-volt power for lighting and operating a laptop computer and printer. It shall be equipped with an air conditioning unit to provide cooling in warm or hot weather, and a heater, properly installed and vented in accordance with the National Fire Protection Association Code, for heating in cold weather, as required. The

Contractor shall make the necessary arrangements to obtain or to generate the power required to operate the air conditioning unit, lights, and laptop computer and printer, and the power or fuel required for the heater, and shall bear the cost thereof. A drafting table providing a working surface having dimensions of at least 4-feet by 6-feet (which may consist of a piece of plywood, at least 3/4-inch thick, hinged to a wall of the building with hinged legs) shall be installed in the building. The building shall have a built-in locker, extending from the floor to the ceiling, having dimensions of at least 2- feet by 5-feet, with a shelf twelve (12) inches from the top, and one (1) door equipped with two (2) hinges, a hasp and a padlock. All exterior doors and window frames of the building shall be equipped with iron security guards. The door shall also be equipped with butt hinges and a cylinder lock. One (1) draftsman's stool, two (2) strong chairs and one (1) desk shall be provided. The building or trailer shall conform to the following minimum requirements:

Ceiling height, not less than	6-feet 9-inches
Floor space, no less than	240 square feet
Windows, not less than	2
Doors, outside	1
Rooms	1

The inspector's field office shall be mobilized to the work site and functional including electric, phone, and toilet facilities within thirty (30) days of the NTP or prior to the start of work.

Screens over doors and windows; walls and ceilings shall be insulated; and interior walls finished.

b. The building, or trailer, shall be removed by the Contractor after completion of all work under this Task Order and before final acceptance thereof. Payment will be made for furnishing, maintaining, providing the prescribed utilities, and removing the inspector's field office shall be included in the Bidding Schedule Line Item for "Government Inspector Trailer".

c. The Contractor shall provide daily janitorial services for this and other buildings at the site throughout the life of the Task Order. The cost of this service shall be distributed throughout the existing bid items and there shall be no separate payment.

5. PROJECT SIGN

Prior to commencement of work, the Contractor shall construct and erect Corps of Engineers project signs; and shall pickup and erect Jefferson Parish project signs at the site of the work at locations directed by the Contracting Officer.

(a) Corps of Engineers Sign

The signs that will identify the work with the Corps of Engineers shall be 4 feet by 6 feet in size and shall conform to the requirements of the PROJECT SIGN drawings and installation instructions attached at the end of this section. The lettering for the 2 feet by 4 feet section of the sign with the Corps logo shall be white; all other lettering shall be black. Lettering for the project name shall be Helvetica Bold, all other lettering shall be Helvetica Regular. The sign coordinator is Ronald Olsen at (504) 862-2325.

(b) Jefferson Parish Department of Public Works Sign

These signs will be furnished to the Contractor. The Contractor shall be responsible for picking the signs and post up from the sign shop. The point of contact at the sign shop is Mr. Harry Rivero at (504) 736-6530.

(c) Corps of Engineers Safety Sign

The Safety sign be installed in accordance with subparagraph 3.e.

The number and description of the signs shall be as specified in each Task Order. No measurement will be made for transporting and installing the Jefferson Parish furnished project signs, nor for construction and erection of the Corps of Engineers project sign and safety sign. Signs shall be included in the Bidding Schedule Line Item for "Mobilization and Demobilization" and the price will be determined for each Task Order. Upon completion of the work, all signs shall become the property of the Contractor and shall be removed from the job site.

6. RIGHTS-OF-WAY

The rights-of-way required for the work to be constructed under this Task Order have been obtained by the Government and are provided without cost to the Contractor. If the Contractor proposes a deviation from the Government furnished rights-of-way for his convenience, the Contractor shall notify the Contracting Officer or his representative in writing of these intentions to use alternative rights-of way. A proposed deviation to the Government furnished rights-of-way may require the Contractor to secure additional real estate interest and environmental compliance coordination and documentation. There is no guarantee that environmental compliance will be obtained; therefore, the Contractor shall assume all risks and liabilities associated with pursuing alternative rights-of-way. The Contractor shall reimburse the Government for actual expenses incurred for assistance in completing or attempting to complete additional environmental coordination and documentation. The maximum reimbursement amount shall be limited to \$100,000. Any delays resulting from completing such additional rights-of-way and environmental coordination and documentation shall not be made the basis of any Contractor claim for increase in the Task Order cost and/or increase in Task Order duration. No work shall be initiated using the additional rights-of-way until the Contractor receives written notification from the Contracting Officer that environmental coordination and documentation are complete.

a. Additional Real Estate Clearances. The Contractor shall submit a letter to the Contracting Officer, confirming that he has obtained additional real estate interest for his own convenience. The Contractor shall indicate that he/she has utilized sound and legal real estate practices, and has acquired this additional real estate at his/her own risk and liability, and at no cost to the Government. The Contractor shall also indicate the availability of rights-of-entry to perform environmental compliance on the additional real estate interests.

b. Additional Environmental Compliance. The proposed work is in compliance with all applicable Federal and state environmental laws and regulations. The Contractor is cautioned that any alternative or additional rights-of-way used in construction of this project are subject to all applicable Federal and state environmental laws and regulations. Compliance with these laws and regulations may require additional NEPA (National Environmental Policy Act) documents, cultural resources surveys, water quality certification, coordination with the Louisiana State Historical Preservation Officer, modification of the Federal consistency determination, etc. The Government is ultimately responsible for environmental compliance; therefore, the Government will determine the additional environmental coordination and documentation necessary for a proposed deviation to the Government furnished rights-of-way. The Contracting Officer will advise the Contractor of the additional environmental coordination and documentation that must be completed. Unless notified otherwise by the Government, the Contractor shall be responsible for obtaining any additional environmental coordination and documentation. The Government will offer advice and assistance to the Contractor in obtaining the additional environmental coordination and documentation. Depending on the environmental impact of the proposed deviation, obtaining the coordination and documentation may not be approved or could take as much as 180 days for approval by the Government. The Contractor shall submit copies of his/her environmental coordination and documentation to the Contracting Officer for review and approval before work commences on alternative or additional rights-of-way. Government assistance in obtaining additional environmental clearances does not relieve the Contractor of responsibility for complying with other Federal, state or local licenses and permits.”

7. CERTIFICATES OF COMPLIANCE

Any certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in three (3) copies. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the

Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet specified requirements.

8. ENVIRONMENTAL LITIGATION

a. If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor or a Subcontractor at any tier not required by the terms of this Task Order. If the order is not due in any part to acts or omissions of the Contractor (or a Subcontractor at any tier) other than as required by this Task Order, such suspension, delay, or interruption shall be as if ordered by the Contracting Officer under the Contract Clause in Section 00700 entitled, "*Suspension of Work (FAR 52.242-14)*". The period of such suspension, delay or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this Task Order (excluding profit) as provided in that clause, subject to all the provisions thereof.

b. The term "environmental litigation", as used herein, means a lawsuit alleging that the work has an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

9. UTILITIES AND IMPROVEMENTS

a. All known utilities within the limits of the work, such as pipes, communication lines, power lines, etc., that would interfere with construction work shall be removed, modified or relocated by the appropriate utility at no cost to the Contractor unless otherwise noted in the plans and/or specifications. The Contractor, however, shall cooperate with the authorities or company representatives and shall conduct his operations in such manner as to result in a minimum of inconveniences to the owners of said utilities. The Contractor shall notify each utility owner by certified mail forty-five (45) days, fifteen (15) days and again seventy-two (72) hours to the date utilities need to be moved and provide a copy of these notifications to the Contracting Officer. The following contact persons and telephone numbers should be utilized during the construction phase:

CONTACTS:

****Contacts shall be provided with each Task Order.**

b. Any unidentified pipes or structures which may be found within the limits of the work during the course of construction shall not be disturbed nor shall

construction or excavation be performed at these locations unless and until approved by the Contracting Officer. Payment for ordered excavation, if any, will be made in accordance with the Contract Clause in Section 00700 entitled "*Differing Site Conditions (FAR 52.236-2)*".

c. Notices to Owners and Authorities. The Contractor shall notify owners of utilities when prosecution of the work may affect them. When it is necessary to temporarily disconnect utility services, the Contractor shall give notices sufficiently in advance to enable the affected persons to provide for their needs. Notices shall conform to any applicable local ordinance and, whether delivered orally or in writing, shall include appropriate information concerning the interruptions and instructions on how to limit their inconvenience. Utilities and other concerned agencies shall be contacted at least forty-eight (48) hours (excluding Saturdays, Sundays and legal holidays) prior to cutting or closing streets or other traffic areas or excavating near underground utilities or pole lines.

d. Entergy Electric Transmission and Distribution Lines (Entergy). While constructing the project, the Contractor will be working near, and under the Entergy overhead power lines. The Contractor shall contact Entergy prior to start of construction to coordinate all construction work with Entergy in order to insure safety.

(1) The Contractor shall maintain a minimum distance from all power lines as required by OSHA, the National Electric Code, Entergy and EM 385-1-1. Contractor shall be responsible for determining the maximum height and reach attainable by any part of any piece of equipment, and after coordinating with Entergy to determine the height and location of the power line, shall determine if the required clearance will be violated. The Contractor shall not work within the required clearance of the lines unless the lines are de-energized. If the clearance will be violated, prior to beginning any operations in the area, the Contractor shall coordinate with Entergy to de-energize the line. If the line is to be de-energized but is to remain in place, rather than being removed, the Contractor shall establish a procedure with Entergy to ensure that the Contractor shall have sufficient notice to allow removal of all equipment which may violate the required clearance from the area prior to the line being re-energized. These procedures and requirements shall also apply to any buried power lines.

(2) It shall be the Contractor's sole duty and responsibility to provide for the safety of his men, equipment, subcontractors and the general public during operations in the vicinity of overhead and underground power lines; and to assure that all of his operations and those of his employees and subcontractors comply with OSHA, EM 385-1-1, the National Electric Safety Code, and all applicable Parish, State and Federal codes and regulations.

(3) The utility contact for Entergy's New Orleans Office is Mr. Guy Johnson at 595-3857, or emergency pager number 329-3439.

e. The Contractor shall construct timber mat bridges wherever temporary haul and access roads traverse existing pipeline crossings to prevent damage to and subsidence of the pipelines. No separate measurement and payment will be made for timber mat bridges. Payment for the timber mat bridges shall be included in the Bidding Schedule Line Item for "Mobilization and Demobilization" and the price will be determined for each Task Order.

10. WEEKENDS, HOLIDAYS, AND NIGHTS

Contractor may work twenty-four (24) hours per day seven (7) days per week as required to meet the required time of construction. Adequate lighting for thorough inspection of night operations shall be provided by the Contractor. No separate payment will be made for lighting. The cost shall be distributed among the bid items for the work it is associated with. Contractor shall submit a waiver from the appropriate local or parish government office stating that it is acceptable to violate the noise ordinances.

11. U.S. ARMY CORPS OF ENGINEERS CRD-C STANDARDS

CRD-C Standards can be found at the following case-sensitive address:
www.wes.army.mil/SL/MTC/handbook/handbook.htm

12. AGGREGATE SOURCES

a. Concrete aggregates meeting the quality requirements of these specifications have been produced from the sources listed below:

February 2006

PRODUCER	NEAREST TOWN TO PIT*	TYPE	PIT DESIGNATION
Blain Sand & Gravel, Inc.	Georgetown, MS	S, G	Bailey Pit
B. & M. B., Inc.	Jackson, LA	S, G	Dudley Pit
B. & M. B., Inc.	Wakefield, LA	S, G	Island Pit
B. & M. B., Inc.	Jackson, LA	S, G	Thompson Pit
Bunch Gravel Co.	Clinton, LA	G	Bunch Gravel Plant #1
Bunch Gravel Co.	Darlington, LA	S, G	Bunch Gravel Plant #2
Fleniken Sand & Gravel Co.	Grangeville, LA	S, G	Flen-Rock Pit (Spears Lease)
Irv Daniel	Wakefield, LA	S, G	Island Pit
Lambert Gravel Co., Inc.	Darlington, LA	S, G	Billups Pit (B 1)
Lambert Gravel Co., Inc	Bains, LA	S, G	Harvey Garrett & Butler lease (G-2)
Martin Marietta Aggregates	Crystal Springs, MS	S, G	Crystal Springs Plant (Bell Pit)

PRODUCER	NEAREST TOWN TO PIT*	TYPE	PIT DESIGNATION
Martin Marietta Aggregates	Watson, LA	S, G	Plant 5
Martin Marietta Aggregates	Watson, LA	S, G	Plant 6
Martin Marietta Aggregates	Watson, LA	S, G	Plant 11
Martin Marietta Aggregates	Smithland, KY	LS	Three Rivers Quarry
Mears Sand & Gravel Co.	Watson, LA	S, G	Penny & Easterly Lease
Norris Springs Gravel	Sicily Island, LA	S, G	Norris Springs Gravel Pit
Pine Bluff Sand & Gravel Co.	Delaware, AR	SS	River Mountain Quarry
Southern Aggregates	Watson, LA	S, G	Mullins Lease
Standard Gravel Co., Inc.	Hattiesburg, MS	S	Plant 80
Standard Gravel Co.	Enon, LA	G	Enon Pit (C-10 & CZ-30 leases)
Standard Gravel Co.	Pearl River, LA	S, G	Nicholson Plant (Nic-7)
Texas Industries, Inc.	DeRidder, LA	S, G	Anacoco Creek Plant
Texas Industries, Inc.	Watson, LA	S, G	Clemons Plant
Texas Industries, Inc.	Grangeville, LA	S, G	Harvel/Hartner/Dunn Plant
Texas Industries, Inc.	Pearl River, LA	S, G	Honey Island Operation (Pit #1)
Texas Industries, Inc.	Pearl River, LA	S, G	Honey Island Operation (Pit #2)
Texas Industries, Inc.	Sun, LA	S	Isabel Plant
Texas Industries, Inc.	Perryville, LA	S, G	Perryville Plant
Texas Industries, Inc.	Grangeville, LA	G	Stanley Hornsby Plant
Texas Industries, Inc.	Woodworth, LA	S, G	Woodworth Plant
Tower Rock Stone Co.	Ste. Genevieve, MO	LS	Tower Rock Stone Co.
Tower Rock Stone Co.	Scott City, MO	LS	Grays Point Quarry
Vulcan Materials Co.	Lake City, KY	LS	Reed Quarry

***“Nearest Town to Pit” according to LDOTD Official State Highway Map and Rand McNally Road Atlas copyrighted 2000.**

Type Legend: G - Gravel LS - Limestone S - Sand SS = Sandstone

b. Concrete aggregates may be furnished from any of the above listed sources or at the option of the Contractor may be furnished from any other source designated by the Contractor and approved by the Contracting Officer, subject to the conditions hereinafter stated and as specified in Section 03301, “CAST-IN-PLACE STRUCTURAL CONCRETE”.

c. After the award of the Task Order, the Contractor shall designate in writing only one source or one combination of sources from which he/she proposes to furnish aggregates. If the Contractor proposes to furnish aggregates from a source or from sources not listed above, he/she may designate only a single source or single combination of sources of aggregates. If a source for coarse and/or fine aggregate so designated by the Contractor is not approved for use by

the Contracting Officer, the Contractor may not submit for approval other sources but shall furnish the coarse and/or fine aggregate, as the case may be, from a source listed above at no additional cost to the Government.

d. Approval of a source of concrete aggregate is not to be construed as approval of all material from that source. The right is reserved to reject materials from certain localized areas, zones, strata, or channels, when such materials do not conform to the quality requirements of ASTM C 33, Concrete Aggregates. Aggregate gradations shall be in accordance with the specified requirements of Section 03301, "CAST-IN-PLACE STRUCTURAL CONCRETE". Materials produced from any source, including those listed above, shall also meet all the requirements of Section 03301, "CAST-IN-PLACE STRUCTURAL CONCRETE" of the Technical Specifications.

e. It is the Contractor's responsibility to determine that the aggregate source or combination of sources selected is capable of supplying the quantities and gradations needed and at the rates needed to maintain the scheduled progress of the work. The inability of a source or combination of sources to maintain the necessary volume shall not be the basis for any claim for a time extension.

13. STONE SOURCES

a. On the basis of information and data available to the Contracting Officer, stone meeting the quality requirements of these specifications has been produced from the sources listed below:

STONE SOURCES

March 2006

PRODUCER	NEAREST TOWN TO PIT*	TYPE	PIT DESIGNATION
APAC	Bloomsdale, MO	LS	APAC Brickeys Quarry
Arab Stone, Inc.	Zalma, MO	DO/LS	Arab Quarry
Burfordville Stone LLC	Burfordville, MO	DO	Burfordville Quarry
Bussen Quarries, Inc.	Mehlville, MO	LS	Bussen Quarry
Central Stone Co.	Withers Mill (Monroe City), MO	LS	Pit # 1
Central Stone Co.	Perry, MO	LS	Pit # 9
Cumberland River Resources	Salem, KY	LS	Smith Quarry
Florida Rock Industries	Humm Wye, IL	SS	Golconda Quarry
Granite Mountain Quarries	Sweet Home, AR	GR	Granite Mountain, Quarry # 1
Granite Mountain Quarries	Sweet Home, AR	GR	Granite Mountain, Quarry # 2

PRODUCER	NEAREST TOWN TO PIT*	TYPE	PIT DESIGNATION
Granite Mountain Quarries	Bryant, AR	GR	Granite Mountain, Quarry # 3
Hoover Incorporated	Allsboro, AL	LS	Allsboro Quarry
Industrial Minerals Products Division/3M	Little Rock, AR	GR	3M Arch Street Quarry
Martin Marietta Aggregates	Uniontown, MO	LS	Appleton Quarry
Martin Marietta Aggregates	Black Rock, AR	DO	Black Rock Quarry (Sloan/Cavanaugh)
Martin Marietta Aggregates	Cave In Rock, IL	LS	Cave-In-Rock Quarry
Martin Marietta Aggregates	Fredonia, KY	LS	Fredonia Quarry
Martin Marietta Aggregates	Smithland, KY	LS	Three Rivers Quarry
Pine Bluff Sand & Gravel Co.	Delaware, AR	SS	River Mountain Quarry
Seminole Stone, Inc.	Wappapello, MO	DO	Cave Quarry
Shippers and Sellers LLC	Kellerman, AL	SS	Kellerman Quarry
Simpson Construction Materials	Fenton, MO	LS	Simpson South Quarry
Strack Excavating and Hauling (Strack Stone Co.)	Cape Girardeau, MO	LS	Strack Quarry # 1
Tower Rock Stone Co.	Scott City, MO	LS	Grays Point Quarry
Tower Rock Stone Co.	St. Genevieve, MO	LS	Tower Rock Stone Co.
Vulcan Materials Co.	Black Rock, AR	DO	Black Rock Quarry
Vulcan Materials Co.	Cherokee, AL	LS	Cherokee Quarry
Vulcan Materials Co.	Tuscumbia, AL	LS	Pride Quarry
Vulcan Materials Co.	Lake City, KY	LS	Reed Quarry
Vulcan Materials Co.	Judsonia, AR	SS	Searcy Quarry
Vulcan Materials Co.	Tuscumbia, AL	LS	Tuscumbia Plant (Quarry #114)
White River Materials, Inc.	Cord, AR	LS	Cord Quarry

Type Legend: DO - Dolomite LS - Limestone GR - Granite (Nepheline syenite) SS - Sandstone

* "Nearest Town to Pit" according to Rand McNally Road Atlas copyrighted 2000.

b. Stone may be furnished from any of the above listed sources, or at the option of the Contractor may be furnished from any other source designated by the Contractor and accepted by the Contracting Officer, subject to the conditions hereinafter stated.

c. It is the Contractor's responsibility to determine that the stone source or combination of sources selected is capable of supplying the quantities and gradation needed and at the rate needed to maintain the scheduled progress of the work.

d. After the award of the Task Order, the Contractor shall designate in writing only one source or one combination of sources from which he/she proposes to furnish stone. If the Contractor proposes to furnish stone from a source not listed above, he/she may designate only a single additional source for stone. Samples for acceptance testing shall be provided as required by Section 02383, "STONE RIP RAP CONSTRUCTION" of the Technical Specifications. If a source for stone so designated by the Contractor is not accepted for use by the Contracting Officer, the Contractor may not propose other sources but shall furnish the stone from a source listed above at no additional cost to the Government.

e. Acceptance of a source of stone is not to be construed as acceptance of all material from the source. The right is reserved to reject materials from certain localized areas, zones, strata, or channels, when such materials are unsuitable for stone as determined by the Contracting Officer. Materials produced from a listed or unlisted source shall meet all requirements of Section 02320, "STRUCTURAL EXCAVATION AND BACKFILL", Section 02383, "STONE RIPRAP CONSTRUCTION", Section 02633, "CONCRETE AND STONE LINED DITCHES, Section 02721, "DRAIN LINES", Section 02722, "DRAINAGE STRUCTURES", and Section 02731, "SURFACING (GRANULAR)" of these Technical Specifications.

14. SIGNAL LIGHTS

The Contractor shall display signal lights and conduct his/her operations in accordance with U. S. Coast Guard regulations governing lights and day signals to be displayed, as set forth in Commandant, U. S. Coast Guard Instruction M16672.2, Navigation Rules, International - Inland (COMDTINST M16672); 33 CFR 81, Appendix A (International); and 33 CFR 84 through 33 CFR 90 (Inland) as applicable.

15. STATE TAXES

a. The bid submitted in response to this Invitation shall not include any amount whatever for payment of any of the following taxes, fees or charges:

(1) The Louisiana "Severance Tax" imposed by LSA R.S. 47:631 and made applicable to the dredging of fill material from rivers and bodies of water within the State of Louisiana by the Severance Tax Regulations promulgated by the Collector of Revenue dated 31 March 1968.

(2) Any amounts claimed by the Louisiana Department of Wildlife and Fisheries for the privilege of removing fill from the water bottoms of the State of Louisiana.

b. If the Contractor is required to pay or bear the burden of any tax, fee, or charge described in paragraphs a(1) and/or a(2) above, the contract prices shall be increased by the amount which the Contractor is required to pay to the State of Louisiana; provided, however, that no increase in contract price shall be made for any liability the Contractor may incur as a result of his fault or negligence or his failure to follow the instructions of the Contracting Officer (CO).

c. The Contractor shall promptly notify the Contracting Officer of all matters pertaining to taxes, fees, or charges as described herein which reasonably may be expected to affect the contract price and shall at all times follow the directions and instructions of the Contracting Officer in regard to the payment of such taxes, fees, or charges.

d. Before any increase in contract price becomes effective in accordance with the provisions of this clause, the Contractor shall warrant in writing that no amount of such taxes, fees, or charges was included in the contract price as a contingency reserve or otherwise.

e. In addition to the costs allowed by subparagraph b, the Contracting Officer may also allow an increase in contract price for costs or expenses which accrue to the Contractor as a result of any directions or instructions received from the CO.

16. REQUIRED INSURANCE (RAILROAD)

a. Before commencing any work under this Task Order adjacent to or on the premises of any railroad track, the Contractor shall procure and maintain in force, so long as work shall continue upon such premises, and at its sole expense, comprehensive general and automobile liability insurance with contractual liability endorsement and products and completed operation hazards included, which shall provide the following kinds and amounts of insurance:

(1) Contractor's Public Liability and Property Damage Liability Insurance. Similar insurance in the same amounts will be provided by or in behalf of any subcontractors to cover their operations.

Combined Single Limit for Bodily Injury Liability, Property Damage Liability and Physical Damage to Property -	\$2,000,000 per occurrence
Aggregate Limit -	\$6,000,000 for the term of the policy

(2) Contractor's Protective Public Liability and Property Damage Liability Insurance. This insurance will be required in addition to the above when any work is performed by subcontractor.

Combined Single Limit for Bodily Injury Liability, Property Damage Liability
and Physical Damage to Property - \$2,000,000 per occurrence
Aggregate Limit - \$6,000,000 for the term of
the policy

(3) Railroad Protective Public Liability and Property Damage Liability Insurance. This insurance policy will name the Railroad insured with respect to the operations of the Contractor or any subcontractor employed by the Contractor and shall be on the form of Railroad Protective Policy as accepted by the Association of American Railroads and Mutual Insurance Rating Bureau.

Combined Single Limit for Bodily Injury Liability, Property Damage Liability
and Physical Damage to Property - \$2,000,000 per occurrence
Aggregate Limit - \$6,000,000 for the term of
the policy

b. The Contractor shall not commence any of the said work until evidence of such insurance is furnished to the Contracting Officer and the Railroad in a form satisfactory to them. In addition, the Contractor shall furnish evidence of a commitment by the Insurance Company to notify the Contracting Officer and the Railroad in writing of any material change or cancellation of such required insurance for any reason at least thirty (30) days before such change or cancellation is effective.

c. The Contractor will be required to provide the Railroad with a certificate of insurance to which will be attached an endorsement, the form of which will be furnished by the Railroad and prepared by the Insurer. Payment for furnishing railroad insurance will be included in the Bidding Schedule Line Item for "Railroad Insurance" and the price will be determined for each Task Order.

17. WORK ON OR ADJACENT TO RAILROAD

The following will apply to Task Order operations on or adjacent to the premises of the Railroad:

a. The Contractor shall, before entering upon the premises of a railroad, contact both the Contracting Officer Representative (COR) and the appropriate Levee District to make arrangements to secure written permission from an authorized representative of the Railroad for the use and occupancy of its premises. The Contractor shall confer with officials of the Railroad relative to its requirements for clearances, operation and general regulations.

b. The Contractor shall perform a complete survey of the railroad track alignment and profile along its entire length within the project construction easement before commencing operations and again after work has been completed. In addition, during construction, at every location where the Contractor has shored the

tracks, installed a temporary retaining structure or is driving piling within twenty-five (25) feet of the track centerline, the Contractor shall use a licensed surveyor to monitor daily the track alignment and profile. The top of rails shall be surveyed along the centerline of each rail at five (5) foot centers. There will be no measurement for the surveys. Payment for the railroad surveys shall be included in the Bidding Schedule Line Item for "Railroad Survey" and the price will be determined for each Task Order. Five (5) copies of the records of the survey data shall be furnished to the Contractor within five (5) calendar days of when each survey is taken.

c. The Contractor shall fully coordinate his work with the operations of the Railroad. The Contractor shall notify the COR and the Railroad by certified mail forty-five (45) days, fifteen (15) days and again seventy-two (72) hours prior to the date the railroads tracks will be interrupted or otherwise disturbed and provide a copy of these notifications to the Contracting Officer.

d. The Contractor shall comply with all established pertinent regulations and requirements of the Interstate Commerce Commission and the Railroad.

e. The Contractor shall perform all work adjacent to or on the property of the Railroad so as not to interrupt or delay the operation of trains over the tracks in use, or to interfere with communications and signal lines adjacent to said tracks or upon said premises except under arrangements between the Contractor and the Railroad.

f. Installation of Drainage Pipes under Tracks. Drainage discharge pipes may be installed under the railroad tracks. The maximum length of interruption to the tracks for each installation shall not be longer than forty-eight (48) consecutive hours, inclusive of track work that will be performed by the Railroad. However, the local unit of the Railroad will make the final determination as to the permissible length of interruption at each location. The Contractor is cautioned not to interrupt the tracks during any period for which adverse weather is anticipated. Any delay, which is caused by adverse or unusually severe weather, as defined in the Section 01100 provision entitled TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER, and which results in the track being out-of-service longer than forty-eight (48) consecutive hours, will be considered to be the fault of the Contractor. In that case, no time extension to install the pipe will be granted, and all resulting costs incurred by the Railroad and its customers shall be borne entirely by the Contractor.

(1) Method of Installation. The Contractor may choose to install these drainage discharge pipes by open cutting, or jacking and boring. If the Contractor chooses to jack and bore discharge pipes under the railroad tracks, he shall ensure that the track alignment is not disturbed. If the tracks are misaligned during installation, the Railroad will realign the railroad tracks. However, the cost of realigning the tracks shall be solely borne by the Contractor. If the Contractor chooses to install discharge

pipes by open cutting, he may install falsework (temporary rail bridge over the excavation) and shoring. The falsework shall be designed for a Cooper E-80 loading in accordance with the American Railway Engineering and Maintenance-of-Way Association (AREMA) *Manual for Railway Engineering*, latest edition. Regardless of the method of pipe installation, the Railroad will replace all tracks and miscellaneous track work materials. The Local Sponsor will reimburse the Railroad for all track work associated with installing the pipes by open cutting, provided the track work is not required due to the failure of the Contractor to protect the track adjacent to the open cut from being damaged or shifting during installation of the pipe. In that case, the cost of track repairs will be borne entirely by the Contractor.

(2) Measurement and Payment. Measurement and payment for this work shall be made under the Bidding Schedule Line Item for "Drainage Pipe Jacking" regardless of the method used to install these pipes under the railroad tracks.

(3) Submittals. In accordance with Section 01330, "SUBMITTAL PROCEDURES" the Contractor shall submit his installation plan for review and approval to the Contracting Officer and two (2) additional copies to the Railroad a minimum of forty-five (45) days prior to each installation. For each location, the submittal shall include stamped plan drawings detailing all aspects of the installation (e.g., falsework details, shoring details, limits of excavation, jacking pits, etc); stamped calculations; and a sequence of work detailing his intended operations for installing each discharge pipe.

g. During the progress of the work, the Contractor shall maintain liaison with the Railroad's officers and representatives as may be designated by the Railroad so as to ascertain the time of passage of trains at the site of the work, and to clear the railroad tracks and facilities of men, equipment and obstructions to permit free flow of railroad traffic. In the event the Contractor requires a crossing of the Railroad's right-of-way and tracks at other than a public crossing with its machinery or equipment incident to the Task Order, the Contractor shall first enter into an agreement satisfactory to the Railroad setting forth the terms and conditions with respect to the establishment, use, and removal of such crossing.

h. The Contractor shall, at all times during the period of construction, keep the railroad tracks and roadbed free of materials, earth, mud, rocks and other debris.

i. The Contractor shall keep all equipment, tools and materials stored at least fifteen (15) feet from the centerline of any usable track. Explosives or other highly flammable substances shall not be stored on the Railroad right-of-way without the prior approval of the Railroad's representative.

j. Reserved

k. The Contractor shall remove all tools, equipment and materials from the Railroad's premises promptly upon completion of work, restoring premises to the same state and condition as when the Contractor entered thereon.

l. The Contractor shall remove any liens against the Railroad's property arising from performance of work hereunder by the Contractor or any subcontractor.

m. Inspection Services. The Railroad will furnish such watching, flagging and inspection services as outlined below during construction, all cost of which is to be reimbursed by the Contractor. Payment for furnishing railroad flagging, watchman or inspection services will be included in the Bidding Schedule Line Item for "Railroad Inspection" and the price will be determined for each Task Order.

(1) Flagging Service. The Contractor shall be responsible for arranging with the Railroad for flagging protection or watchman service, which is required whenever his equipment and/or men are working within fifty (50) feet of the centerline of any operable track, or over, under or adjacent thereto. Flagging or watchman service will also be required whenever boom equipment machinery is working closer to the track centerline than boom length (horizontally extended and at right angles to the track) plus fifteen (15) feet. The Contractor shall give seventy-two (72) hours advance notice to the Railroad's representative in order that flagging protection or watchman service can be arranged and provided. No work shall be undertaken until said flagman or watchmen are at the job site. The Railroad will provide flagging service with one (1) man normally required at all times when the Contractor is performing the work which requires this service, but sufficient time must be given so arrangements can be made. If work is done at points separated by more than one (1) mile it is likely that more than one (1) flagman will be required.

(2) Watchman Service. The purpose of this service is to insure that Contractor's operations do not damage railroad facilities nor foul operations unless flagging service has been arranged. The watchman assigned will flag trains if they deem necessary, but such service is intended to eliminate the need of unplanned flagging. Such service will be required at all times that work is done (or crane boom can fall) within fifteen (15) feet of centerline of track when any work is done in the Railroad's embankment under or adjacent to track or when work is done above any track. In general, one (1) watchman will be expected to cover work within a one mile stretch along the tracks. Work more widely scattered will require additional watchmen.

n. Before commencing any work under the Task Order whether on or adjacent of the rights-of-way of the Railroad, the Contractor and applicable subcontractors shall procure and keep in effect during the period of such work, at the Contractor's own cost and expense insurance in accordance with the above

General Provision entitled "REQUIRED INSURANCE (RAILROAD)". Payment for furnishing the required insurance will be included in the Bidding Schedule Line Item for "Railroad Insurance" and the price will be determined for each Task Order.

18. COMMERCIAL WARRANTY

The Contractor agrees that the standard commercial equipment furnished under the Task Order shall be covered by the most favorable commercial warranties the manufacturer gives to any customer for such equipment, and that the remedies provided herein are in addition to and do not limit any rights afforded to the Government by any other clause of this contract. Two (2) copies of the warranties shall be furnished by the Contractor to the Contracting Officer.

19. ACCESS PLAN

The Contractor shall submit an access plan for each Task Order to be reviewed and approved by the Contracting Officer to include, as a minimum, the following:

- a. Layout drawings showing the location of all equipment, office structures, toilets, and storage areas for materials.
- b. Show mobilization and demobilization routing and locations of large equipment, such as draglines, cranes, etc. while on the jobsite.
- c. Show waterway channels or canals used to mobilize and demobilize equipment and materials and show access routes and docking areas of all marine equipment with respect to the jobsite.

20. PAYMENT FOR MATERIALS STORED OFFSITE

Pursuant to the Contract Clause in Section 00700 entitled "*Payments Under Fixed Price Construction Contracts (FAR 52.232-5)*", materials delivered to the Contractor at locations other than the site of the work may be taken into consideration in making progress payments if included in invoices for payment estimates and if all the conditions of the Contract Clauses are fulfilled. Payment for items delivered to locations other than the work site shall be limited to materials which have been approved (if required by the Technical Specifications) and fabricated to the point where they are identifiable to an item of work required under the Task Order. Such payment shall be made only after receipt of paid or receipted invoices or invoices with canceled check showing title to the items by the prime contractor. These invoices must show the dollar value of the materials and labor incorporated into them. The delivery size shall be acceptable to the Government and the materials shall be available for inspection by the Government prior to any consideration for payment. Payment for materials delivered offsite is limited to the following items: Steel H-Piles, steel pipe piles, steel sheet piling and prestressed concrete piles.

21. COORDINATION OF FACILITY WORK

a. All required relocation work shall be fully coordinated by the Contractor with the appropriate Levee District and the facility owners so that no delays or adverse impacts are experienced. Any difficulty encountered when attempting to contact a facility owner shall be promptly brought to the attention of the Levee District and Contracting Officer.

b. The Contractor shall notify the facility, plant, and parish contacts by certified mail with a copy furnished to the Contracting Officer, no sooner than ninety (90) days but at least forty-five (45) days prior to starting any work which will impact their facilities. In addition, a fifteen (15) day and seventy-two (72) hour certified mail notification letter shall be sent to each facility representative and the Levee District with a certified copy furnished to the Contracting Officer. The Contractor shall notify utility owners and the Levee District by certified mail at least forty-five (45) days prior to beginning construction in the vicinity of the utility. Once work commences, the Contractor shall maintain communications with the designated representatives during any activity in the vicinity of pipelines, buried or overhead power lines, and other buried facilities. The Contractor shall conform to requirements of the Louisiana One-Call System. This list is complete and accurate as of the preparation of construction documents. Discrepancies may appear between the list and actual owners/lessees on site, due to subsequent changes in ownership and/or lesseeship from the time between completion of the construction documents and the award of the Task Order. It is the Contractor's responsibility to verify the name, address, telephone number and other relevant information of all owners/lessees affected by this work, to contact the owner/lessees prior to beginning any work in the area of their operations and to coordinate work with them so as to minimize the impact of the Contractor's work on the owner/lessees' operations.

c. Temporary Employee Parking. The Contractor shall coordinate with the facility owners to establish temporary parking required due to demolition of existing employee parking. Contractor shall coordinate to insure that temporary parking does not disrupt floodwall construction. Payment for furnishing temporary parking will be included in the Bidding Schedule Line Item for "Temporary Detour/Access Roads Temporary Driveways and Parking Areas".

22. EXISTING FACILITIES

a. Protection and Relocation of Existing Structures and Utilities. The Contractor shall assume full responsibility for the protection of all structures and utilities, public or private, including poles, signs, services to building utilities, in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's

negligence shall be repaired by him at his expense. (See related General Provision entitled "DAMAGED STRUCTURES AND ROADWAYS" below).

b. Care and Protection of Property. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in another manner acceptable to the Contracting Officer.

c. Sidewalks and Curbs. All sidewalks which are disturbed by the Contractor's operations shall be restored to their original or better condition by the use of similar or comparable materials. All curbing shall be restored in a condition equal to the original construction and in accordance with the current Federal (American Disability Act - ADA), State and local code requirements.

d. Other Features. Along the location of this work, all fences, walks, bushes, trees, shrubbery, and other physical features to remain, shall be protected and restored in a thoroughly workmanlike manner.

e. Trees. Trees close to the work shall be boxed or otherwise protected against injury. The Contractor shall trim all branches that are liable to damage because of his operations, but in no case shall any tree be cut or removed without prior notification of the Contracting Officer. All injuries to bark, trunk, limbs, and roots of trees shall be repaired.

f. The protection, removal, and replacement of existing physical features along the line of work shall be a part of the work under the Task Order, and all costs in connection therewith shall be included in the applicable contract unit and/or lump sum prices for which the work is incidental thereto.

g. Water for Construction Purposes. In locations where public water supply is available, the Contractor may purchase water for all construction purposes. The express approval of the Water Department of the Parish shall be obtained in writing. Hydrants shall only be operated under the supervision of the Water Department personnel of the Parish.

h. Maintenance of Flow. The Contractor shall at his own cost, maintain the flow of existing sewers, drains, and water courses, including drain pipes and overland flow scheduled to be modified, within the project limits during the progress of the work, and shall immediately cart away and remove all offensive matter. The Contractor shall submit his drainage plan, in accordance with Section 1330, "SUBMITTAL PROCEDURES" depicting how the existing overland flow will be maintained during construction. If the Contractor elects not to build the drainage monoliths with the lateral drains under the railroad tracks before he constructs

the other floodwall monoliths, he must calculate the amount of overland flow that will be diverted by the construction of the floodwall using the Drainage Maps included in each Task Order and provide a means to discharge the flow to an existing ditch. Services to buildings shall be maintained and all costs or charges resulting from damage there to shall be paid by the Contractor. See Section 01568, "MAINTENANCE AND DIVERSION OF STORM WATER" for additional requirements.

23. DAMAGED STRUCTURES AND ROADWAYS

The Contractor shall at his own expense remove and replace any damaged structures and roadways caused by the negligence of his construction work as directed by the Contracting Officer.

The Contractor shall coordinate the work with the Contracting Officer's representative. These existing buildings, railroad tracks and other structures are located very close to the proposed floodwall and damages to these structures may occur due to construction operations, construction vehicular traffic, unwatering, vibrations, sheeting (driving and withdrawal), excavation, etc. To minimize the possibility of damages to these structures, the Contractor shall use the following procedures and/or guidance:

a. Install temporary shoring in accordance with Section 02320, "STRUCTURAL EXCAVATION AND BACKFILL". Soil boring logs will be included in the Task Order Drawings.

b. Monitoring Unwatering (Pumping Operations). An unwatering plan shall be submitted to the Contracting Officer's Representative for approval. The unwatering plan shall address the requirements set forth in Section 02242, "UNWATERING". The Contractor shall provide sufficient personnel, equipment, and controls to minimize pumping of water within the sheeted area of the proposed floodwall.

c. Monitoring Vibrations. The Contractor shall monitor vibrations in accordance with the General Provision entitled "Vibration Monitoring".

24. RESERVED

25. YEAR 2000 COMPLIANCE

In accordance with FAR 39.106, the Contractor shall ensure that with respect to any design, construction, goods, or services under this Task Order as well as any subsequent task/delivery orders issued under this Task Order (if applicable), all information technology contained therein shall be Year 2000 compliant. Specifically, the Contractor shall:

a. Perform, maintain, and provide an inventory of all major components to include structures, equipment, items, parts, and furnishings under this contract

and each task/delivery order which may be affected by the Year 2000 compliance requirement.

b. Indicate whether each component is currently Year 2000 compliant or requires an upgrade for compliance prior to Government acceptance.

26. PILE DRIVING UNDER SPECIAL CONDITIONS

a. Where required due to limited clearances, steel piles shall be driven in segments and field spliced. This work may require that the Contractor employ special pile driving equipment to install the piles. The Contractor's licensed surveyor shall verify the locations of the buildings and power lines prior to developing the piling and sheet pile placement plans. The Contractor shall immediately notify the Contracting Officer if the survey information differs from the measurements shown on the Task Order Drawings by more than six (6) inches. The Contractor shall include the verified survey information on the pile placement plans. Because the transmission and distribution line locations will vary with atmospheric weather conditions and the amount of current passing through the lines, the Contractor shall re-survey all powerlines immediately prior to driving piling beneath them. Other special conditions may include driving piles from water based equipment, driving in areas with restricted overhead clearances such as under bridges, locations where special equipment may be required or locations where crane mats are not sufficient to carry the expected loads. The use of crane mats is not considered a special procedure and their use is generally required for all pile driving operations and the cost of their use shall be included in the bid items for which the work is incidental thereto.

27. VIBRATION MONITORING

a. The Contractor shall perform monitoring of vibrations before, during, and after pile driving and extraction operations, and on all other construction operations involving hauling and placement of any construction materials, movement of heavy equipment, or any activity likely to cause high vibration levels. A sufficient number of monitoring stations for each source of major vibration shall be maintained to adequately ensure that vibration levels remain within the required limit during concurrent construction operations. A registered professional engineer with experience in interpreting/assessing vibration monitoring operations shall stamp all results and geotechnical interpretations/assessments obtained from the vibration monitoring. As a minimum, the geotechnical engineer shall have experience in performing and evaluating vibration monitoring results on at least five (5) projects of similar magnitude and similar subsurface soil conditions within the last five (5) years. Qualifications of the registered engineer and the name of the independent vibration monitoring company shall be submitted to the Contracting Officer for approval thirty (30) days prior to the need for any vibration monitoring as described above. The Contractor shall inform the Local Sponsor by certified mail and the Contracting Officer's Representative at

least fifteen (15) days prior to the beginning of any vibration-inducing construction operations.

b. Vibrations shall be limited to a peak particle velocity of 0.25 inches per second at the nearest structure.

When vibrations from its operations have exceeded the limit, the Contractor shall take immediate action to reduce the vibrations to acceptable limits.

c. A daily monitoring summary sheet shall be provided in the Contractor's Quality Control report. Also, a weekly vibration assessment report shall be prepared and submitted to the Government no later than seven (7) days after that reporting period. The report shall include the job title; name of registered professional engineer and vibration monitoring firm; type of vibration monitoring equipment used including type, model and method of measuring vibrations; date of monitoring; location and sketch of monitoring operations; distance from operations; type and location of construction operation(s) being monitored; and minimum and maximum readings (any readings above the maximum peak particle velocity) with dates, durations and times, including copies of vibration recording tapes with the documentation of corrective actions taken and the interpretation/ assessment that these vibrations would have had on the structure.

d. The Government may check the vibration monitoring operations by performing its own independent vibration monitoring.

e. All pile driving and extraction operations and all other construction operations shall comply with EM 385-1-1.

f. Measurement and Payment. No measurement will be made for vibration monitoring. All costs incurred for vibration monitoring shall be included in the Bidding Schedule Line Item for "Vibration Monitoring" and the price will be determined for each Task Order.

g. Additional Vibration Monitoring. The Contracting Officer may request additional vibration monitoring during any construction operations. All costs associated with additional vibration monitoring operations, other than those required for pile driving and extraction operations, and during construction operations involving hauling and placement of any construction materials, shall be paid for in accordance with Contract Clause in Section 00700, entitled "*Changes (FAR 52.243-4).*"

28. VIDEOTAPE AND PHOTOGRAPHIC DOCUMENTATION

The pre-construction and post-construction conditions of permanent roads, streets, driveways, sidewalks, railroad, above-ground utilities, and existing structures shall be verified and documented by the use of Contractor-furnished photographs and videotapes. Videotapes shall be VHS format. Photographs shall be 35 mm, color,

and 4 inch x 6 inch size. The Contractor shall provide two (2) copies of the videotape and two (2) copies of photos with negatives to the Contracting Officer for the Task Order file. The Contractor shall coordinate so that representatives of the Contracting Officer are present during the pre- and post-construction documentation. There will be no measurement videotape and photographic documentation. The costs for videotape and photographic documentation shall be included in the Bidding Schedule Line Item for "Videotape and Photographic Documentation" and the price will be determined for each Task Order.

29. SPECIAL WORK REQUIREMENTS

**** To be added for each Task Order.**

30. RELATED WORK AT SITE

**** To be added for each Task Order.**

31. ORDER OF WORK

**** To be added for each Task Order.**

32. DESCRIPTION OF WORK

a. General. The work shall consist of separate construction Task Orders intended to provide hurricane protection along the east bank of the Harvey Canal as well as other areas in the New Orleans District. All task orders shall be awarded within nine (9) months of the Contract Award. All task orders shall be completed as soon as possible but no later than the time frame specified in the Task Order. The work includes the following tasks:

b. Pile Driving. See tabulation for pile types, sizes, batters, and lengths. For typical driving conditions, see the boring logs.

c. Sheet Piling. A steel sheet pile seepage cut-off wall extends along the length of the T-walls. Penetrations through this steel sheet pile will be required to accommodate drain lines and utilities. Jacking and boring may be required for drain line installations under roadways and railroads where open cut excavation may not be an option.

d. Concrete. The project consists of reinforced concrete T-wall monoliths varying in length from 23'-0" to 82'-0" by 12'-0" to 23'-0" wide. The base slab thickness of each monolith varies from 3'-0" to 5'-3" thick. The floodwall stem consists of a 15'-0" to 28'-0" tall cast-in-place concrete section, while the thickness of the wall stem varies from 2'-6" to 3'-4". Excavation and backfill will be required to construct the base slabs. The contractor may be required to design and submit for approval a Temporary Retaining Structure (TRS) to accommodate T-Wall

fronting protection spanning a canal. The canal bottom is approximately 12-foot below the water stage. Walls may have an architectural fractured-fin finish or other wall treatment on the protected side of the wall.

e. Gates. There are 4 types of gates required for this project: swing gates, a pedestrian gate, roller gates and railroad gates. Swing gates are approximately 25'-0" to 30'-0" wide gates and are hung on 3 heavy duty hinges. Roller gates are approximately 35'-0" wide are bottom roller gates. Railroad gates are approximately 20'-3" tall x 26' wide and are hung on 2 heavy duty hinges. Each gate is contained within a pile founded gate monolith and reinforced concrete pilasters provide direct support and bearing for these gates. Gate monolith footings are approximately 40'-0" to 54'-0" long by 5'-3" thick by 23'-0" wide. The gates consist of a skin plate supported by an upper and lower horizontal girders, the girders are rolled W-sections. An intercostal system combining with the skin plate act compositely transferring the load to the horizontal girders.

f. Drainage. Subsurface drainage work includes installation of catch basins, trenching, placing continuous and solid planking in the bottom of the trench, crush stone bedding, placing RCP, RCAP and CMP, geotextile separator, granular backfill, and clay cap backfill. The drainage monoliths contain wall penetrations for drainage pipes that allow water to drain from the flood side of the wall to the protected side of the wall during conditions when there is no threat of a surge in the canal. Each of these penetrations contains a valve that allows the drainage line to be cut-off if a surge is expected in the canal. Drainage monolith footings are approximately 30'-2" long by 5'-3" thick by 23'-0" wide. Drainage monolith stems are 3'-0" thick by 25'-6".

g. Earthwork. Levee construction is required. The work includes clearing and grubbing existing levee surfaces, hauling in fill from a Government furnished borrow pit and the placement and compaction of semi-compacted fill. Final levee sections shall be shaped and fertilized and seeded.

h. Miscellaneous. Also included are concrete lined drainage ditches, asphalt paving, stone surfacing, slope paving, clearing and grubbing, fine grading, fertilizing, seeding and mulching, temporary retaining structures, levee work and the possible demolition of existing buildings to accommodate the floodwall alignment. Mechanical and electrical modifications to existing pumping stations may also be required.

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SECTION 02315 - STEEL H-PILING

PART 1 GENERAL

1.1 SCOPE

The work covered by this Section consists of furnishing all plant, equipment, labor and materials, and performing all operations in connection with the installation of new steel H-piling in accordance with these specifications.

1.2 RELATED WORK SPECIFIED ELSEWHERE

SUBMITTAL PROCEDURES, Section 01330

CONTRACTOR QUALITY CONTROL, Section 01451

PILE LOAD TESTS, Section 02355

METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS, Section 05501

PAINTING, Section 09940

1.3 BIDDING SCHEDULE LINE ITEMS

1.3.1 Furnishing Piles

Bidding Schedule Line Items for "Furnish and Deliver Steel H-Piling 14 X 73" or "Furnish and Deliver Steel H-Piling 14 X 89" shall constitute full compensation for furnishing all plant, labor, equipment, material, painting, transporting, unloading, and all other costs incidental thereto.

1.3.2 Driving Piles

Bidding Schedule Line Items for "Drive Steel H-Piling 14 X 73" and "Drive Steel H-Piling 14 X 89" shall constitute full compensation for furnishing all plant, labor, equipment, material, and all other costs incidental thereto for driving the piles except for items covered in paragraph 1.3.6 below.

1.3.3 Field Splicing Piles

Bidding Schedule Line Item for "Splicing H-Piling" shall constitute full compensation for furnishing all plant, labor, equipment, material, welding and weld testing, and all other costs incidental thereto. Splices performed by the H-Pile supplier shall be included in the applicable Bidding Schedule Line Items in paragraphs 1.3.1 above.

1.3.4 Painting H-Piling

Bidding Schedule Line Item for "Paint H-Piling" shall constitute full compensation for furnishing all plant, labor, equipment, material, testing, and all other costs incidental thereto for painting the steel H-Piling.

1.3.5 Tension Pile Connection

Bidding Schedule Line Item for "Tension Pile Connection" shall constitute full compensation for furnishing all additional plant, labor, equipment, material, and other costs required to install the tension pile connection on the H-Piles.

1.3.6 Driving Piles in Special Conditions

Bidding Schedule Line Item for "Special Pile Driving Conditions" shall constitute full compensation for furnishing all additional plant, labor, equipment, material, and other costs required to drive the piles in special conditions as specified in Section 01100, provision entitled "Pile Driving Under Special Conditions". Pile splicing due to these special conditions shall also be included in this Bidding Schedule Line Item.

1.4 REFERENCES

The following standards of the issues listed below and referred to thereafter by basic designation only form a part of this specification to the extent indicated by the references thereto:

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A 572 (2006) High-Strength Low-Alloy Columbian-Vanadium Structural Steel

U.S. ARMY CORPS OF ENGINEERS ENGINEER MANUAL

EM 385-1-1 (Nov. 2003) Safety and Health Requirements Manual

1.5 SUBMITTALS

The following shall be submitted in accordance with Section 01330, "SUBMITTAL PROCEDURES".

1.5.1 Survey

Prior to developing the pile placement plan and in accordance with Section 01100, "GENERAL PROVISIONS", paragraph entitled, "PILE DRIVING UNDER SPECIAL

CONDITIONS", the Contractor shall perform a survey of the existing buildings and overhead power lines in close proximity to the floodwall.

1.5.2 Equipment Descriptions

Complete descriptions of pile driving equipment including the rig, boom, leads, hammers, extractors, protection caps and other installation appurtenances shall be submitted for approval prior to commencement of work. Pile driving equipment to be used adjacent to existing buildings or beneath overhead transmission and distribution lines shall be specifically identified.

The following information for each hammer proposed shall be submitted:

- (1) Make and model
- (2) Ram weight (pounds)
- (3) Anvil weight (pounds)
- (4) Weight of the moving parts of the hammer (pounds)
- (5) Rated stroke (inches)
- (6) Rated Energy range (foot-pound)
- (7) Rated speed (blows per minute)
- (8) Steam or air pressure, hammer, and boiler and/or compressor (pounds per square inch)
- (9) Power pack description

1.5.3 Shop Drawings

Shop drawings for H-piling shall show complete dimensions and details of piling, including the location of splices, and shall show the driving sequence and location of piling. Shop drawings shall include details and dimensions of templates and other temporary guide structures for installing the piling, and shall provide details of the method of handling piling to prevent permanent deflection. H-pile splice details shall be submitted to the Contracting Officer for review and approval.

1.5.4 Installation Plans

Placement plans shall show the proposed methods of installing the piles adjacent to existing buildings and beneath the overhead, high voltage transmission and distribution lines. Placement plans of the piles, that will be driven in close proximity to

existing buildings or beneath overhead transmission and distribution lines, shall show the clear distances that will be maintained between the pile driving equipment and these structures during pile driving operations. Contractor shall calculate these distances based on the survey information required in Section 01100, "GENERAL PROVISIONS", paragraph entitled, "PILE DRIVING UNDER SPECIAL CONDITIONS". The placement plans shall be submitted for review and approval in conjunction with the shop drawings.

1.5.5 Materials Test Certificates

Material test certificates shall be submitted for each shipment and identified with specific lots prior to installing piling. Identification data should include piling type, dimensions, chemical composition, mechanical properties, section properties, heat number and mill identification mark.

1.5.6 Driving Records

Records of the pile 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.

1.6 QUALITY CONTROL

1.6.1 General

The Contractor shall establish and maintain quality control for pile driving operations to assure compliance with the requirements of this Section and maintain records of his quality control for all construction operations including, but not limited to, the following:

(1) Driving of H-piling. The record shall include the pile number or identification, location, size, length, elevation of tip, cut-off and top of pile, the number of blows and ram drop (in inches) required for each foot of penetration throughout the entire length of the pile, and the number of blows per inch for the last eighteen (18) inches of penetration. The record shall include the type and size of the hammer, the rate of operation, the type and dimensions of driving helmet, the cap-block and pile cushion used. The location and elevation of any obstruction or unusual occurrence encountered during driving shall be recorded and immediately reported to the Contracting Officer. His directed action shall also be recorded.

(2) Recording uplift and vertical tolerances after driving, pulled and redriven piles, and removal and disposal of damaged piles.

(3) Cutting and splicing of piling (welding).

(4) Plumbness of piling.

(5) Penetration depth.

(6) Stockpiling.

1.6.2 Reporting

The original and two (2) copies of these records and tests, as well as the records of corrective action taken, shall be furnished to the Government daily. Format of the report shall be as prescribed in Section 01451, "CONTRACTOR QUALITY CONTROL".

1.7 QUALITY ASSURANCE

Requirements for material tests, welding, workmanship and other measures for quality assurance shall be as specified herein and in Section 05501, "METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS". All steel H-piling and appurtenant materials shall be tested and certified by the manufacturer to meet the specified chemical, mechanical and section property requirements prior to delivery to the site.

1.8 DELIVERY, STORAGE AND HANDLING

Materials delivered to the site shall be in a new and undamaged condition and shall be accompanied by certified test reports. The manufacturer's logo and mill identification mark shall be stamped on each unspliced piling at a minimum of two (two) locations. All piling shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection. Storage of piling should also facilitate required inspection activities.

PART 2 PRODUCTS

2.1 MATERIALS

Steel for H-piling, tension connections and splices shall conform to the requirements of ASTM A 572. The H-piling shall be of the shape and sections required in the individual Task Order. Piling shall have standard square ends, unless otherwise specified or directed. All steel H-piling shall be furnished full length unless length exceeds standard mill production lengths. If full lengths cannot be furnished, splicing is allowed provided the requirements of paragraph 3.1.3 are met. Where required, piles shall be cut and driven in lengths to be determined by the Contractor so as to avoid obstructions from adjacent buildings and maintain safe clearance from overhead power lines or other overhead obstructions.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Lengths of Permanent Piles

The individual Task Orders shall state if the quantities of piles listed in the unit price schedule for the Task Order are estimated and pile length determination will be made from the results of the pile tests specified in Section 02355, "PILE LOAD TESTS" or are the actual lengths.

3.1.2 Placing

H-piling shall be driven as accurately as practicable in the correct locations, true to line both laterally and longitudinally and to the vertical or batter lines. A lateral deviation from the correct location at the cut-off elevation of not more than three (3) inches will be permitted. A variation in slope of not more than 1/4-inch per foot of longitudinal axis will be permitted. The correct relative position of group piling shall be maintained by the use of templates or by other approved means. Any H-pile driven out of correct location shall be pulled and redriven by the Contractor at no additional cost to the Government.

3.1.3 Splicing

Welding of splices for H-piling shall be performed and tested in accordance with Section 05501, "METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS". The Contractor shall ultrasonically test a minimum of twenty-five percent (25%) of the full penetration welds and magnetic particle test a minimum of twenty-five percent (25%) of the fillet welds. One hundred percent (100%) of all welds shall be visually tested. Only one (1) splice shall be allowed per pile and the splice shall be located in the middle third of the pile, unless specified otherwise due to driving restrictions. Details of pile splicing are attached at the end of this Section.

3.1.4 Tension Pile Connection

Welding of tension pile connections for H-piling shall be performed and tested in accordance with Section 05501, "METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS". The Contractor shall ultrasonically test a minimum of twenty-five percent (25%) of the full penetration welds and magnetic particle test a minimum of twenty-five percent (25%) of the fillet welds. One hundred percent (100%) of all welds shall be visually tested. Details of tension connection are attached at the end of this Section.

3.2 DRIVING

The piles shall be driven by an approved steam, air or diesel drop, single-acting, double-acting, or differential-acting pile driving hammer. The size and capacity of the hammer shall be as recommended by the manufacturer for the pile weights and soil formations to be penetrated. Final approval of the proposed equipment is subject to the satisfactory completion and approval of the pile load test, wave equation analysis and the engineering judgment of the Contracting Officer. No drilling or jetting will be allowed before or during driving operations without Contracting Officer's written approval. The hammer shall be operated at all times at the steam or air pressure and at the speed recommended by the manufacturer. Boiler or compressor capacity shall be sufficient to operate the hammer continuously at full rated speed so that a single-acting hammer obtains a full upward stroke of the ram, a double-acting hammer operates at or near the blows per minute at which the hammer is rated and a differential type hammer obtains a slight rise of the base during each upward stroke. Single-acting hammers shall have a scale (in inches) to the pile hammer and an indicator on the pile ram (see the diagram at the end of this Section). Installation of both devices shall be in such a manner that displacement of the ram will be indicated on the scale. Both the scale and the indicator shall be easily legible to observers on the ground during operations. Hammers shall have a gage to monitor hammer bounce chamber pressure for diesel hammers or pressure at the hammer for air and steam hammers. Piling shall be protected during driving by a cushion and cap of approved design. Pile drivers shall have firmly supported leads extending to the lowest point the hammer must reach to maintain the hammer in proper alignment at all times. Each pile shall be driven continuously and without voluntary interruption, except for splicing where required, until the required depth of penetration has been attained. Deviation from this procedure will be permitted only in case the driving is stopped by causes which could not reasonably have been anticipated. When driving long piles of high slenderness ratio, special precautions shall be taken to prevent overstressing and leading away from a plumb or true position. Due to obstructions from adjacent buildings or the proximity to overhead transmission and distribution lines, H-piling may have to be driven in short lengths and spliced. Where splicing of H-piling is required, the full length piling shall be cut by either an exothermic method or by any other method approved by the Contracting Officer. The piling shall be spliced as shown on the drawing attached at the end of this Section. Minimum clear distances between the pile driving equipment and the distribution and transmission lines shall be per EM 385-1-1. Any pile that cannot be driven to the required depth because of an obstruction shall, as directed by the Contracting Officer, be pulled and another pile driven adjacent thereto, be cut off and used, or be abandoned as directed by the Contracting Officer. Where voids adjacent to the steel H-piling are induced by pile driving or pulling operations, the Contractor shall pump out all seepage and rain water and backfill to within three (3) feet of the ground surface with a tremie-placed slurry. The slurry shall consist of one (1) part cement, two (2) parts bentonite, and six (6) parts sand mixed with enough water to produce a slurry viscous enough to thoroughly fill the voids. The upper three (3) feet of the hole shall be filled with earth. The Contractor shall make observations to detect any uplift of piling already driven

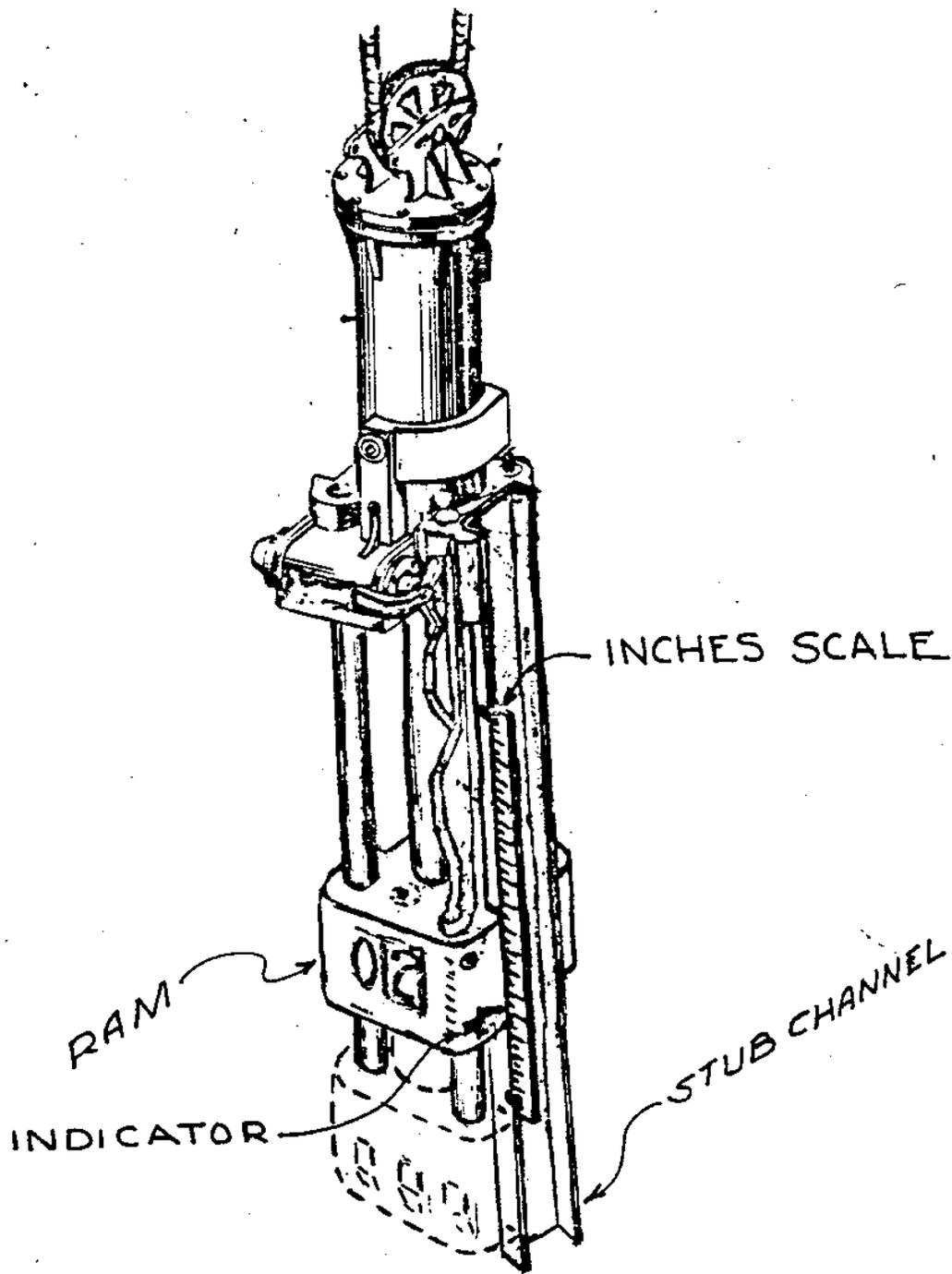
and uplifted piling shall be backdriven to the original penetration, at no additional cost to the Government. Piling shall not be driven within one hundred (100) feet of concrete less than seven (7) days old nor within thirty (30) feet of concrete less than twenty-eight (28) days old. The Contractor shall provide every facility for the Contracting Officer to inspect and record data relative to pile driving operations. This data shall include blows and ram drop (in inches) per foot of pile penetration, final tip elevation, and blows per inch prior to seating.

3.3 DAMAGED AND MISPLACED PILING

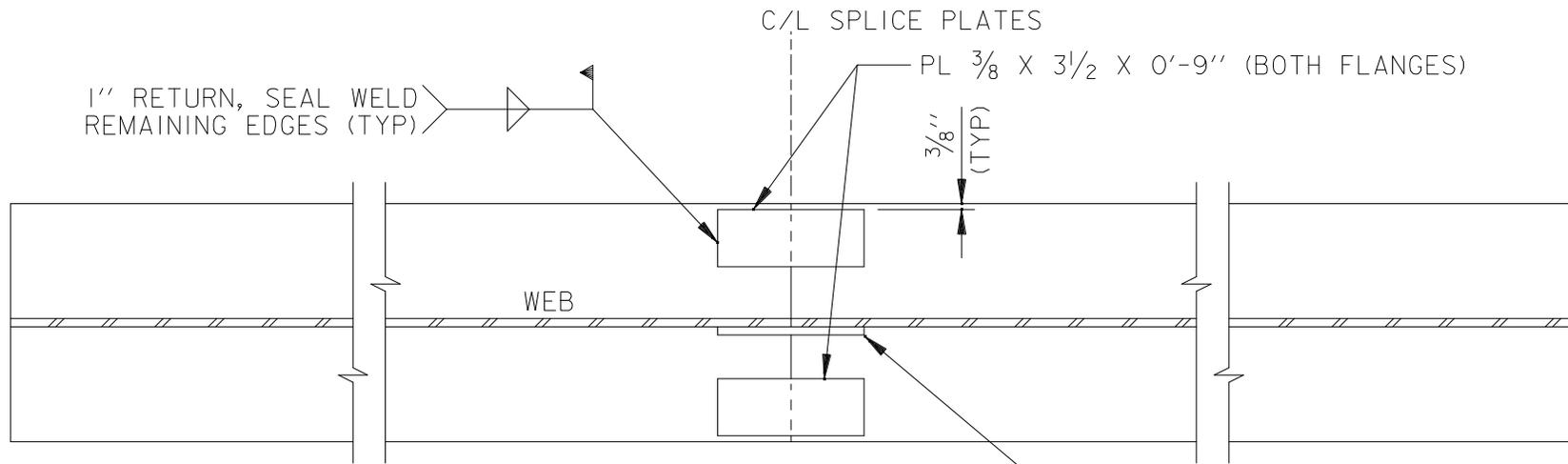
Any pile which is damaged because of internal defects or by improper handling or driving, or which is otherwise damaged by fault of the Contractor so as to impair it for its intended use, or any pile driven out of proper location, shall be removed and replaced. All work of removal and cost of replacement shall be borne by the Contractor at no additional expense to the Government. The Contracting Officer may require the Contractor to pull certain selected piling after driving for inspection to determine the condition of the piling. Any pile so pulled and found to be damaged to such extent as, in the opinion of the Contracting Officer, would impair its usefulness in the completed structure, shall be removed from the site of the work and the Contractor shall furnish and drive a new pile to replace the damaged pile at no additional cost to the Government. Piling pulled and found to be sound and in a satisfactory condition as determined by the Contracting Officer's Representative shall be redriven at the Government's expense. Any holes which remain as a result of pulling operations shall be filled as specified in paragraph 3.2.

3.4 PAINTING

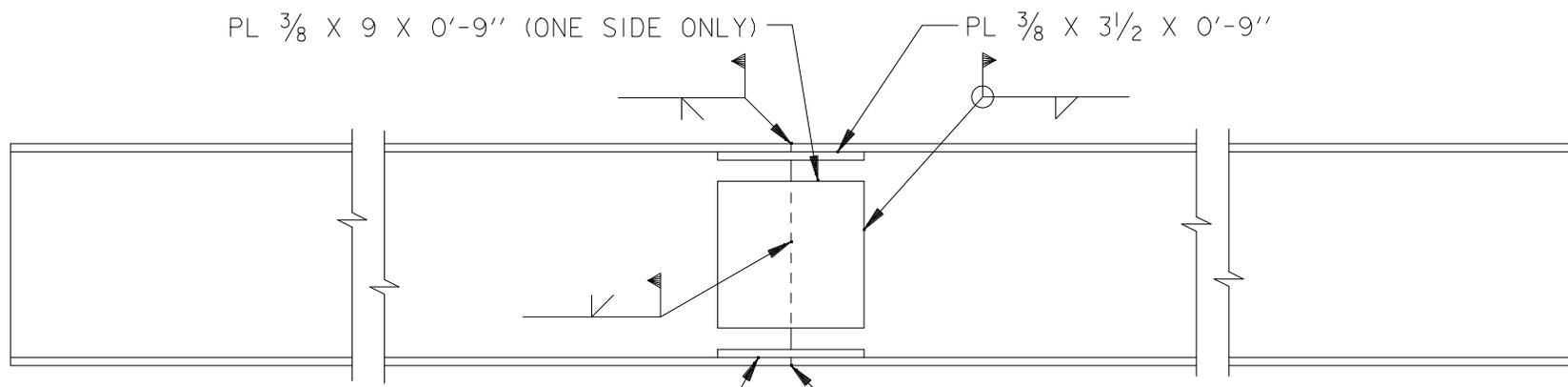
Steel H-Piling shall be painted with coal-tar epoxy in accordance with Section 09940, PAINTING" and shall extend from five (5) feet below the ground surface to where it shall extend one (1) inch minimum (two (2) inches maximum) beyond the bottom elevation of the concrete. The unpainted portion of steel H-piling which shall be embedded in concrete shall be free from surface contaminants such as oil, loose particles, or similar debris that would inhibit bonding between the concrete and piling.



PILE HAMMER



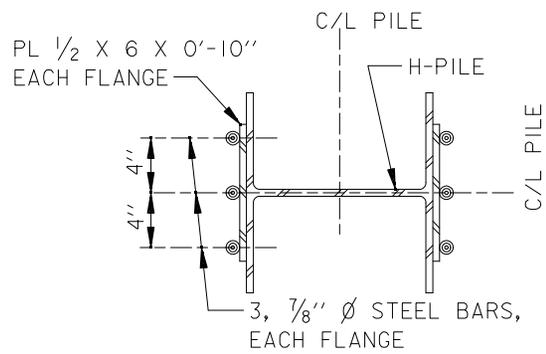
SECTION THRU WEB



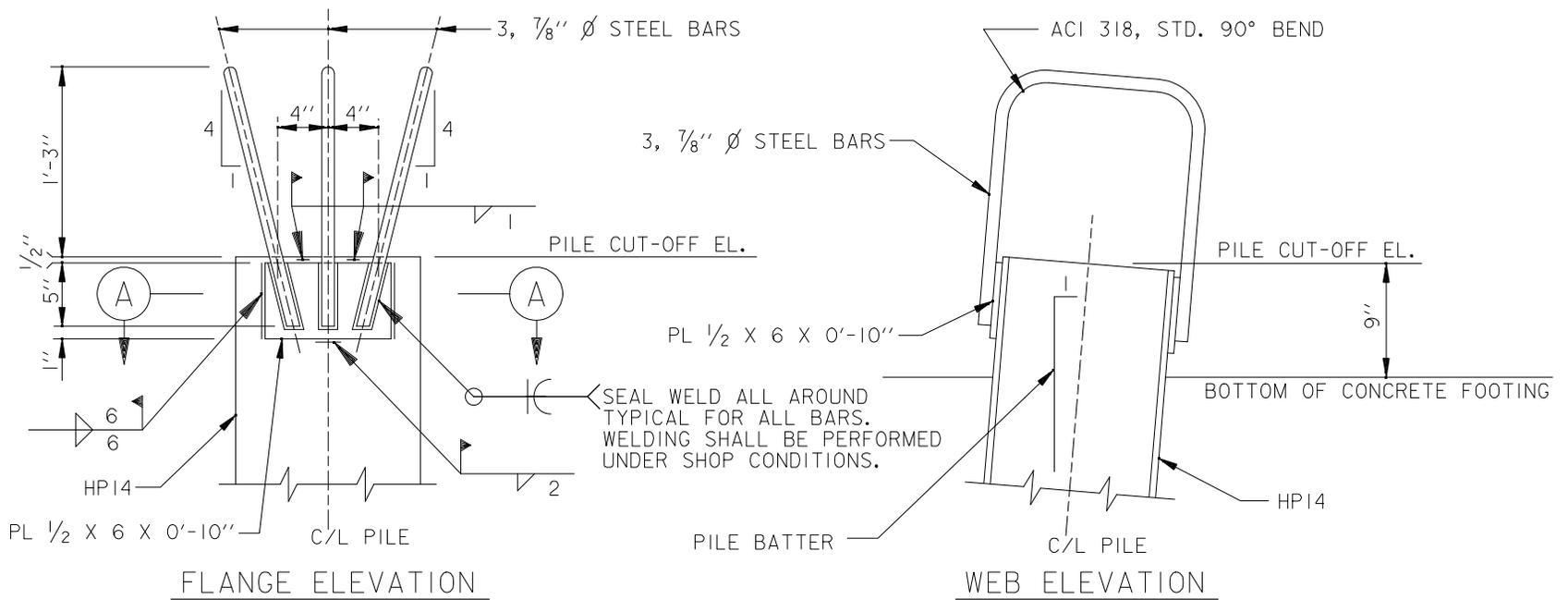
WEB ELEVATION
H-PILE SPLICE

SCALE: 1 1/2" = 1' - 0"

NOTE:
THE FOUR FLANGE PLATES SHALL BE IN PLACE BEFORE THE GROOVE WELDS ARE MADE.
GROOVE WELDS SHALL BE GROUND SMOOTH FOR FLUSH FIT OF OVERLAPPING SPLICE PLATES AS REQUIRED.



SECTION (A)



TENSION PILE CONNECTION DETAIL

SCALE: 1 $\frac{1}{2}$ " = 1' - 0"

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SECTION 02320 - STRUCTURAL EXCAVATION AND BACKFILL

PART 1 GENERAL

1.1 SCOPE

The work covered by this Section consists of furnishing all plant, labor, materials, equipment, and performing all operations necessary for stockpiling materials, structural excavation and backfill, excavating and backfilling inspection trenches; and all other incidental work specified herein. Shoring requirements are covered by Section 02252, "TEMPORARY RETAINING STRUCTURES".

1.2 RELATED WORK SPECIFIED ELSEWHERE

SUBMITTAL PROCEDURES, Section 01330

CONTRACTOR QUALITY CONTROL, Section 01451

SEPARATOR FABRIC, Section 02075

TEMPORARY FLOOD PROTECTION, Section 02111.

TEMPORARY RETAINING STRUCTURES, Section 02252.

EMBANKMENT, Section 02332

1.3 BIDDING SCHEDULE LINE ITEMS

1.3.1 Excavation

Bidding Schedule Line Item for "Excavation" or "Levee Cut (Excavation)" shall constitute full compensation for furnishing all plant, labor and equipment and performing all operations necessary for excavation and disposal of excavated material.

1.3.2 Inspection Trench

Bidding Schedule Line Item for "Inspection Trench" shall constitute full compensation for furnishing all plant, labor and equipment and performing all operations necessary for excavation of the inspection trench, and disposal of excavated material.

1.3.3 Water-Based Equipment Excavation

Bidding Schedule Line Item for "Water-Based Equipment Excavation" shall constitute full compensation for furnishing all plant, labor and equipment and performing all operations necessary for water-based equipment excavation and disposal of excavated material.

1.3.4 Backfill

Bidding Schedule Line Items for "Granular Backfill Type 1", "Crushed Stone Backfill", "Select Backfill" and "Clay Backfill" shall constitute full compensation for furnishing all plant, labor, materials, equipment and tools to complete the work as specified herein. Quantities shall be determined from truck measurements.

1.3.5 Light Weight Fill

Bidding Schedule Line Item for "Lightweight Fill" shall constitute compensation for furnishing all plant, labor, and equipment necessary to haul and place the material as specified herein. Quantities shall be determined from truck measurements.

1.3.6 Shoring

Work required for temporary retaining structures (shoring) shall be included in the Bidding Schedule Line Item for "Temporary Retaining Structures".

1.3.7 Separator Fabric

Work required for separator fabrics shall be included in the applicable Bidding Schedule Line Item specified in Section 02075, "SEPARATOR FABRIC".

1.4 REFERENCES

The following publications of the issues listed below, but referred to before and thereafter by the basic designation only, form a part of this specification to the extent indicated by the references thereto:

AMERICAN ASSOCIATION OF STATE HIGHWAY AND
TRANSPORTATION OFFICIALS (AASHTO)

T 104 (1999(2003)) Soundness of Aggregate by Use of
Sodium Sulfate or Magnesium Sulfate

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

C 131	(2003) Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
C 136	(2006) Sieve Analysis of Fine and Coarse Aggregates.
C 330	(2005) Lightweight Aggregates for Structural Concrete
D 698	(2000ae1) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ³ (600 kN-m/m ³))
D 1556	(2000) Density and Unit Weight Soil in Place by the Sand-Cone Method
D 2216	(2005) Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
D 2487	(2006) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
D 2922	(2005) Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)
D 3017	(2005) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
D 4318	(2005) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
E 329	(2005be1) Agencies Engaged in Construction Inspection and/or Testing

U.S. ARMY CORPS OF ENGINEERS ENGINEER MANUAL

EM 385-1-1 (Nov 2003) Safety and Health Requirements Manual

American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering, 2000 Edition

1.5 SUBMITTALS

The following shall be submitted in accordance with Section 01330, "SUBMITTAL PROCEDURES". No work shall proceed until the submittals have been reviewed and approved by the Contracting Officer.

1.5.1 Slope Stability

Should the Contractor wish to deviate from the slope stability requirements detailed in the Task Order Drawings and specified herein, the Contractor shall submit an original and seven (7) copies of its complete design package at least sixty (60) days prior to its actual intended use. The package shall consist of the following for the Contracting Officer's review, which will not exceed thirty (30) calendar days.

(1) Design Calculations

(2) Shop Drawings. A detailed layout of all various open cut excavations on standard size (28"x40") sheets. These drawings shall bear the stamp and signature of a Registered Professional Engineer. These drawings shall clearly show:

- (a) All pertinent dimensions and locations of the cuts with reference to the project baselines and any adjacent structures.
- (b) Excavation sequence and procedure.
- (c) Provisions made for unwatering and material and/or equipment loads.

1.6 SLOPE STABILITY DESIGN CALCULATIONS

1.6.1 Design Procedures

Should the Contractor wish to deviate from the slope stability requirements detailed in the Task Order Drawings and specified herein, the Contractor's determination of the excavation slopes shall include the stability of the excavated slope itself and its stability effect on adjacent project features and existing structures. The design performed by the Contractor must evaluate the overall stability against a shear failure using the LMVD Method of Planes Analysis. The Contractor shall use and rely upon the soil borings, design shear strength profile(s) and unit weight data presented in the individual Task Orders. The design calculations shall clearly demonstrate the proposed design meets these requirements. In no case, shall the excavated slopes be steeper than one (1) vertical on three (3) horizontal for temporary excavations.

1.6.2 Loads

The minimum safety factor used in the geotechnical design for the determination of slope stability is 1.30 for the short term (Q) case analysis. The design shall also

include the loading influence of any loads placed at the top of the slope, especially train loads. Train loads shall be equivalent to that of the Cooper E80 as defined by AREMA.

1.7 QUALITY CONTROL

1.7.1 General

The Contractor shall establish and maintain quality control for excavation operations to assure compliance with the requirements of this Section and maintain records of his quality control for all construction operations including but not limited to the following:

- (1) Equipment. Type, size, and suitability for construction of the prescribed work.
- (2) Excavation. Check grade, slopes, and dimensions for compliance with design sections.
- (3) Grade Tolerances. Check fills to determine if placement conforms to prescribed grade and design section.
- (4) Construction. Layout, maintaining existing drainage, moisture control, thickness of layers, spreading and compacting.
- (5) Control Testing. The Contractor shall perform all control testing including soil classification, moisture content, control compaction curves, and in-place density. The Contractor shall perform as a minimum, the specified number of each of the tests to demonstrate to the satisfaction of the Contracting Officer that the specifications are in compliance. Testing shall be performed by a government approved testing agency, or laboratory. Criteria used for obtaining Government approval shall be in accordance with ASTM E 329. Microwave testing for moisture control is allowed in the Contractor's field laboratory. Tests performed by the Contractor's laboratory shall be pursued in such a manner that the results are obtained and furnished to the Government within twenty-four (24) hours. No separate measurement or payment will be made for control testing. The Contractor shall include any and all costs for control testing in the contract prices for items of work to which the work is incidental thereto.

1. Soil Classification Tests. Determination of soil classification shall be in accordance with the United States Soil Classification System and ASTM D 2487. Particle size analysis shall be performed in accordance with ASTM C 136. Atterberg Limit Tests required for soil classification shall be performed in accordance with ASTM D 4318. One (1) Atterberg test shall be obtained from the sample material used for each control compaction curve and one (1) shall be obtained from the sample material from one (1) of the in-place density tests conducted each per lift per one thousand (1,000) cubic yards of fill

placed. If the Nuclear Method is used, the material to be tested shall come from within a radius of twelve (12) inches of the center of the in-place density test site. The soil classification obtained from in-place density tests will serve as the basis for determining the applicable control compaction curves.

2. Control Compaction Curves – Compacted Fills. Control compaction curves shall be established in accordance with ASTM D 698 (Standard Proctor Density Tests). Two (2) control compaction curves will be required for each type of material from each source. Where construction operations result in blending of several types of material prior to or during fill placement, two control compaction curves will be required for each resulting blend of material and will be utilized in lieu of those required for unblended materials. The average of the two (2) tests shall be the controlling optimum moisture content and maximum density, subject to verification by the Contracting Officer.

3. In-Place Density Tests. In-place density tests for compacted fill materials shall be made in accordance with ASTM D 2922 (Nuclear Method) or ASTM D 1556 (Sand Cone Method), and shall be one (1) per lift per one thousand (1,000) cubic yards of fill placed. The location of the test shall be representative of the area being tested or as directed by the Contracting Officer. For each in-place density test, the Contractor shall determine the percent of ASTM D 698 maximum dry density and the percent (plus or minus) optimum water content using the control compaction curves for the same type of material. The appropriate control compaction curve shall be selected by using either visual soil classification or soil classification test. The results of the soil classification test, in-place density test and moisture content test shall be reported to the Contracting Officer's representative by the end of the working day following in-place density tests.

4. Moisture Content Tests. Moisture content tests at each density test location shall be taken to assure compliance with requirements for fill placement. Determination of moisture content shall be performed in accordance with ASTM D 2216 or alternately by ASTM D 3017.

5. Additional tests required are as follows:

(a) Areas not meeting the specified density shall be retested at no additional cost to the Government, after corrective measures have been applied.

(b) Where the Contracting Officer's representative has reason to doubt the adequacy of the compaction or moisture control.

(c) Where materials change substantially, the Contracting Officer shall direct additional testing.

1.7.2 Reporting

The original and two (2) copies of these records of inspections and tests, as well as the records of corrective action taken, shall be furnished the Government daily. Format of the report shall be as prescribed in Section 01451, "CONTRACTOR QUALITY CONTROL".

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Granular Material Type 1(Commercial Source)

Granular material shall be a clean, non-plastic material that is free of roots, clay lumps, and any other deleterious materials with at least seventy-five percent (75%) (by weight) passing the No. 4 sieve and containing not more than ten percent (10%) (by weight) of material passing a No. 200 sieve.

2.1.2 RESERVED

2.1.3 Clay Fill (Commercial Source)

Clay fill shall be free of roots or organic matter and shall be classified as CH or CL materials by the Unified Soil Classification System, with a liquid limit no higher than 70 and a plasticity index no higher than 40.

2.1.4 Crushed Stone

Crushed stone used as backfill shall be from the sources listed in the General Provision clause entitled "STONE SOURCES" and shall consist of one hundred percent (100%) stone meeting the following requirements:

<u>U.S. Sieve</u>	<u>Percent Passing (by weight)</u>
2-1/2"	100
2"	90-100
1"	35-70
1/2"	1 – 30
No. 4	0 – 5
No. 200	0 – 1

2.1.5 Suitable From Excavation (Select)

Granular or non-granular material not classified as unsuitable as described in paragraph 2.1.7, below with a maximum organic content of four percent (4%).

2.1.6 Lightweight Backfill

Lightweight fill shall meet the requirements of ASTM C 330. The lightweight fill shall consist of durable, non-corrosive particles meeting the following gradation:

<u>U.S. Sieve</u>	<u>Percent Passing (by weight)</u>
3/8"	100
No. 4	50-100
No. 8	15-60
No. 50	0 – 15
No. 100	0 – 10

The maximum wet unit weight corresponding to the maximum dry density obtained from ASTM D 698 shall not exceed seventy (70) pounds per cubic foot. The maximum soundness loss after five (5) cycles of magnesium sulfate shall be thirty percent (30%) when measured according to AASHTO T 104. The maximum abrasion loss, when tested in accordance with ASTM C 131 shall be forty percent (40%).

2.1.7 Unsuitable Materials

Materials, which are classified as unsuitable structural backfill, are defined as material containing organic matter, sticks, branches, roots, brick, concrete, rock, and other debris.

2.2 EQUIPMENT

Equipment for compaction shall conform to the requirements herein.

2.2.1 Hand Tampers

Hand tamping shall be used in the compaction of structural fill within three (3) feet of any floodwall or structure and near floodwalls and structures where vehicular equipment cannot be used. These hand tampers should be power driven, hand operated type.

2.2.2 Alternative Compaction Equipment

The Contractor may propose for use alternative types of compaction equipment not included in these specifications. The suitability of the alternative equipment must be demonstrated to the Contracting Officer by a field test conducted by and at the expense of the Contractor. The alternative compaction equipment must be capable of properly compacting the soil so that no planes of weakness or laminations are formed in the fill. Additionally, the alternative compaction equipment must not detrimentally affect any adjacent structure. The field test shall consist of compacting a minimum of three (3) layers of an area of embankment with the alternative type equipment.

2.2.3 Miscellaneous Equipment

Scarifiers, disks, spring-tooth or spike-tooth harrows, spreaders, power tampers and other equipment shall be of types suitable for the required construction. Sprinkling equipment shall be designed to apply water uniformly and in controlled quantities to variable widths of surface.

PART 3 EXECUTION

3.1 STRIPPING OF TOPSOIL

Where indicated or directed, topsoil shall be stripped to a depth of eight (8) inches. Topsoil shall be spread on areas already graded and prepared for topsoil, or transported and deposited in stockpiles convenient to areas that are to receive application of the topsoil later, or at locations indicated or specified. Topsoil shall be kept separate from other excavated materials, brush, litter, objectionable weeds, roots, stones larger than two (2) inches in diameter, and other materials that would interfere with planting and maintenance operations. Any surplus of topsoil from excavations and grading shall be removed from the site.

3.2 EXCAVATION

3.2.1 General

The Contractor shall make all excavations required for the construction of the floodwalls, floodgate monoliths, floodwall/bulkhead and all other incidental work. Suitable material from required structural excavation may be used as select backfill if material's properties are in accordance with requirements specified herein. Materials determined to be unsuitable by the Contracting Officer shall be ordered wasted. Work under this section shall comply with EM 385-1-1.

3.2.2 Site Preparation

Underground obstructions may be present in the area of the project. If abandoned underground utilities are discovered during excavation operations, the Contracting Officer shall be notified. Special care shall be taken in their removal. The void created by their removal shall be backfilled with granular material placed and compacted in accordance with paragraph 3.7.1.1 during dry weather conditions only.

3.2.3 Open Cut Excavations

Should the Contractor wish to deviate from the slope stability requirements detailed on the Task Order Drawings and specified herein, slope stability calculations shall be submitted in accordance with paragraphs 1.5.1 and 1.6. In no case shall excavated slopes be steeper than one (1) vertical on three (3) horizontal for temporary

excavations. Open cut excavations shall be accomplished in a controlled manner. Excavations shall be initiated from the top of the projected slope downward to the invert.

3.2.4 Floodwall/Bulkhead Degrading

Degrading of the existing ground surface to expose and remove existing tiebacks and facilitate installation of new anchor piles may be required. Contractor shall excavate on a stable slope determined in accordance with paragraphs 1.6 and 3.2.3. Open cut excavations shall be accomplished in a controlled manner. Excavations shall be initiated from the top of the projected slope downward to the invert.

3.2.5 Water-Based Equipment Excavation

Excavation from water-based equipment shall consist of removal of material to the lines and grades required. Care shall be exercised by the Contractor in excavating to the lines and grades required and in removing waste materials so as not to excavate below the grades specified or depth indicated. Excavation below the lines and grades specified or the depth indicated shall be backfilled by the Contractor at its expense. Such backfill shall be brought to grade with suitable material. For excavation in the wet, a tolerance of 5/10 of a foot above or below the prescribed grade and cross section shown will be permitted

3.3 INSPECTION TRENCHES

An inspection trench shall be excavated to the sizes and at the locations specified in the individual Task Orders. Inspection trenches shall be centered on the floodwall centerline or tie-back centerlines as applicable. This work includes removal of all obstructions and debris that would interfere with installation of the steel sheet piles, tie-back rods and anchor piles. The trench shall be completed at least two hundred (200) feet in advance of construction. In the event that a high water table prevents excavation of an inspection trench to the minimum depth required, the Contracting Officer may order the excavation of the inspection trench to be discontinued. Contractor shall install safety fencing around inspection trenches which are left open overnight. In the event that a high water table prevents excavation of an inspection trench to the minimum depth required, the Contracting Officer may order the excavation of the inspection trench to be discontinued. Inspection trenches shall comply with requirements listed for excavations in EM 385-1-1. The stability and integrity of existing infrastructure in the vicinity of the inspection trench (i.e. – railroad track, existing structures, etc.) shall be the sole responsibility of the Contractor. Unless the Contractor submits calculations demonstrating that the open cut is stable when a train passes on the adjacent railroad tracks, the inspection trenches shall not remain open and shall be backfilled prior to each train's passage. The Contractor shall coordinate inspection trench work with the Railroad in accordance with Section 01100, "GENERAL PROVISION" entitled "WORK ON OR ADJACENT TO RAILROAD". Without exception, inspection trenches shall be backfilled before the

Contractor leaves the site the day of the excavation and obstructions shall be flagged as necessary.

3.4 DEGRADING EXISTING LEVEES

3.4.1 Extents

The existing levee shall be degraded to elevations required to provide drainage. Material excavated from the existing levee shall be used in berms or backfill. Excess material excavated from the existing levee shall be disposed of by the Contractor.

3.4.2 Embankments Not To Be Disturbed

Existing levees, parts of levees, sublevees, spurs, or other embankments shall not be disturbed unless it is specifically stated in paragraph 3.4.1 or in Section 02332, "EMBANKMENT" that they may be degraded.

3.5 HAULING

All excavated material to be removed from the site, including debris, shall be hauled in watertight trucks with secured binders on tailgates to the place of destination. The route for trucks carrying material from the job site, shall avoid residential streets, and shall be approved by the Contracting Officer. Trucks shall not spill or track mud on public roads. The Contractor shall take immediate action to clean up any material spilled on the roads without notification from the Contracting Officer. Failure by the Contractor to satisfactorily clean public roads used for the hauling operation shall result in the suspension of hauling operations until such roads are cleaned to the satisfaction of the Contracting Officer.

3.6 SHORING

The Contractor shall provide all necessary shoring, bracing, sheeting, underpinning, and/or supports as may be required for the construction of the floodwalls, floodgate monoliths and floodwall/bulkhead in accordance with Section 02252, "TEMPORARY RETAINING STRUCTURES".

3.7 BACKFILL

3.7.1 Structural Backfill

Structural backfill is defined as any soil material, which is placed within the limits of the structural excavation and the final grade, and as herein specified. The Contractor shall fill all excavations to the required grades. Structural backfill shall not be placed against concrete structures for a minimum of fourteen (14) days after the concrete is placed. The Contractor may at his expense place fill sooner if he furnishes and tests cylinders to demonstrate that the concrete has achieved seventy-five percent (75%)

of its design specified strength. Compaction requirements for the selected backfill shall be in accordance with those specified herein.

3.7.1.1 Granular Backfill

The granular material shall meet the material requirements specified in paragraph 2.1.1 and shall be spread in loose lifts of six (6) to eight (8) inches. The granular material, where not used to support footings or slabs, shall be compacted in accordance with ASTM D 698 to a minimum of ninety-five percent (95%) of its maximum dry density at a moisture content of plus three percent to minus two percent (+3% to -2%) of optimum water content. The compactive effort shall be required to achieve a minimum of ninety-eight percent (98%) of the maximum dry density determined in accordance with ASTM D 698 if the backfill will support any structures. Granular backfill shall be placed in a timely manner to avoid erosion.

3.7.1.2 Clay Backfill

Clay fill meeting the material requirements specified in paragraph 2.1.3 shall be used in areas adjacent to floodwall and floodgate monoliths. The clay fill shall be spread in loose lifts of eight (8) to twelve (12) inches and compacted in accordance with ASTM D 698 to a minimum of ninety-five percent (95%) of its maximum dry density at a moisture content of plus three percent to minus two percent (+3% to -2%) of optimum water content. The area receiving the clay blanket shall be approved by the Contracting Officer prior to placement of the blanket. The clay backfill shall be rolled with a sheep's foot roller or other approved methods. The clay backfill shall be placed in a timely manner to prevent erosion.

3.7.1.3 Frozen Materials

Under no circumstances shall frozen earth, snow or ice be placed in the fill. The Contracting Officer may require the wasting of frozen material.

3.8 EMBANKMENT FILL

Embankment fill shall be compacted in accordance with Section 02332, "EMBANKMENT".

3.9 CRUSHED STONE BACKFILL

3.9.1 Crushed Stone

Crushed stone fill meeting the material requirements given in paragraph 2.1.4 shall be used as backfill between the new and existing bulkheads. Crushed stone fill shall be placed in standing water in lifts no larger than three (3) feet. Crushed stone fill placed below the water surface need not meet the compaction requirements specified herein, but shall be tamped or vibrated to facilitate compaction of the lifts placed above the

water surface. The crushed stone shall be spread in loose lifts of six (6) to eight (8) inches. Each lift shall be compacted to a minimum ninety-five percent (95%) of its maximum dry density at a moisture content of plus three percent to minus two percent (+3% to -2%) of optimum water content.

3.9.2 Separator Geotextile

Separator geotextile shall be placed between the crushed stone and granular backfill to prevent clogging of the stone with fine materials. The fabric shall encapsulate the crushed stone. The separator geotextile material properties and placement techniques shall be in accordance with Section 02075, "SEPARATOR FABRIC".

3.9.3 Granular Backfill Materials

The granular material above the standing water surface shall be placed in lifts of nine (9) inches loose measure and uniformly compacted with a power tamper to a minimum of ninety-five percent (95%) of its maximum dry density at a moisture content of plus three percent to minus two percent (+3% to -2%) of optimum water content in accordance with ASTM D 698. Where pavements will overlie the fill, the select sand fill material located twelve (12) inches directly beneath the pavement shall be placed in two lifts and compacted to a minimum density corresponding to ninety-eight percent (98%) of its maximum dry density at a moisture content of plus three percent to minus two percent (+3% to -2%) of the optimum water content as determined in accordance with ASTM D 698.

3.10 PLACING LIGHT WEIGHT FILL

Lightweight backfill material shall be spread in loose lifts of six (6) to eight (8) inches and shall be compacted to at least ninety-five (95%) of maximum dry density in accordance with ASTM D 698.

3.11 FINISHING

The surface of excavations, embankments, and subgrades shall be finished to a smooth and compact surface in accordance with the lines, grades, and cross sections or elevations prescribed. The degree of finish for graded areas shall be within one-tenth (0.1) foot of the grades and elevations indicated except that the degree of finish for subgrades shall be specified in paragraph 3.10. Ditches shall be finished in a manner that will result in effective drainage. The surface of areas to be turfed shall be finished to a smoothness suitable for the application of turfing materials. Unreasonable roughness of surface shall be dressed out to permit finished surface operations.

3.12 PLACING TOPSOIL

Topsoil shall be spread evenly to a thickness of two (2) inches and graded to the elevations and slopes shown. Topsoil shall not be spread when frozen or excessively wet or dry. Material required for topsoil in excess of that produced by excavation within the grading limits shall be obtained from offsite areas.

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SECTION 02355 - PILE LOAD TEST

PART 1 GENERAL

1.1 SCOPE

The work covered by this Section consists of furnishing all plant, equipment, labor, and materials, and performing all operations in driving, testing, pulling, and removing of steel H-piles, steel pipe piles and prestressed concrete piles in accordance with these specifications. The static load test methods described herein are generally in accordance with ASTM D 1143 and D 3689. The dynamic load test methods are in general accordance with ASTM D 4945. The Contractor shall submit his plan for conducting tests to the Contracting Officer for approval a minimum of fifteen (15) days prior to the beginning of the tests. Prestressed concrete piles are specified in Section 02365, "PRESTRESSED CONCRETE PILES". Steel H-piles are specified in Section 02315, "STEEL H-PILING". Steel pipe piles are specified in Section 02451, "STEEL PIPE PILES".

1.2 REFERENCES

The following publications, referred to thereafter by basic designation only, form a part of this specification to the extent indicated:

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 1143	(1994) Method of Testing Piles Under Static Axial Compressive Load
D 3689	(1995) Individual Piles Under Static Axial Tensile Load
D 4945	(2000) High-Strain Dynamic Testing of Piles

1.3 BIDDING SCHEDULE LINE ITEMS

1.3.1 Furnishing and Driving Test Pile

Bidding Schedule Line Item for "Steel H-Pile, Furnish and Drive Test Pile", "Concrete Precast, Prestressed, Furnish and Drive Test Pile" or "Steel Pipe Pile, Furnish and Drive Test Pile" shall constitute full compensation for furnishing all plant, labor, equipment, and materials for furnishing and driving test piles; and all operations incidental thereto.

1.3.2 Pile Test

Bidding Schedule Line Items for "Static Tension Test - Steel H-Pile", "Static Tension Test – Steel Pipe Pile", "Static Tension Test – Piling, Concrete Precast, Prestressed", "Static Compression Test – Steel H-Pile", "Static Compression Test – Piling, Steel Pipe Pile", "Static Compression Test – Piling, Concrete Precast, Prestressed", "Dynamic Test During Initial Driving – Steel H-Pile", "Dynamic Test During Initial Driving – Steel Pipe Pile", "Dynamic Test During Initial Driving – Piling, Concrete Precast, Prestressed", "Dynamic Test During Restrike – Steel H-Pile", "Dynamic Test During Restrike – Steel Pipe Pile", or "Dynamic Test During Restrike – Piling, Concrete Precast, Prestressed" shall include calibration of the extensometers, load cell, and hydraulic jack; placing and removing test loads and test equipment; pulling test and reaction piles or cutting them off below grade; backfilling pulled pile holes; and all operations incidental thereto. Bidding Schedule Line Item for dynamic testing shall include calibration of the gauges, placing and removing gauges and other test equipment; documentation and submission of dynamic pile testing reports; and all operations incidental thereto.

1.4 QUALITY CONTROL

1.4.1 General

The Contractor shall establish and maintain quality control for all operations to assure compliance with the requirements specified in this Section and maintain records of his quality control for all construction operations including, but not limited to, the following:

- (1) Facilities and personnel providing for installation and reading by the Contractor of all measuring devices.
- (2) Static Compression test (pile number, location); loading frames and description (number, size, type, and location of supporting piles); sequence and method of loading; records of measurements, and driving records.
- (3) Static Tension test (pile number, location); description of loading yoke and yoke installation (number, size, type, and location of supporting piles); sequence and method of loading; records of measurements, and driving records.
- (4) Dynamic Test (pile number, location); type of test (initial drive or restrike) sequence and method of testing; records of measurements, and driving records.
- (5) Ensure dynamic pile testing equipment is in good working order and calibrated before, during and after gauges are attached to the pile.
- (6) Perform data quality checks throughout the dynamic pile test and ensure data quality is reasonable, consistent and proportional.

1.4.2 Reporting

The original and two (2) copies of these records and tests, as well as records of corrective action taken, shall be furnished to the Government daily. Format of reports other than test data shall be as prescribed in Section 01451, "CONTRACTOR QUALITY CONTROL".

1.5 SUBMITTALS

The following shall be submitted in accordance with Section 01330, "SUBMITTAL PROCEDURES";

1.5.1 Qualifications

The Contractor shall secure the services of a qualified Dynamic Pile Testing Consultant to perform the dynamic pile testing. The Contractor shall submit a proven experience record of the firm and individual(s) within the firm qualified to perform the dynamic testing for the project. These qualifications will be submitted to the Contracting Officer for approval.

1.5.2 Reports

The Contractor shall furnish all data from each pile tested within twenty-four (24) hours after completion of each static and dynamic test. Pile test data shall be recorded for all items shown in paragraph 1.7. Blow counts shall be recorded for each foot of each test pile and, in addition, the Contractor shall complete revised LMN Form 1119 (Pile Driving Report) and furnish copies to the Contracting Officer. Copies of these forms shall also be furnished to the Contracting Officer.

The Dynamic Testing Consultant shall prepare a hand written daily field report summarizing the dynamic testing results. As a minimum, the daily reports shall include the calculated driving stresses, transferred energy, and estimated pile capacity at the time of testing. Variations from previous trends in the dynamic test data shall also be noted. Daily field reports shall be furnished to the Contracting Officer.

1.6 TEST MEASUREMENT

Measurements of compression and tension loads, deflections and settlements, of the static test piles shall be made by the Contractor. Measurement and evaluation of all initial driving and restrike dynamic pile test shall be made by the Contractors Dynamic Testing Consultant. Reports on all static and dynamic test piles shall be made by the Contractor. The lengths of prestressed concrete piles and steel service piles as determined by the results of the static and dynamic load tests shall be determined by the Contracting Officer and furnished to the Contractor within thirty (30) days after receipt of the last test report.

1.7 REPORTS

The report of the load test shall include the following items where applicable:

1.7.1 General

- (1) Project Identification
- (2) Location

1.7.2 Pile Installation Equipment

- (1) Make, model, type, and size of hammer
- (2) Weight of hammer and ram
- (3) Stroke of ram
- (4) Rated energy and operating speed of hammer
- (5) Steamer air pressure of boiler and/or compressor
- (6) Type and thickness of cap blocks and pile cushions
- (7) Weight and dimensions of drive-cap and follower

1.7.3 Test and Support Piles

- (1) Identification of test pile(s)
- (2) Type of piles
- (3) Pile material including basic specifications
- (4) Dimensions of pile
- (5) Pile weight as driven
- (6) Which piles vertical-batter
- (7) Degree of batter
- (8) Driven length

- (9) Embedded length
- (10) Tested length, and
- (11) Final elevation of piles butt referenced to fixed datum (identify datum)

1.7.4 Pile Installation - Test and Support

- (1) Date driven
- (2) Pre-excavation or jetting - depth, size, pressures, duration, etc.
- (3) Operating of hammer during final driving
- (4) Driving log, blows per foot
- (5) Final penetration resistance, blows per inch
- (6) Description of special installation procedures used, and
- (7) Notation of any unusual occurrences during installation

1.7.5 Static Pile Testing

- (1) Date tested
- (2) Type of test pile
- (3) Type of load application apparatus
- (4) Number of support piles of each test
- (5) Instrumentation used to measure pile movement
- (6) Special testing procedures used
- (7) Temperature and weather conditions during test
- (8) Tabulation of all load-time-movement reading
- (9) Gages, scales, and reference points identified
- (10) Adjustment made to field data and explanation
- (11) Notation of any unusual occurrences during test, and

(12) Test jack and other required calibration reports

1.7.6 Dynamic Pile Testing

(1) Date tested

(2) Type of test pile

(3) Type of dynamic test (initial drive or restrrike)

(4) Number, location and type of gauges/sensors attached to pile

(5) Description of equipment used to record dynamic measurements

(6) Description of equipment used to display and reduce dynamic measurements

(7) Cross-sectional area, density, wave speed and modulus of elasticity of the test piles

(8) Graphical and Tabular summary of all measurements, including velocity and force measurements in the time domain for representative average blow at the end of driving of each pile tested using one foot of driving data

(9) Gages, scales, and reference points identified

(10) Adjustment made to field data and explanation

(11) Notation of any unusual occurrences during test,

(12) Calibration reports

(13) Method(s) and one-dimensional wave propagation theory used to evaluate the data

(14) Capacity of the pile at the time of testing, including a summary of the variables utilized in the soil model (damping factors, quakes, etc) and rational for their selection

(15) Hammer performance as measured by energy transferred to the pile

(16) Evaluation of the integrity of the test piles based on the initial driving, and

(17) Driving stresses (average and individual compression and tension) in the pile.

PART 2 PRODUCTS

2.1 TYPES AND PROPERTIES

Prestressed concrete piles shall conform to the requirements of Section 02365, "PRESTRESSED CONCRETE PILES". H-piles shall conform to all requirements of Section 02315, "STEEL H-PILING". Pipe piles shall conform to all requirements of Section 02451, "STEEL PIPE PILES".

PART 3 EXECUTION

3.1 PLACING TEST PILE

Test piles shall be driven vertically to the required tip elevation. A variation from the vertical of not more than 1/4-inch per foot of longitudinal axis will be permitted. Any pile driven and not meeting the above requirements shall be pulled and redriven by the Contractor at no additional cost to the Government.

3.2 DRIVING TEST PILE

The service pile driving procedures specified in Sections 02315, "STEEL H-PILING", Section 02451, "STEEL PIPE PILES" and 02365, "PRESTRESSED CONCRETE PILES" also apply respectively to the driving of steel H test piles, pipe piles and prestressed, precast concrete test piles. Wave equation analyses, in conjunction with the dynamic load test results, shall be performed on the driving system (s) utilized for installation of the vertical test piles to evaluate requirements for the installation of the battered job piles.

3.3 STATIC TEST PILE LOADING

3.3.1 Scope

This part covers procedures for testing vertical foundation piles to determine the response of the pile to a static compressive or tensile load applied axially to the pile. Determination of the allowable compression and tensile load for the pile is made by the incremental loading and measurement of the pile deformation.

3.3.1.1 Compression Test

Test piles shall be furnished in the lengths required and driven as directed by the Contracting Officer. A minimum time period of twenty-one (21) days shall be allowed to elapse between driving of the piles and/or any dynamic pile testing and the initiation of a compression test. If the results of the compression test on the pile are not acceptable, the Contracting Office will direct the Contractor to perform an additional compression test. There will be no payment nor additional time granted for delays incurred between driving of test piles, dynamic testing and initiation of static pile tests.

3.3.1.2 Tension Test

A minimum time period of twenty-one (21) days shall be allowed to elapse between driving of the piles and/or any dynamic pile testing and the initiation of a tension test. If the results of the tension test on the pile are not acceptable, the Contracting Office will direct the Contractor to perform an additional tension test. There will be no payment nor additional time granted for delays incurred between driving of test piles, dynamic testing and initiation of static pile tests.

3.3.2 General Procedures

The Contractor shall provide and be responsible for furnishing all necessary apparatus, measuring equipment, and personnel to install, test, and extract the test piles described within this specification in its entirety. The recording and reporting of all data shall be the responsibility of the Contractor. However, the Contracting Officer's representative shall have free access to the pile test data at any time. A Government representative will be present during the load tests. The Contractor shall provide the Contracting Officer seventy-two (72) hours notice prior to initiating each pile load test in order that arrangements may be made to have a Government representative present during the test. The reduction, analysis, and interpretation of the test data will be accomplished by Government personnel after completion of each pile test. Additional pile tests may be required as determined by the Contracting Officer. In order to prevent disturbances to the instrumentation readings, construction activities, equipment movement, or operation of construction equipment, will not be permitted within two hundred (200) feet of any static load test in progress.

3.3.3 Loading Frames

For illustration purposes, the loading frames for applying known compressive loads to a pile are shown on the drawings attached at the end of this Section. Loading frames shall be constructed so that the loads are applied axially to minimize eccentric loading. Design considerations such as sizes, numbers, and material of specific beams, support piles, bearing plates, etc., shall be the responsibility of the Contractor and subject to approval of the Contracting Officer. Included with his plan for conducting the tests, the Contractor shall submit computations used in the design of the loading frame. The computations shall be certified by a registered professional engineer. For the compression test, a steel bottom bearing plate of appropriate thickness for the loads involved shall not be less than the size of the pile butt, nor less than the area covered by the base of the hydraulic jack. A top bearing plate shall have a size not less than the load cell head, nor less than the total width of the reactor beam(s). The support piles for the loading frame shall be placed as far from the test piles as practicable, but in no case less than a clear distance of eight (8) feet. The box or platform shall be loaded with any suitable material such as soil, rock, concrete, steel, or water filled tanks with a total weight (including that of the test beams(s) and

box or platform) at least ten percent (10%) greater than the anticipated maximum test load. The anticipated maximum test load is three times (3X) the service load.

3.3.4 Apparatus for Applying Pile Load and Measuring Movement

All equipment related to the load test (extensometers, level, load cell, hydraulic jack, scales, mirrors, etc.) and testing shall be furnished and operated by the Contractor. Typical apparatus setup is depicted on the drawings attached at the end of this Section. The hydraulic jack shall be equipped with a pressure reading gage calibrated in tons and with a ram having a spherical bearing head to minimize eccentric loading. The jack shall be capable of maintaining constant loads between load changes and shall be calibrated prior to the test so that the load applied is controllable to within five percent (5%). The load cell (non-self-leveling) shall be an electric strain gage type equipped with a readout device. Load cells shall be calibrated prior to the test to an accuracy within two percent (2%) of the applied load. The changing and maintaining of loads on each test pile shall be done utilizing the load cell as the primary loading device and pressure gage on the jack as a backup. However, both readings shall be recorded. Extensometers shall be used to measure pile movement and shall have dial gages with stems having at least a two (2) inch travel, or sufficient gage blocks shall be provided to allow this travel with shorter gage stems. Gages shall be read to an accuracy of 0.001-inch. Smooth bearing surfaces perpendicular to the direction of the measurements shall be provided for by the gage stems. The hydraulic jack, load cell, and extensometers shall be calibrated both before the start and after the completion of the testing program, by a certified testing laboratory for both the loading and unloading cycles and calibration curves furnished to the Contracting Officer. The calibration curves shall be load cell strain readings versus load in tons. In developing the calibration curves, the load cell shall be placed above the jack in the testing machine and the loads shall be applied through the ram to the load cell to the testing machine in the actual working manner of the field loading system. Two reference beams, one on each side of the pile, shall be independently supported with supports firmly embedded in the ground at a clear distance of not less than eight (8) feet from the test pile, and seven (7) to eight (8) feet from the support piles. Reference beams shall be of sufficient stiffness to prevent excessive deflections. Reference beam stakes shall be firmly embedded in the ground. If steel reference beams are used, one end of each beam shall be free to move as the length of the beams change with temperature variations. As a backup to the extensometers, an engineer's level and scale shall be used to check the movement of the test pile. The level shall also be used to check the movement of the support piles. Scales used to measure pile movements shall read to 1/64th of an inch or to 0.01 inch. Target rods shall read 0.001 foot. All dial gages, scales, and reference points shall be clearly marked with a reference number or letter to assist in recording data accurately. Readings from the surveyor's level may be taken on a target rod or a scale and shall be referenced to two (2) permanent benchmarks located outside the immediate test area or the surveyor's level shall be mounted on an object of fixed elevation (for example, a driven pile) outside of the immediate test area. Readings shall be taken on two fixed points or scales on opposite sides of the pile or pile cap or on a single

fixed point or scale in the center of the pile top or pile cap. Readings shall be taken on a sufficient number of support piles and on the reference beams to establish if there is any movement. A tarpaulin of minimum dimension of 12 feet x 12 feet shall be installed by the Contractor to protect at all times the instrumentation, measuring system, and prevent adverse temperature variations.

3.3.5 Loading Procedure and Measurement of Pile Movement

After the test piles are driven, the Contractor shall allow a time period of not less than twenty-one (21) days to elapse before loading the test piles. Apply loads to the piles in increments of twenty-five percent (25%) of the anticipated service load until two hundred percent (200%) of the service load is reached or until failure, whichever ever occurs first. The rate of application and removal of load shall be two (2) tons per minute. The Contractor shall take readings of time, load, and movement and record them for each load increment or load decrement. When the twenty-five percent (25%) increment has been reached, the Contractor shall maintain the load for 2 hours and readings shall be taken at the 2 minute, 8 minute, 15 minute, 30 minute, 60 minute, and 120 minute intervals. After the application of loads equal to 50, 100, and 150 percent of the test load, remove the applied load in each case in decrements equal to the loading increments with twenty (20) minutes between decrements. After removing each total applied load, reapply the load to the previous load level in increments equal to fifty percent (50%) of the test load with twenty (20) minutes between increments. When the previous load level has been obtained, increase load in twenty-five percent (25%) increments to the next load level. When two hundred percent (200%) of the service load has been applied and failure has not occurred, allow the two hundred percent (200%) service load to remain on the pile for twenty-four (24) hours, except in the event that the average rate of settlement is greater than 0.01 in/hour, hold the total load on the pile for forty-eight (48) hours. During this time, readings shall be taken every hour. After the required holding time, remove the load in decrements of fifty percent (50%) of the service load with one (1) hour between decrements. After the load has been applied and removed in accordance with the above, reload the pile to two hundred percent (200%) of the service load in increments of fifty percent (50%), allowing twenty (20) minutes between increments. The Contractor shall then increase the load in increments of ten percent (10%) of the service load until failure occurs or the applied load reaches three hundred percent (300%) of the service load. The time lapse between increments shall be twenty (20) minutes. If failure does not occur, hold the full load for two (2) hours at which time remove the load in four equal decrements, allowing twenty (20) minutes between decrements. For purposes of stopping pile tests in progress, failure is achieved when the full extent of the extensometers is reached. If failure occurs before the load reaches three hundred percent (300%) of the service load then the load shall be removed in four (4) equal decrements allowing twenty (20) minutes between decrements. Test apparatus shall not be removed from the pile until approval is received from the Government representative. To illustrate the loading and pile measurement procedures, a sample test schedule is provided following this paragraph.

3.4 MAXIMUM TEST PILE LOADING

3.4.1 General

For estimating purposes, the following paragraphs shall be used as a basis for bidding the pile testing:

3.4.2 Compression Tests

The maximum compressive load for a pipe pile shall be assumed to three hundred fifty (350) tons. The maximum compressive load for a precast concrete pipe shall be assumed to three hundred fifty (350) tons. The maximum compressive load for an H-pile shall be assumed to one hundred fifty (150) tons.

3.4.3 Tension Tests

The maximum tension load for a pipe pile shall be assumed to two hundred eighty (280) tons. The maximum tension load for a precast concrete pipe shall be assumed to one hundred twenty (120) tons. The maximum tension load for an H-pile shall be assumed to one hundred twenty (120) tons.

SAMPLE OF COMPRESSION PILE TEST SCHEDULE

<u>Load (Tons)</u>	<u>Elapsed Time</u>	<u>Incremental Time</u>	<u>Remarks</u>
0	0:00	0 min.	
16.3	0:04	4 min.	25% service load
	0:06	2 min.	
	0:12	8 min.	
	0:19	15 min.	
	0:34	30 min.	
	1:04	60 min.	
	2:04	120 min.	
32.5	2:08	4 min.	50% service load
	2:10	2 min.	
	2:16	8 min.	
	2:23	15 min.	
	2:38	30 min.	
	3:08	60 min.	
	4:08	120 min.	
16.3	4:12	4 min.	Decrement 25%
	4:32	20 min.	
0	4:36	4 min.	Decrement 25%
	4:56	20 min.	
32.5	5:03	7 min.	Increment 50%
	5:23	20 min.	
48.8	5:27	4 min.	75% service load
	5:29	2 min.	
	5:35	8 min.	
	5:42	15 min.	
	5:57	30 min.	
	6:27	60 min.	
	7:27	120 min.	
65.0	7:31	4 min.	100% service load
	7:33	2 min.	
	7:39	8 min.	
	7:46	15 min.	
	8:01	30 min.	
	8:31	60 min.	
	9:31	120 min.	
48.8	9:35	4 min.	Decrement 75%
	9:55	20 min.	
32.5	9:59	4 min.	Decrement 50%
	10:19	20 min.	

SAMPLE OF COMPRESSION PILE TEST SCHEDULE

<u>Load (Tons)</u>	<u>Elapsed Time</u>	<u>Incremental Time</u>	<u>Remarks</u>		
0	10:26	7 min.	Decrement 0%		
	10:46	20 min.			
32.5	10:53	7 min.	Increment 50%		
	11:13	20 min.			
65.0	11:20	7 min.	Increment 100%		
	11:40	20 min.			
81.3	11:44	4 min.	125% service load		
	11:46	2 min.			
	11:52	8 min.			
	11:59	15 min.			
	12:14	30 min.			
	12:44	60 min.			
	13:44	120 min.			
	97.5	13:48		4 min.	150% service load
		13:50		2 min.	
		13:56		8 min.	
14:03		15 min.			
15:28		30 min.			
14:48		60 min.			
15:48		120 min.			
81.3	15:52	4 min.	Decrement 125%		
	16:12	20 min.			
65.0	16:16	4 min.	Decrement 100%		
	16:36	20 min.			
32.5	16:43	7 min.	Decrement 50%		
	17:03	20 min.			
0	17:10	7 min.	Decrement 0%		
	17:30	20 min.			
32.5	17:37	7 min.	Increment 50%		
	17:57	20 min.			
65.0	18:04	7 min.	Increment 100%		
	18:24	20 min.			
97.5	18:31	7 min.	Increment 150%		
	18:51	20 min.			
113.8	18:55	4 min.	175% service load		
	18:57	2 min.			
	19:03	8 min.			
	19:10	15 min.			
	19:25	30 min.			

SAMPLE OF COMPRESSION PILE TEST SCHEDULE

<u>Load (Tons)</u>	<u>Elapsed Time</u>	<u>Incremental Time</u>	<u>Remarks</u>		
130.0	19:55	60 min.	200% service load. Continue to hold load for 24 hours. If settlement is greater than .01 load for 48 hours. inch/hour hold		
	20:55	120 min.			
	20:59	4 min.			
	21:01	2 min.			
	21:07	8 min.			
	21:14	15 min.			
	21:29	30 min.			
	21:59	60 min.			
	22:59	120 min.			
	23:59	3 hr.			
97.5	0:59	4 hr.	Decrement 150%		
	1:59	5 hr.			
	19:59	23 hr.			
	20:59	24 hr.			
	21:06	7 min.			
	21:26	20 min.			
	21:46	40 min.			
	22:06	60 min.			
	65.0	22:13		7 min.	Decrement 100%
		22:33		20 min.	
22:53		40 min.			
23:13		60 min.			
32.5	23:20	7 min.	Decrement 50%		
	23:40	20 min.			
	0:00	40 min.			
	0:20	60 min.			
0	0:27	7 min.	Decrement 0%		
	0:47	20 min.			
	1:07	40 min.			
	1:27	60 min.			
32.5	1:34	7 min.	Increment 50%		
	1:54	20 min.			
65.0	2:01	7 min.	Increment 100%		

SAMPLE OF COMPRESSION PILE TEST SCHEDULE

<u>Load (Tons)</u>	<u>Elapsed Time</u>	<u>Incremental Time</u>	<u>Remarks</u>
	2:21	20 min.	
97.5	2:28	7 min.	Increment 150%
	2:48	20 min.	
130.0	2:55	7 min.	Increment 200%
	3:15	20 min.	
136.5	3:17	2 min.	Increment 210%
	3:37	20 min.	
143.0	3:39	2 min.	Increment 220%
	3:59	20 min.	
149.5	4:01	2 min.	Increment 230%
	4:21	20 min.	
156.0	4:23	2 min.	Increment 240%
	4:43	20 min.	
162.5	4:45	2 min.	Increment 250%
	5:05	20 min.	
169.0	5:07	2 min.	Increment 260%
	5:27	20 min.	
175.5	5:29	2 min.	Increment 270%
	5:49	20 min.	
182.0	5:51	2 min.	Increment 280%
	6:11	20 min.	
188.5	6:13	2 min.	Increment 290%
	6:33	20 min.	
195.0	6:35	2 min.	Increment 300%
	6:55	20 min.	
	7:15	40 min.	
	7:35	60 min.	
	7:55	80 min.	
	8:15	100 min.	
	8:35	120 min.	
145.3	8:45	10 min.	
	9:05	20 min.	
97.5	9:15	10 min.	
	9:35	20 min.	
48.8	9:45	10 min.	
	10:05	20 min.	
0	10:15	10 min.	
	10:35	20 min.	

END OF TEST

Loading and unloading time increments have been rounded upward to the nearest whole minute. Service load = 65.0 tons (SAMPLE).

SAMPLE OF TENSION PILE TEST SCHEDULE

<u>Load (Tons)</u>	<u>Elapsed Time</u>	<u>Incremental Time</u>	<u>Remarks</u>
0	0:00	0.0 min.	
3.2	0:02	2 min.	25% service load
	0:04	2 min.	
	0:10	8 min.	
	0:17	15 min.	
	0:32	30 min.	
	1:02	60 min.	
6.4	2:02	120 min.	50% service load
	2:04	2 min.	
	2:06	2 min.	
	2:12	8 min.	
	2:19	15 min.	
	2:34	30 min.	
3.2	3:04	60 min.	Decrement 25%
	4:04	120 min.	
	4:06	2 min.	
0	4:26	20 min.	Decrement 0%
	4:28	2 min.	
6.4	4:48	20 min.	Increment 50%
	4:52	4 min.	
9.6	5:12	20 min.	75% service load
	5:14	2 min.	
	5:16	2 min.	
	5:22	8 min.	
	5:29	15 min.	
	5:44	30 min.	
12.75	6:14	60 min.	100% service load
	7:14	120 min.	
	7:16	2 min.	
	7:18	2 min.	
	7:24	8 min.	
	7:31	15 min.	
9.6	7:46	30 min.	Decrement 75%
	8:16	60 min.	
	9:16	120 min.	
6.4	9:18	2 min.	Decrement 50%
	9:38	20 min.	
0	9:40	2 min.	Decrement 0%
	10:00	20 min.	
6.4	10:04	4 min.	Increment 50%
	10:24	20 min.	
	10:28	4 min.	

12.75

10:48
10:52

20 min.
4 min.

Increment 100%

SAMPLE OF TENSION PILE TEST SCHEDULE

<u>Load (Tons)</u>	<u>Elapsed Time</u>	<u>Incremental Time</u>	<u>Remarks</u>
15.9	11:12	20 min.	125% service load
	11:14	2 min.	
	11:16	2 min.	
	11:22	8 min.	
	11:29	15 min.	
	11:44	30 min.	
	12:14	60 min.	
19.1	13:14	120 min.	150% service load
	13:16	2 min.	
	13:18	2 min.	
	13:24	8 min.	
	13:31	15 min.	
	13:46	30 min.	
	14:16	60 min.	
15.9	15:16	120 min.	Decrement 125%
	15:18	2 min.	
12.75	15:38	20 min.	Decrement 100%
	15:40	2 min.	
6.4	16:00	20 min.	Decrement 50%
	16:04	4 min.	
0	16:24	20 min.	Decrement 0%
	16:28	4 min.	
6.4	16:48	20 min.	Increment 50%
	16:52	4 min.	
12.75	17:12	20 min.	Increment 100%
	17:16	4 min.	
19.1	17:36	20 min.	Increment 150%
	17:40	4 min.	
22.3	18:00	20 min.	175% service load
	18:02	2 min.	
	18:04	2 min.	
	18:10	8 min.	
	18:17	15 min.	
	18:32	30 min.	
	19:02	60 min.	
25.5	20:02	120 min.	200% service load Continue to hold load for 24 hrs. If settlement is greater than .01 in/hr, hold
	20:04	2 min.	
	20:06	2 min.	
	20:12	8 min.	
	20:19	15 min.	
	20:34	30 min.	
	21:04	60 min.	

22:04
23:40
0:04

120 min.
3 hr.
4 hr.

load for 48 hrs.

SAMPLE OF TENSION PILE TEST SCHEDULE

<u>Load (Tons)</u>	<u>Elapsed Time</u>	<u>Incremental Time</u>	<u>Remarks</u>
	1:04	5 hr.	
	19:04	23 hr.	
	20:04	24 hr.	
19.1	20:08	4 min.	Decrement 150%
	20:28	20 min.	
	20:48	40 min.	
	21:08	60 min.	
12.75	21:12	4 min.	Decrement 100%
	21:32	20 min.	
	21:52	40 min.	
	22:12	60 min.	
6.4	22:16	4 min.	Decrement 50%
	22:36	20 min.	
	22:56	40 min.	
	23:16	60 min.	
0	23:20	4 min.	Decrement 0%
	23:40	20 min.	
	0:00	40 min.	
	0:20		
	0:24	4 min.	Increment 50%
	0:44	20 min.	
12.75	0:48	4 min.	Increment 100%
	1:08	20 min.	
19.1	1:12	4 min.	Increment 150%
	1:32	20 min.	
25.5	1:36	4 min.	Increment 200%
	1:56	20 min.	
26.8	1:57	1 min.	Increment 200%
	2:17	20 min.	
28.0	2:18	1 min.	Increment 220%
	2:38	20 min.	
29.3	2:39	1 min.	Increment 230%
	2:59	20 min.	
30.6	3:00	1 min.	Increment 240%
	3:20	20 min.	
31.9	3:21	1 min.	Increment 250%
	3:41	20 min.	
33.2	3:42	1 min.	Increment 260%
	4:02	20 min.	
34.4	4:03	1 min.	Increment 270%
	4:23	20 min.	

SAMPLE OF TENSION PILE TEST SCHEDULE

<u>Load (Tons)</u>	<u>Elapsed Time</u>	<u>Incremental Time</u>	<u>Remarks</u>
35.7	4:24	1 min.	Increment 280%
	4:44	20 min.	
37.0	4:45	1 min.	Increment 290%
	5:05	20 min.	
38.2	5:06	1 min.	Increment 300%
	5:26	20 min.	
	5:46	40 min.	
	6:06	60 min.	
	6:26	80 min.	
	6:46	100 min.	
	7:06	120 min.	
	7:11	5 min.	
28.7	7:31	20 min.	
19.1	7:36	5 min.	
	7:56	20 min.	
9.6	8:01	5 min.	
	8:21	20 min.	
0	8:26	5 min.	
	8:46	20 min.	

END OF TEST

Loading and unloading time increments have been rounded upward to the nearest whole minute. Service load - 12.75 tons (SAMPLE)

3.3.6 Additional Load Cycles

Any load cycles not accomplished in accordance with these specifications shall be redone at the direction of the Contracting Officer.

3.4 DYNAMIC TEST PILE LOADING

3.4.1 Scope

The Contractor shall secure the services of a qualified Dynamic Testing Consultant as stipulated in 1.5.1 and 3.4.3 Dynamic testing shall be performed on the specified number of test piles during the initial driving. The test piles shall be tested for their full length. The segmented steel H test pile shall be tested for the last thirty (30) feet or last pile segment, whichever is greater. The steel pipe pile test pile shall be tested for the last thirty (30) feet. The dynamic testing shall include attaching at least two (2) strain transducers and two (2) accelerometers to the test pile near the pile head

during initial driving. Determination of the driving stresses pile integrity, and hammer system performance during the initial driving shall be made by the Dynamic Testing Consultant. Restrike dynamic testing shall be performed to evaluate the static pile capacity. CAPWAP computer analyses shall be performed to verify soil damping coefficients, quake values and capacity distribution along the pile shaft and at the pile toe.

3.4.1.1 Restrike Test

A minimum time period of twenty-one (21) days shall be allowed to elapse between initial driving of the piles and restrike dynamic pile testing. If the results of the dynamic test on the pile are not acceptable, the Contracting Office will direct the Contractor to perform an additional test. There will be no payment nor additional time granted for delays incurred between initial driving of test piles , dynamic testing and initiation of static pile tests.

3.4.2 General Procedures

The Contractor shall provide and be responsible for furnishing all necessary apparatus, measuring equipment, and personnel to install, test, and extract the test piles described within this specification in its entirety. The recording and reporting of all data shall be the responsibility of the Contractor. However, the Contracting Officer's representative shall have free access to the pile test data at any time. A Government representative (engineer) will be present during the load tests. The Contractor shall provide the Contracting Officer seventy-two (72) hours notice prior to initiating each pile load test in order that arrangements may be made to have a Government representative present during the test. The reduction and analysis of the dynamic test data shall be made by the Dynamic Testing Consultant. Interpretation of the test data will be accomplished by Government personnel after completion of each pile test. Additional pile tests may be required as determined by the Contracting Officer.

3.4.3 Equipment and Personnel

The dynamic monitoring shall be performed using a Pile Driving Analyzer conforming to the requirements of ASTM D 4945. All equipment necessary for the dynamic monitoring such as gages, cables, apparatus for recording, reducing and displaying data shall be furnished by the Dynamic Testing Consultant. An engineer with a minimum ten (10) years of experience or who has achieved Basic Level or better on the Foundation QA Examination for Providers of PDA Testing Services shall be in charge of Pile Driving Analyzer (PDA) operation and of result interpretation, either on site or by remote connection (PAL-R).

To prepare the pile for gauge attachment, either a generator or a DC drill of sufficient power shall be available. A hammer drill is required for preparation of concrete piles. A minimum of two (2) strain transducers and two (2) accelerometers shall be

securely attached to the pile during the dynamic testing. These calibrated transducers shall be capable of independently measuring strain and acceleration versus time at a specific location along the pile axis during the impact event.

3.4.4 Apparatus for Applying Pile Load

The driving system for the restrike dynamic pile test shall be capable of mobilizing the frictional and end bearing components of the piles' capacity for evaluation of the design pile capacities. The restrike driving sequence shall be performed with a warmed up hammer and shall consist of striking the piles for fifty (50) blows or until the pile penetrates an additional three inches, whichever occurs first. In the event the pile movement is less than ¼ inch during the restrike at satisfactory hammer energy output, the restrike may be terminated after twenty (20) blows.

3.4.5 Procedure

Prior to lifting the pile to be dynamically tested, the Contractor shall provide a minimum of three (3) feet of clear access to 180 degree opposite faces of the pile for pile preparation. The Dynamic Testing Consultant or the Contractor's personnel shall then drill and prepare holes for gage attachment. A minimum of two strain transducers and two accelerometers shall be securely attached to the pile during the dynamic testing. The Contractor's personnel shall attach the gages to the pile after the pile has been driven to the penetration depths identified in 3.4.1. The Contractor shall perform the internal calibration check and take the dynamic measurements for the impacts together with routine observation of penetration resistance. The force and velocity signals from the pile driving analyzer shall be calibrated before dynamic testing begins. Driving of the test pile shall then continue using the installation procedures outlined in these specifications.

When the level of the gages is within one (1) foot of any obstruction endangering the survival of sensors or cables, driving shall be halted to remove the gages from the pile. If additional driving is required, the obstruction shall be removed or the pile shall be spliced and the gages shall be reattached to the head of the next pile segment prior to the resumption of driving.

The impact force applied during the dynamic testing shall be applied axially and concentrically with the pile. The Dynamic Testing Consultant shall take measurements in accordance with ASTM D 4945 including but not limited to recording the number of impacts for a specific penetration and display computations based on the force and velocity records. Data quality checks shall be made during the dynamic tests

After the test piles are initially driven, the Contractor shall allow a time period of not less than twenty-one (21) days to elapse before performing the restrike dynamic pile tests.

3.4.6 Modifications to Driving Criteria

Adjustments to the preliminary driving criteria may be made by the Engineer based upon the dynamic testing results. The Contracting Officer may request additional piles to be dynamically tested if the hammer and/or driving system is replaced or modified, the pile installation procedures are modified, the pile capacity requirements are changed, unusual blow counts or penetrations are observed on any other piling behavior differ from normal installation.

3.4.7 Dynamic Testing Reports

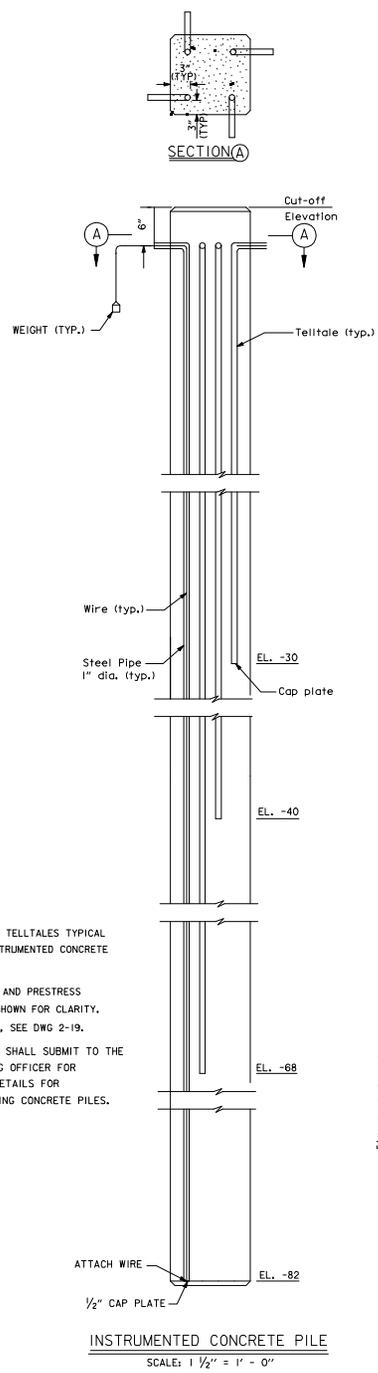
The Dynamic Testing Consultant shall prepare a written report of the test pile program. This report shall include a discussion of the pile capacity obtained from the dynamic and static testing. The report shall also discuss hammer and driving system performance, driving stress levels, and pile integrity.

The Contractor shall perform Case Pile Wave Analysis Program (CAPWAP) analyses on the dynamic pile testing data obtained from the beginning of restrike on all four test piles subjected to restrikes. CAPWAP analyses shall be performed by a registered engineer qualified to perform these services. The Contractor shall report the results of the calibration of the soil model, as well as present a sensitivity analysis of a range of CAPWAP results. The Contracting Officer may request additional analyses at selected pile penetration depths or using alternate soil damping or quake values.

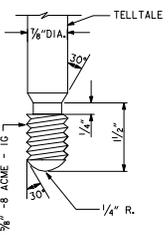
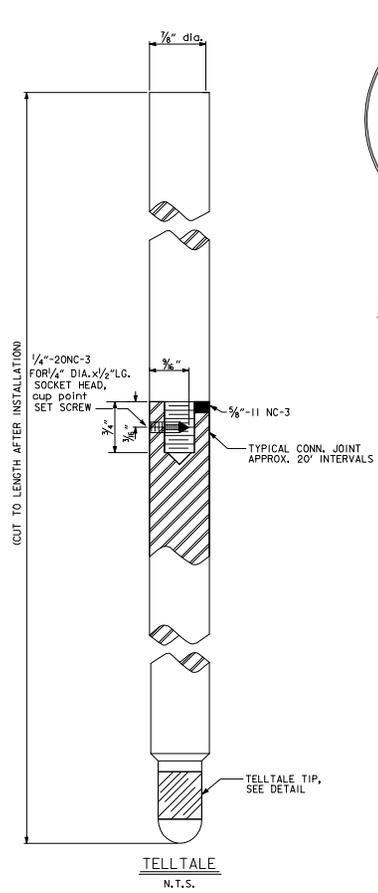
For a blow count based driving criterion, the Dynamic Testing Consultant shall perform a refined wave equation analysis or analyses based upon the variations in the subsurface conditions and/or drive system performance observed in the test pile program results to evaluate requirements for the battered permanent piles.

3.5 REMOVAL OF PILES

After the static and dynamic pile tests are completed and accepted at each location, all support piles, and test piles shall be pulled and removed from the test site or cut off a minimum of three (3) feet below existing grade. The remaining holes in the ground shall be filled to within two (2) feet of the ground surface with the cement-bentonite-sand slurry. The slurry shall consist of one (1) part cement, two (2) parts bentonite, and six (6) parts sand mixed with enough water to produce a slurry viscous enough to thoroughly fill the voids. The upper two (2) feet of the hole shall be filled with earth.

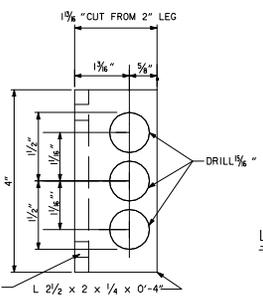


- NOTES:
1. LOCATION OF TELLTALES TYPICAL FOR ALL INSTRUMENTED CONCRETE PILES.
 2. REINFORCING AND PRESTRESS STEEL NOT SHOWN FOR CLARITY. FOR DETAILS, SEE DWG 2-19.
 3. CONTRACTOR SHALL SUBMIT TO THE CONTRACTING OFFICER FOR APPROVAL DETAILS FOR INSTRUMENTING CONCRETE PILES.

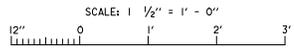
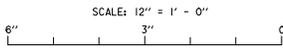
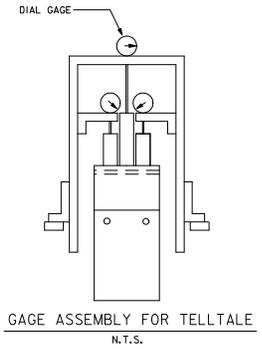
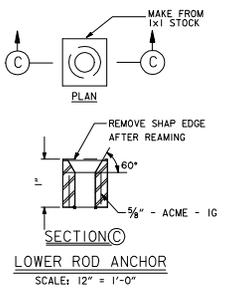
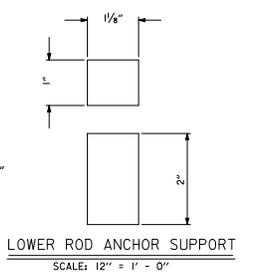
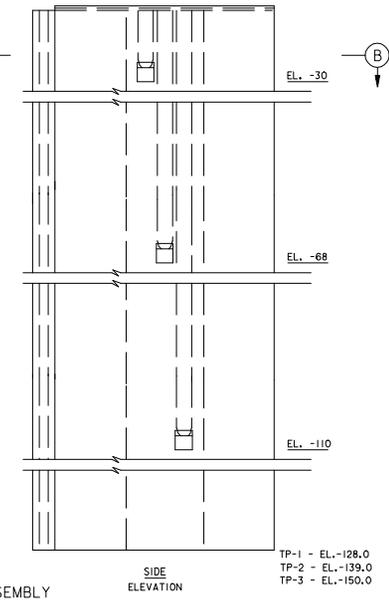
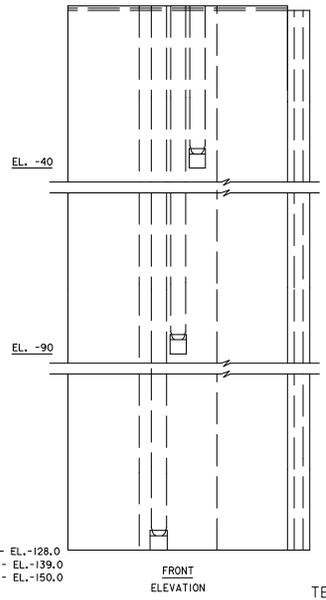
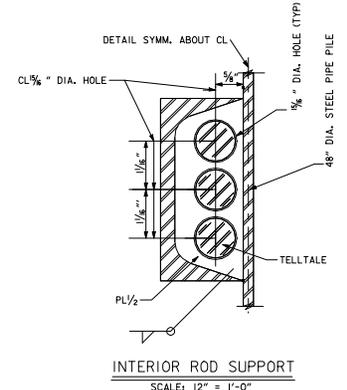
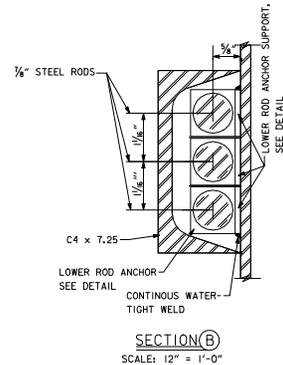
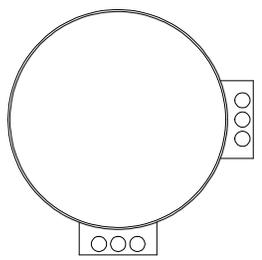


TELLTALE TIP

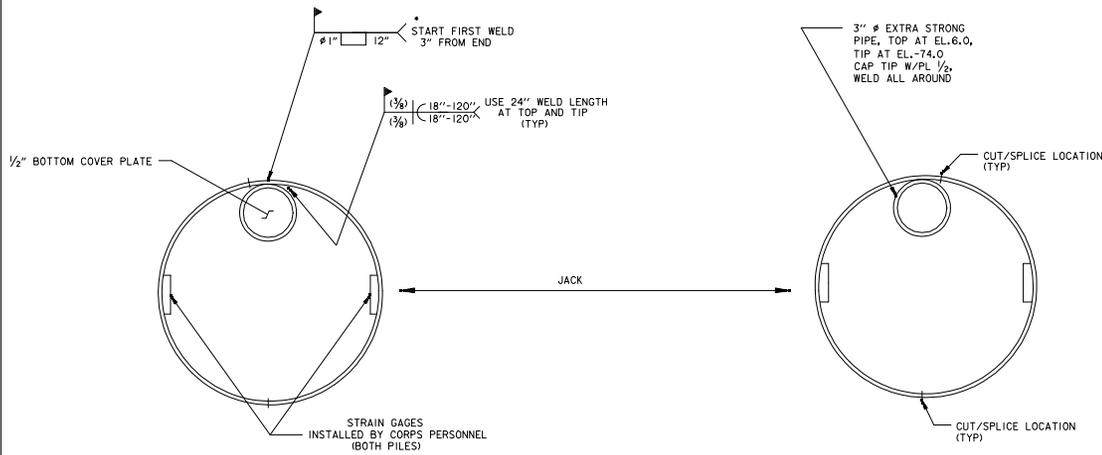
SCALE: 12" = 1' - 0"



DRILL 5/16" HOLE FOR 1/4" DIA. x 3/8" LG. CAP SCREW



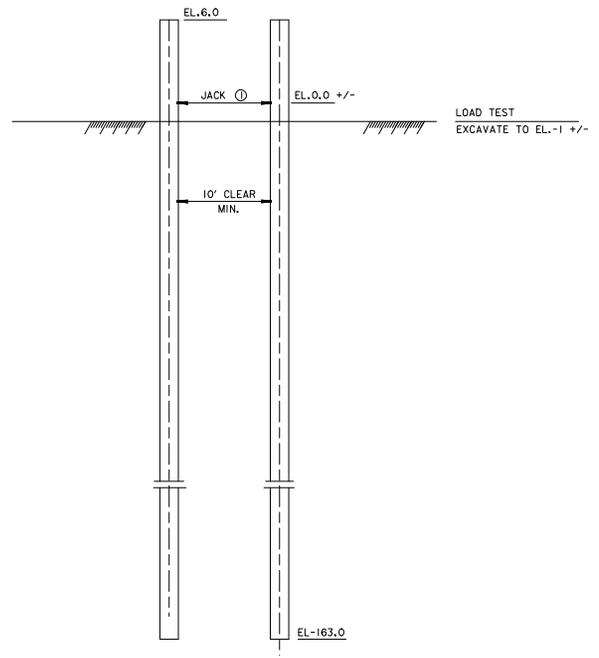
ALTERNATIVE WELD TO DOUBLE FLARE BEVEL GROOVE WELD



TP-5 AND TP-6 INSTRUMENTATION

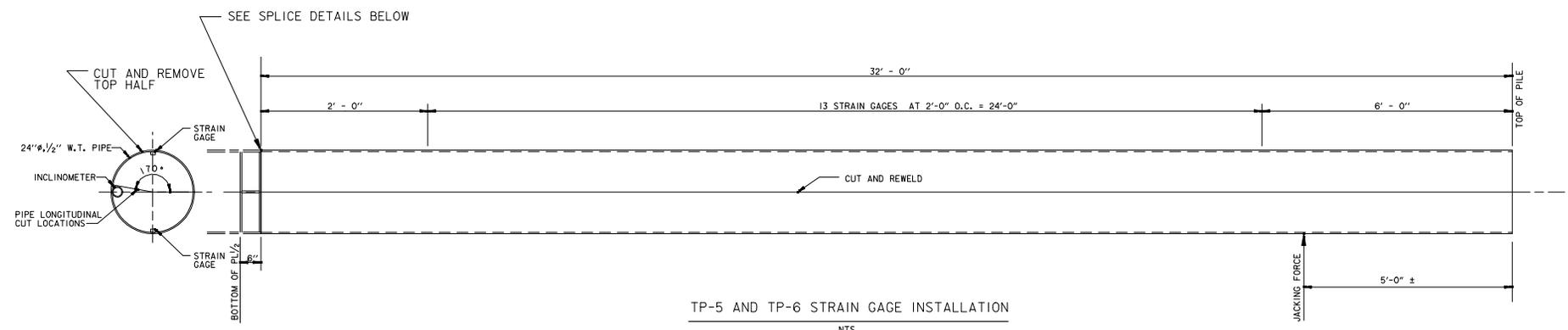
NTS

PLANS REVISED
6 DECEMBER 2004



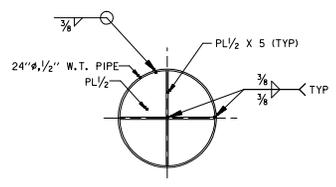
TP-5 AND TP-6 LATERAL LOAD TEST

NTS



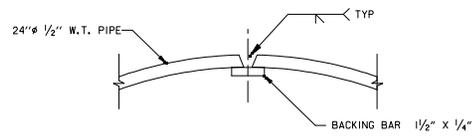
TP-5 AND TP-6 STRAIN GAGE INSTALLATION

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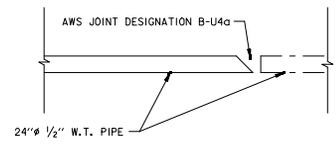
PLUG DETAIL
TP-5 AND TP-6

NTS



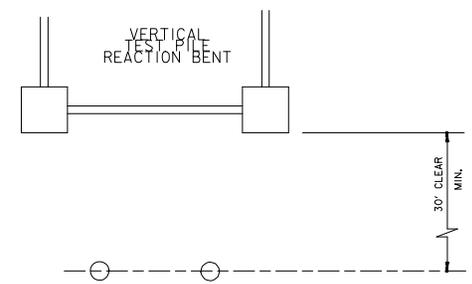
LONGITUDINAL SPLICE DETAIL
TP-5 AND TP-6

NTS



TRANSVERSE PILE SPLICE DETAIL
TP-5 AND TP-6

NTS

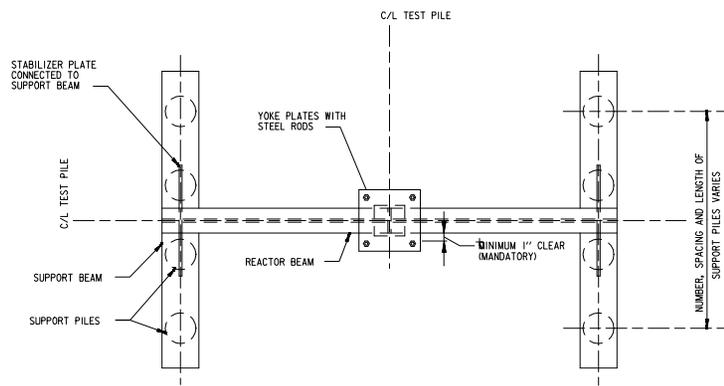


TP-5 AND TP-6 TEST PILES - PLAN

NTS

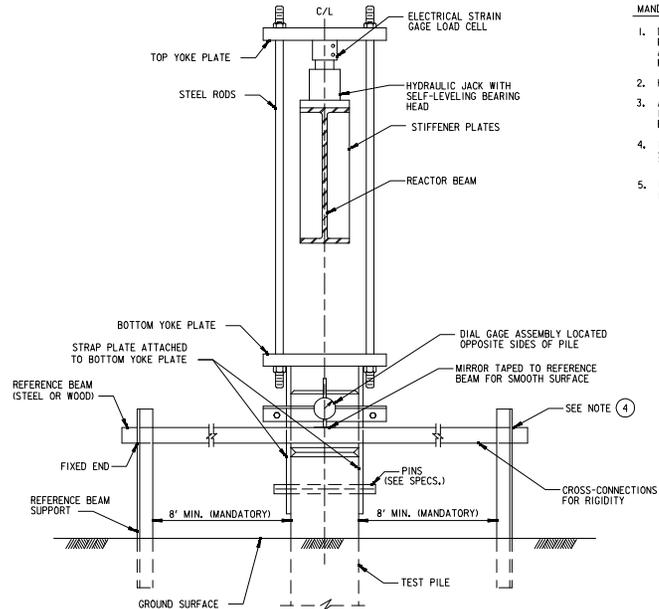
STRAIN GAGE INSTALLATION NOTES:

1. A 32 FT. LENGTH OF TEST PILE WILL BE CUT AND THE TOP HALF REMOVED. STRAIN GAGES WILL BE INSTALLED BY CORPS PERSONNEL, ONCE COMPLETE, PIPE HALVES WILL BE RECONNECTED WITH FULL PENETRATION WELDS.
2. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH AWS D.11. WELDING PROCEDURE SHALL BE SMAW, USING E7018 FILLER METAL. THE CONTRACTOR SHALL PREHEAT THE HAZ AT FULL PENETRATION WELDS WITH A ROSEBUD TO 150°F
3. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO PROTECT THE STRAIN GAGES AND WIRING.



PLAN

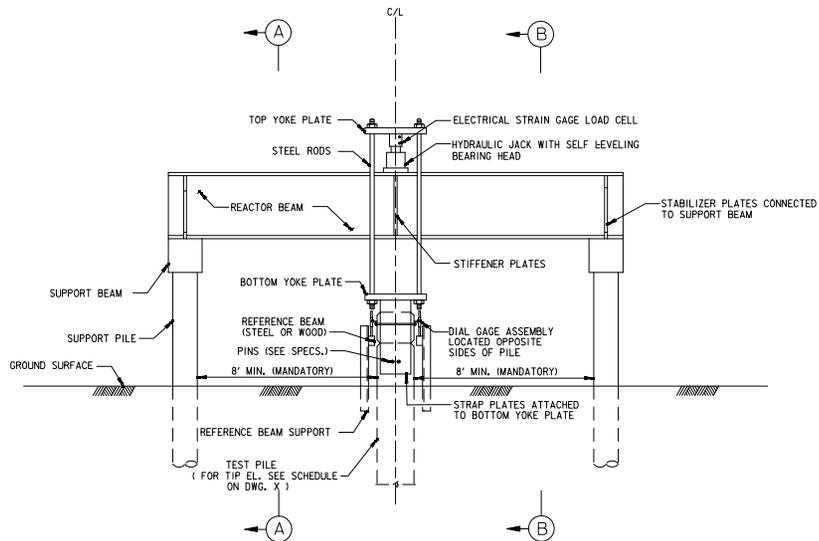
MANDATORY LOADING FRAME NOTE:
 1. DESIGN OF THE LOADING FRAME IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL.



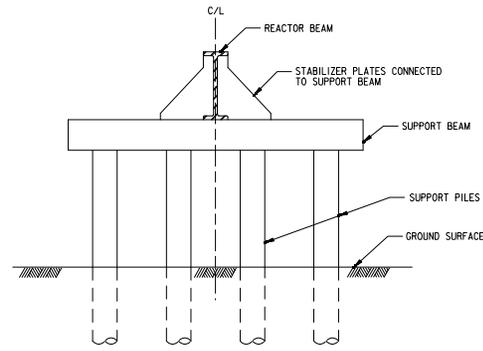
SECTION (B)
 TEST APPARATUS
 SCALE: 1" = 1'- 0"

MANDATORY TEST APPARATUS NOTES:

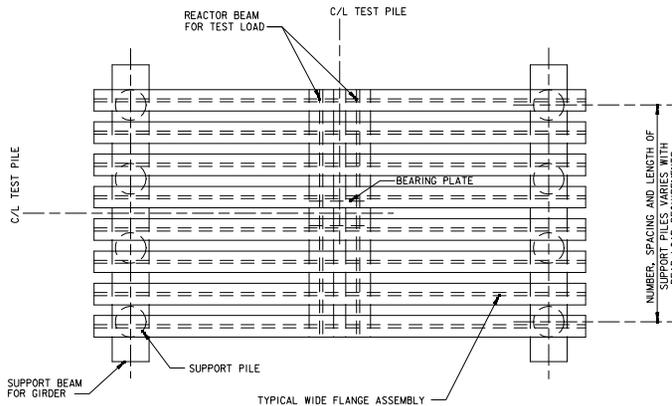
1. DIAL GAGE SHOULD BE ATTACHED TO THE PILE WITH THE STEM RESTING ON THE REFERENCE BEAM IN THE COMPRESSED POSITION AND ON THAT SIDE OF THE REFERENCE BEAM WHERE THE MOVEMENT WILL BE AWAY FROM THE BEAM.
2. READINGS ON THE OPPOSITE SIDES OF THE PILE ARE NECESSARY.
3. A TARPULIN OF MINIMUM DIMENSION 12' X 12' SHALL BE INSTALLED BY THE CONTRACTOR TO PROTECT THE MEASURING EQUIPMENT FROM THE DIRECT EFFECTS OF THE WEATHER.
4. IF STEEL REFERENCE BEAMS ARE USED, ONE END OF EACH BEAM SHALL BE FREE TO MOVE AS THE LENGTH OF BEAMS CHANGE WITH TEMPERATURE VARIATIONS.
5. DESIGN OF THE TEST APPARATUS PILE SET-UP IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL.



ELEVATION
 LOADING FRAME
 SCALE: 1/2" = 1'- 0"



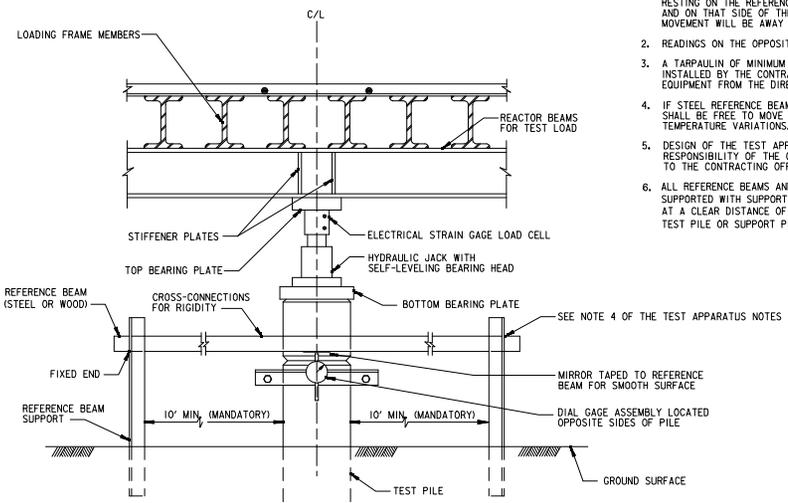
SECTION (A)
 SCALE: 1/2" = 1'- 0"



PLAN

MANDATORY LOADING FRAME NOTES:

1. LOADING FRAME SHOWN WITHOUT DEAD LOAD.
2. CONTRACTOR TO PROVIDE PILE LAYOUT FOR EACH PARTICULAR DEAD LOAD TEST.
3. SECURE DEAD WEIGHT LOAD TO LOADING FRAME WITH CHAINS AND BINDERS.
4. DESIGN OF THE LOADING FRAME IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL.



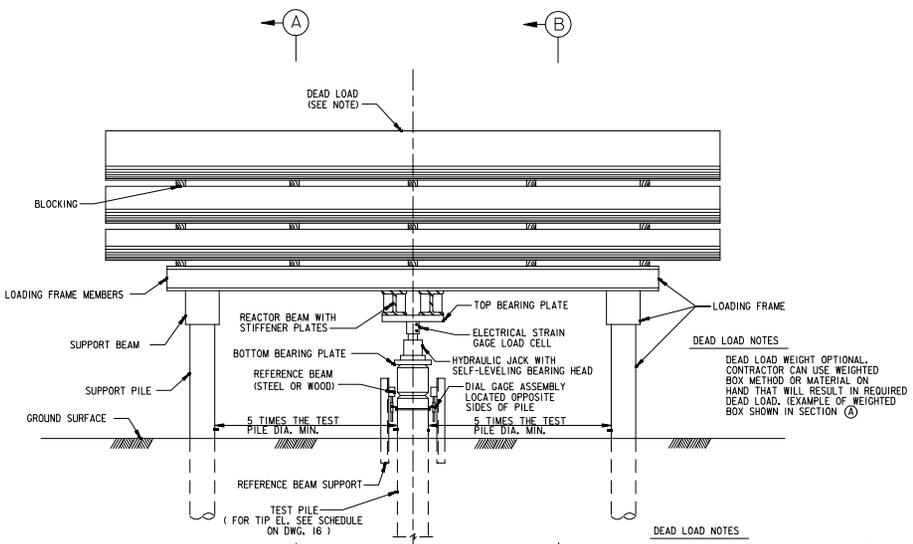
SECTION (B)
TEST APPARATUS
SCALE: 1" = 1'- 0"

GENERAL NOTE:

1. THE CONTRACTOR HAS THE OPTION OF USING REACTION PILES IN LIEU OF THE LOADING FRAME. (SEE SPECIFICATIONS)
2. REACTION PILES: THE CONTRACTOR HAS THE OPTION OF USING REACTION PILES IN LIEU OF THE LOADING FRAME WITH DEAD LOAD. HOWEVER, THE REACTION PILES SHALL HAVE A MIN. CLEAR DISTANCE FROM THE TEST PILE AT LEAST FIVE TIMES THE MAXIMUM DIAMETER OF THE LARGEST REACTION PILES OR TEST PILE. AS AN EXAMPLE, CLEAR DISTANCE BASE ON 4 FOOT DIAMETER TEST PILE IS 20 FEET.
3. DESIGN OF THE LOADING FRAME, TEST APPARATUS AND REACTION PILE SET-UP, IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE SUBMITTED FOR APPROVAL BY THE CONTRACTING OFFICER.

MANDATORY TEST APPARATUS NOTES:

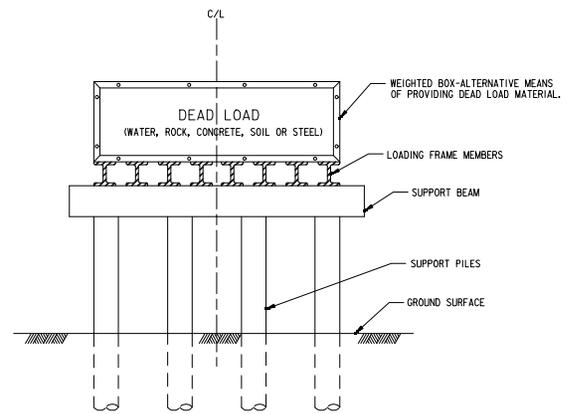
1. DIAL GAGE SHOULD BE ATTACHED TO THE PILE WITH THE STEM RESTING ON THE REFERENCE BEAM IN THE COMPRESSED POSITION AND ON THAT SIDE OF THE REFERENCE BEAM WHERE THE MOVEMENT WILL BE AWAY FROM THE BEAM.
2. READINGS ON THE OPPOSITE SIDES OF THE PILE ARE NECESSARY.
3. A TARPAILIN OF MINIMUM DIMENSION 12' X 12' SHALL BE INSTALLED BY THE CONTRACTOR TO PROTECT THE MEASURING EQUIPMENT FROM THE DIRECT EFFECTS OF THE WEATHER.
4. IF STEEL REFERENCE BEAMS ARE USED, ONE END OF EACH BEAM SHALL BE FREE TO MOVE AS THE LENGTH OF BEAMS CHANGE WITH TEMPERATURE VARIATIONS.
5. DESIGN OF THE TEST APPARATUS PILE SET-UP IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL.
6. ALL REFERENCE BEAMS AND WIRES SHALL BE INDEPENDENTLY SUPPORTED WITH SUPPORTS FIRMLY EMBEDDED IN THE GROUND AT A CLEAR DISTANCE OF NOT LESS THAN 10 FEET FROM THE TEST PILE OR SUPPORT PILES.



ELEVATION
LOADING FRAME
SCALE: 1/2" = 1'- 0"

DEAD LOAD NOTES

1. DEAD LOAD WEIGHT OPTIONAL. CONTRACTOR CAN USE WEIGHTED BOX METHOD OR MATERIAL ON HAND THAT WILL RESULT IN REQUIRED DEAD LOAD. (EXAMPLE OF WEIGHTED BOX SHOWN IN SECTION (C))
2. DEAD LOAD OPTION 1. THE BOX OR PLATFORMS SHALL BE LOADED WITH ANY SUITABLE MATERIAL SUCH AS SOIL, ROCK, CONCRETE, STEEL, OR WATER FILLED TANKS WITH A TOTAL WEIGHT (INCLUDING THAT OF THE TEST BEAMS) AND BOX OR PLATFORM AT LEAST 10 PERCENT GREATER THAN THE ANTICIPATED MAXIMUM TEST LOAD (310% SERVICE LOAD). THE ANTICIPATED MAXIMUM TEST LOAD IS THREE TIMES THE SERVICE LOAD. MIN. CLEAR DISTANCE TO SUPPORT PILE IS 10 FEET.
3. DEAD LOAD OPTION 2. THE CONTRACTOR MAY LOAD THE BOX OR PLATFORM WITH ANY SUITABLE MATERIAL AS DESCRIBED ABOVE TO A TOTAL LOAD (INCLUDING THAT OF THE TEST BEAMS) AND BOX OR PLATFORM TO AT LEAST 210% THE SERVICE LOAD. THE CONTRACTOR MAY USE HIS SUPPORT PILES/ REACTION PILES TO OBTAIN 310 PERCENT THE SERVICE LOAD FOR THE PILE TESTS. MIN. CLEAR DISTANCE TO SUPPORT PILES IS 10 FEET.
4. DEAD LOAD OPTION 3. THE CONTRACTOR MAY USE THE REACTOR PILES WITH FRAMING, IN COMBINATION WITH A LESSEN DEAD LOAD THEN 210%. HOWEVER, THE REACTOR PILES SHALL HAVE A MINIMUM CLEAR DISTANCE FROM THE TEST PILE OF AT LEAST FIVE TIMES THE MAXIMUM DIAMETER OF THE LARGEST REACTOR OR TEST PILE. SEE GENERAL NOTE 1.



SECTION (A)
SCALE: 1/2" = 1'- 0"

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SECTION 02365 - PRESTRESSED CONCRETE PILES

PART 1 GENERAL

1.1 SCOPE

The work covered by this Section consists of furnishing all plant, equipment, labor, and materials, except materials specified to be furnished by the Government, and performing all operations in connection with the manufacture, and installation of prestressed concrete piles. Pile tests shall be in accordance with the provisions of Section 02355, "PILE LOAD TEST".

1.2 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.

ACI INTERNATIONAL (ACI)

SP-66 (2004) ACI Detailing Manual

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A 82 (2005a) Steel Wire, Plain, for Concrete Reinforcement

A 416 (2006) Steel Strand, Uncoated, Seven-Wire for Prestressed Concrete

A 615 (2006a) Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

C 33 (2003) Concrete Aggregates

C 88 (2005) Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

C 150 (2005) Portland Cement

C 260 (2001) Air-Entraining Admixtures for Concrete

C 494 (2005a) Chemical Admixtures for Concrete

C 595 (2005) Blended Hydraulic Cements

C 618 (2005) Coal Fly Ash and Raw or Calcined Natural

Pozzolan for Use in Concrete

C 666 (2003) Resistance of Concrete to Rapid Freezing and Thawing

C 1017 (2003) Chemical Admixtures for Use in Producing Flowing Concrete

AMERICAN WELDING SOCIETY, INC. (AWS)

D1.4/D1.4M (2005) Structural Welding Code - Reinforcing Steel

CORPS OF ENGINEERS (COE)

CRD-C 400 (1963) Water for Use in Mixing or Curing Concrete

PRESTRESSED CONCRETE INSTITUTE (PCI)

MNL 116 (1999) Manual for Quality Control for Plants and Production of Precast Prestressed Concrete Products

STD 112 (1984) Standard Prestressed Concrete Piles Square, Octagonal and Cylinder

LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES (LSSRB) 2000 EDITION, STATE OF LOUISIANA, DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT (LDOTD)

1003.02* Aggregates for Portland Cement Concrete and Mortar
*Including Supplemental Specifications dated November 2005

MISSISSIPPI STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (MSSRBC) 1990 EDITION, MISSISSIPPI STATE HIGHWAY DEPARTMENT (MSHD)

703.02 Fine Aggregate for Portland Cement Concrete

703.03 Coarse Aggregate for Portland Cement Concrete

1.3 RESERVED

1.4 BIDDING SCHEDULE LINE ITEMS

1.4.1 Driven Piles

1.4.1.1 Furnishing Piles

Bidding Schedule Line Items for "Supply Piling, Concrete Precast, Prestressed, 12 inch", "Supply Piling, Concrete Precast, Prestressed, 14 inch", and "Supply Piling, Concrete Precast, Prestressed, 16 inch" shall constitute full compensation for furnishing all plant, labor, equipment, material, fabrication, transporting, unloading, and all other costs incidental thereto.

1.4.1.2 Driving Piles

Bidding Schedule Line Items for "Drive Piling, Concrete Precast, Prestressed, 12 inch", "Drive Piling, Concrete Precast, Prestressed, 14 inch", and "Drive Piling, Concrete Precast, Prestressed, 16 inch" shall constitute full compensation for furnishing all plant, labor, equipment, material, and all other costs incidental thereto, such as backdriving uplifted piles, and cutting off piles.

1.4.2 Jet Tube and Port

Bidding Schedule Line Item for "Jet Tube and Port Casting" includes all plant, labor, material and equipment including incidentals to properly secure the tubing along the interior length of precast prestressed concrete pile during the concrete casting.

1.4.3 Tension Pile Connection

Bidding Schedule Line Items for "12-IN PPC Tension Pile Connection", "14-IN PPC Tension Pile Connection", and "16-IN PPC Tension Pile Connection" shall constitute full compensation for furnishing all additional plant, labor, equipment, material, and other costs required to cast the tension pile connection and remove the concrete driving head to expose the tension reinforcement on the PPC Piles.

1.5 SUBMITTALS

The following shall be submitted in accordance with Section 01330, "SUBMITTAL PROCEDURES".

1.5.1 Data

1.5.1.1 Pile Driving Equipment

Descriptions of pile driving equipment, including hammers, driving helmets, cap blocks, pile cushions, leads, and extractors, shall be submitted for approval at least thirty (30) days prior to commencement of work. The following information shall be submitted for each proposed hammer:

- 1). Make and model
- 2). Ram weight (pounds)
- 3). Anvil weight (pounds)
- 4). Weight of the moving parts of the hammer (pounds)
- 5). Rated stroke (inches)
- 6). Rated energy range (foot-pounds)
- 7). Rated speed (blows per minute)
- 8). Steam or air pressure, hammer, and boiler and/or compressor (pounds per square inch)
- 9). Power pack description.
- 10). Pile driving helmet, make and weight (in pounds)
- 11). Pile cushion material, type, proposed thickness, modulus of elasticity, and coefficient of restitution
- 12). The make-up of the proposed cap block, including material type, dimensions, modulus of elasticity, and coefficient of restitution.
- 13). Leads
- 14). Extractors
- 15). Jetting equipment, if applicable
- 16). Preboring equipment, if applicable

1.5.1.2 Cutting of Piles

The proposed method for cutting piles for desired length and for removal of driving heads shall be submitted for approval thirty (30) days prior to the start of pile driving.

1.5.1.3 Delivery, Storage, and Handling

Delivery, storage, and handling plans for piles shall be submitted for approval at least thirty (30) days prior to delivery of piles to the jobsite.

1.5.1.4 Concrete Mix

Concrete mixture proportions shall be submitted prior to casting piles.

1.5.1.5 Curing of Piles

Methods and details for curing piles shall be submitted for approval prior to casting piles.

1.5.2 Drawings

1.5.2.1 Prestressed Concrete Piles

Detailed drawings of piles shall be submitted for approval at least thirty (30) days prior to commencement of work. Drawings shall show pile dimensions and fabrication details, including forms, reinforcement, collars, shoes, splices, build-ups, embedded or attached lifting devices, pick-up and support points. Typical pile drawing is attached at the end of this Section.

1.5.2.2 Pile Placement and Tolerances

Pile placement plans, as specified in paragraph 3.2.2, shall be submitted for approval at least thirty (30) days prior to delivery of piles to the jobsite.

1.5.3 Statements

1.5.3.1 Voids

Statements of materials and methods for forming voids shall be submitted for approval.

1.5.4 Certificates

1.5.4.1 Certificates of Compliance

Certificates of compliance for admixtures, aggregates, cement, pozzolan, reinforcing steel, and prestressing steel shall be submitted prior to commencing fabrication of piles. Certificates for admixtures, aggregates, cement, and pozzolan shall indicate conformance with specifications and shall be submitted along with concrete mix proportions. Manufacturer's literature indicating conformance may be submitted for admixtures. Aggregate source and gradation information shall be submitted for aggregates.

1.5.5 Records

1.5.5.1 Driving Record Forms

The proposed form for recording pile driving records shall be submitted for approval thirty (30) days prior to commencement of work. Requirements are specified in paragraph 3.2.3.1

1.5.5.2 Driving Records

Original pile driving records shall be submitted daily.

1.6 QUALIFICATIONS

The precast concrete manufacturing plant shall be certified by the Prestressed Concrete Institute, Plant Certification Program, or the manufacturer shall establish a quality control program based on PCI MNL 116, prior to the start of production.

1.7 DELIVERY, STORAGE, AND HANDLING

Piles shall be stored, handled, and transported in accordance with PCI MNL 116 except as follows. Methods used for handling and storage of piles shall be such that the piles are not subjected to excessive bending stress, cracking, spalling, or other damage. Piles which are damaged during delivery, storage, or handling to the extent they are rendered unsuitable for the work, in the opinion of the Contracting Officer, will be rejected and shall be removed from the work site at no cost to the Government.

1.7.1 Delivery and Storage

Piles shall be held at the plant until the specified compressive strength is obtained or fourteen (14) days, whichever is greater. Storage areas for piles shall be stabilized and suitable foundations provided so differential settlement or twisting of the pile does not occur. Stacked piles shall be separated and supported by uniform load transferring material placed across the full width of each bearing point and in vertical planes between the piles. The stacks shall be limited to five (5) feet in height unless otherwise approved. Each pile shall be stacked in a straight position and supported every ten (10) feet or less along its length (ends inclusive) to prevent excessive sweep in the pile.

1.7.2 Handling

Piles shall be lifted by means of a suitable bridle or slings attached to the pile at the marked pickup points. Unless special lifting devices are attached for pickup, pickup points shall be plainly marked on all piles after removal of the forms. Alternate pickup methods or locations shall be subject to approval prior to commencement of pile fabrication. Dragging of piles across the ground will not be permitted. The Contractor shall inspect each pile for sweep and structural damage such as cracking and spalling before transporting them from the storage site to the driving area. Sweep shall be checked by placing the pile on a firm level surface and rotating the pile. Sweep shall be limited to two (2) inches over the length of the pile. The Contractor shall again check the pile for excessive sweep and damage immediately prior to placement in the driving leads. Piles having excessive sweep shall not be used.

1.8 QUALITY CONTROL

1.8.1 General

The Contractor shall establish and maintain quality control for pile manufacturing and driving operations, assure compliance with the requirements of this Section and maintain quality control records for all construction operations including, but not limited to, the following:

- (1) Testing and gradation of aggregates and compressive strength of concrete as required, including batched proportions.
- (2) Setting and bracing of forms and checkout just prior to concrete placement, including accurate placement of reinforcing steel.
- (3) Casting, handling and storage of precast, prestressed piling: records of prestressing tension strands.
- (4) Curing method and duration.
- (5) Driving of all piles and maintaining records of such.

1.8.2 Reporting

The original and two (2) copies of these records and reports, as well as corrective action taken, shall be furnished the Government daily. Format of the report shall be as prescribed in the Section 01451, "CONTRACTOR QUALITY CONTROL."

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Admixtures

Chemical admixtures shall conform to ASTM C 494. Air-entraining admixture shall conform to ASTM C 260. Other chemical admixtures for use in producing flowing concrete shall comply with ASTM C 1017, Type 1 or 2. Calcium chloride or admixtures containing chlorides or nitrates shall not be used.

2.1.2 Aggregates

Aggregates shall conform to ASTM C 33, except as specified otherwise herein. Coarse aggregates shall meet the additional requirements for Class 3M. Aggregates shall conform to the grading requirements of either ASTM C 33; LSSRB, Section 1003.02; or MSSRBC, Sections 703.02 and 703.03. Fine aggregates from different sources of supply shall not be mixed or stored in the same stockpile, or used alternately in the same concrete mix or the same structure without approval. The fineness modulus of fine aggregate shall not be less than 2.40 or greater than 3.00. For piles that will be exposed to freezing and thawing, fine and coarse aggregate subject to five (5) cycles of the sodium sulfate soundness test in accordance with ASTM C 88 shall show a loss not greater than ten percent (10%). If the selected aggregates fail the soundness test, the aggregate source may be used if the concrete specimens made with the aggregates have a durability factor of not less than 80, based on three hundred (300) cycles of freezing and thawing, when tested in accordance with ASTM C 666.

2.1.3 Cement

Portland cement shall conform to ASTM C 150, low alkali, Type I, II or III, with a maximum of fifteen percent (15%) tricalcium aluminate. Blended hydraulic cement shall conform to ASTM C 595, Type IP.

2.1.4 Pozzolan

Pozzolan shall conform to ASTM C 618, Class C or F, with the Multiple Factor and Effectiveness in Controlling Alkali-Silica Reaction Requirements of Table 3.

2.1.5 Prestressing Steel

Prestressing steel shall be seven-wire, ½-inch diameter, Grade 270, low relaxation steel strand conforming to the requirements of ASTM A 416. Steel shall be free from grease, oil, wax, paint, soil, dirt, loose rust, kinks, bends, and other defects.

2.1.6 Reinforcing Steel

Non-prestressing reinforcing steel shall conform to ASTM A 615 Grade 60, deformed.

2.1.7 Ties and Spirals

Steel for ties and spirals shall conform to ASTM A 82.

2.1.8 Water

Water for mixing concrete shall be fresh, clean, drinkable, and free from injurious amounts of oils, acids, alkalies, salts, sugar, organic materials, or other substances that may be deleterious to concrete or steel. Undrinkable water may be used if it meets the requirements of COE CRD-C 400. The time of set for concrete made with undrinkable water may vary from one hour earlier to one and one-half hours later than a control sample made with distilled water.

2.2 FABRICATION

2.2.1 Prestressed Concrete Piles

Prestressed concrete piles shall be solid concrete piles of the type indicated except those piles designated for embedment of a centrally placed jet pipe. Piles shall be cast as monolithic units of homogeneous concrete and pretensioned with prestressing steel. Manufacturing requirements for piles shall conform to PCI MNL 116 except as modified herein. Pick-up points shall be marked on the piles at the indicated location after removal of the forms. Detail drawings of piles, showing dimensions and fabrication details including forms, reinforcement, collars, shoes, build-ups, and embedded or attached lifting devices, pick-up points, drain holes, shall be submitted for approval. The Contractor shall notify the Contracting Officer one (1) week prior to the date casting of piles is to begin.

2.2.2 Forms

Forms shall be of steel, braced and stiffened against deformation, accurately constructed, watertight, and supported on unyielding concrete casting beds. Form surfaces shall be within 1/4 inch of a true plane in a length of fifty (50) feet. Forms shall permit movement of the pile without damage during release of the prestressing force. Voids shall be formed.

2.2.3 Reinforcement and Embedments

Reinforcing steel, prestressing steel, and embedded items shall be accurately positioned in the forms and secured to prevent movement during concrete placement. Steel shall have a minimum concrete cover of 2½ inches. Reinforcing steel details shall conform to ACI SP- 66. Welding of reinforcing steel shall be in accordance with AWS D1.4/D1.4M.

2.2.4 Concrete Mix

The concrete mix shall be selected by the Contractor to have a compressive strength of six thousand (6,000) pounds per square inch at 28 days (90 days if pozzolan is used) and a slump of one (1) to three (3) inches. If a higher slump is required, it shall be attained through the use of a chemical admixture for use in producing flowing concrete in accordance with ASTM C 1017, and the slump of the concrete shall not exceed eight (8) inches after the addition of the admixture and shall be in the range of one (1) to four (4) inches prior to adding the admixture. The water-cementitious materials ratio (by weight) shall be held to the minimum consistent with workability required for placement but in no case shall it exceed 0.45. Concrete shall be air entrained with a minimum of four percent (4%) and a maximum of six percent (6%) air entrainment, accomplished by use of an additive at the mixer. Nominal maximum size coarse aggregate shall be one (1) inch. If pozzolan is used, it shall range from fifteen to thirty percent (15% to 30%) by weight of the total cementitious materials. Once production begins, changes to the mix will not be permitted without written submittal and approval of the proposed changes.

2.2.5 Concrete Work

Concrete shall not be deposited in the forms until the placement of the reinforcement and anchorages has been inspected and approved by the Contracting Officer. Conveying equipment shall be cleaned thoroughly before each run and the concrete conveyed from the mixer to the forms as rapidly as practicable using methods that will not cause segregation or loss of ingredients. Concrete shall be deposited as nearly as practicable in its final position in the forms. At any point in conveying, the free vertical drop of the concrete shall not exceed three (3) feet. Chuting will be permitted if the concrete is deposited into a hopper before being placed in the forms. Concrete that has segregated in conveying shall be removed. Each pile shall be produced of dense concrete with smooth surfaces. Each pile shall be a continuous pour until it is completed. Vibrator heads shall be smaller than the minimum distance between steel pretensioning. Side forms shall not be removed until concrete has attained 3,500 pounds per square inch compressive strength. Dimensional tolerances shall conform to PCI MNL 116. The ends of all piles and corners of square piles shall be chamfered 3/4 inch or, in lieu of chamfering, may be rounded to a 1-inch radius.

2.2.6 Pretensioning

Anchorage for tensioning the prestressing steel shall be an approved type. The tension to which the steel is to be pretensioned shall be measured by the elongation of the steel and also by the jack pressure reading on a gauge or by the use of an accurately calibrated dynamometer. The gauge or dynamometer shall have been calibrated by a calibration laboratory approved by the Contracting Officer within twelve (12) months of commencing work and every six (6) months thereafter during the term of the Task Order. Means shall be provided for measuring the elongation of the steel to the nearest 1/4 inch. The applied load determined from elongation

measurements shall be computed using load-elongation curves for the steel used. When the difference between the results of measurement and gauge reading is more than five percent (5%), the cause of the discrepancy shall be corrected. The tensioning steel shall be given a uniform prestress prior to being brought to design prestress. The same initial prestress shall be induced in each unit when several units of prestressing steel in a pile are stretched simultaneously.

2.2.7 Detensioning

Releasing of prestressing force in pretensioned piles shall be performed in a manner that minimizes eccentricity of prestress. Tension in the strands shall be released from the anchorage gradually. In no case shall the stress be released after casting without approval by the Contracting Officer. The transfer of prestressing force shall be done when the concrete has reached a compressive strength of not less than four thousand two hundred (4,200) pounds per square inch. The prestressing steel shall be cut or ground flush with the pile ends.

2.2.8 Curing of Piles

Piles shall be cured in accordance with the provisions contained in PCI MNL 116 except as follows. The maximum rate of heat gain shall not exceed 40 degrees Fahrenheit per hour and the maximum concrete temperature shall not exceed 165 degrees Fahrenheit during the curing cycle. Curing shall be continued until the concrete has attained a compressive strength of at least three thousand five hundred (3,500) pounds per square inch as determined by the concrete test cylinders.

2.2.9 Splices

Splices will not be permitted.

2.2.10 Build-Ups

Build-ups shall be in accordance with the procedures for build-up without driving as detailed in PCI STD 112 and shall be constructed subsequent to final seating of the pile. The joint between the pile and the build-up shall be protected by an approved mortar or epoxy. Build-ups shall be protected from standing water during the curing period. Concrete in the build-up shall have a minimum compressive strength of five thousand (6,000) pounds per square inch.

2.3 TESTS, INSPECTIONS, AND VERIFICATIONS

Testing during manufacture shall be performed by an approved commercial testing laboratory or by an approved laboratory maintained by the manufacturer of the material. Minimum requirements for testing during manufacture shall be as required in PCI MNL 116 except as modified herein.

2.3.1 Concrete Cylinders

A minimum of four standard 6-inch by 12-inch concrete test cylinders per casting bed shall be made to indicate transfer and 28-day (or 90 days if pozzolan is used) strengths.

2.3.2 Testing by Government

Facilities shall be made available to the Contracting Officer for making and testing any additional test cylinders desired.

PART 3 EXECUTION

3.1 PILE DRIVING EQUIPMENT

The Contractor shall select the proposed pile driving equipment as specified and submit descriptions of the proposed equipment for approval. Equipment approval for the test piles will be based on wave equation analysis and the engineering judgment of the Contracting Officer. Stresses predicted by wave equation analysis shall not exceed 0.85 times the concrete compressive strength minus the effective prestress in compression and the effective prestress in tension. Final equipment approval is subject to satisfactory completion of the pile tests and revised wave equation analyses, including a driveability study for vertical and battered piles. Changes in the selected pile driving equipment will not be allowed after the equipment has been approved by the Contracting Officer except as specified herein and directed by the Contracting Officer.

3.1.1 Pile Driving Hammers

Pile driving hammers shall be of the impact type and capable of satisfying the requirement of paragraph 3.2.3.2. Hammers shall be steam, air or diesel drop of the single-acting type, double-acting, or differential-acting type. The rated energy of steam or air drop hammers for vertical test piles shall be limited to a minimum of 18,000 foot-pounds and a maximum of 32,500 foot-pounds. The rated energy of diesel drop hammers shall be limited to a minimum of 27,000 foot-pounds and a maximum of 48,750 foot-pounds. A wave equation analysis shall be performed subsequent to the static and dynamic testing to evaluate installation requirements for the permanent piles. Higher rated energies may be required for the installation of the battered job piles. The hammer shall be operated at all times at the steam or air pressure and at the speed recommended by the manufacturer. Boiler, compressor, or engine capacity shall be sufficient to operate hammers continuously at the full rated speed so that a single-acting hammer obtains a full upward stroke of the ram, a double-acting hammer operates at or near the blows per minute at which the hammer is rated, and a differential type hammer obtains a slight rise of the hammer base during each upward stroke. Hammers shall have a gage to monitor hammer bounce chamber pressure for diesel hammers or pressure at the hammer for air and steam

hammers. This gage shall be operational during the driving of piles and shall be mounted in an accessible location for monitoring by the Contractor and the Contracting Officer.

3.1.2 Pile Driving Leads

Leads shall align the pile and hammer concentrically, and maintain the pile in proper position and alignment throughout driving. Hammers shall be supported and guided with fixed extended leads or fixed underhung leads. For driving battered piles, hammers shall be supported and guided with fixed extended leads capable of achieving the batters required. The leads shall be of sufficient length to fully accommodate the combined length of the pile and hammer. Two (2) intermediate pile supports shall be provided in the leads to reduce the unbraced length of the pile during driving and pulling.

3.1.3 Driving Helmets and Pile Cushions

A driving helmet including a pile cushion shall be used between the top of the pile and the ram to prevent impact damage to the pile. The driving helmet and pile cushion combination shall be capable of protecting the head of the pile, minimize energy absorption and dissipation, transmit hammer energy uniformly over the top of the pile and prevent excessive tensile stresses from developing in the concrete during driving.

The driving helmet shall fit loosely around the top of the pile so that the pile is not restrained by the helmet if the pile tends to rotate during driving. The pile cushion may be of solid wood or of laminated construction, completely cover the top surface of the pile, and be retained by the driving helmet. Minimum thickness of the pile cushion shall be three (3) inches and the thickness shall be increased so as to be suitable for the size and length of pile, character of subsurface material to be encountered, hammer characteristics, and the required driving resistance.

3.1.4 Cap Blocks

The cap block (hammer cushion) used between the driving cap and the hammer ram may be of solid hardwood block with grain parallel to the pile axis and enclosed in a close-fitting steel housing or may consist of aluminum and approved industrial type plastic laminate disks stacked alternately in a steel housing. Steel plates shall be used at the top and the bottom of the cap block. The cap block shall be replaced if it has been damaged, highly compressed, charred, or burned or has become spongy or deteriorated in any manner. If a wood cap block is used, it shall not be replaced during the final driving of any pile. Under no circumstances will the use of small wood blocks, wood chips, rope, or other material permitting excessive loss of hammer energy be permitted.

3.1.5 Pile Extractors

Impact hammers are required for pulling piles.

3.2 INSTALLATION

3.2.1 Lengths of Permanent Piles

The individual Task Orders shall state if the quantities of piles listed in the unit price schedule for the Task Order are estimated and pile length determination will be made from the results of the pile tests specified in Section 02355, "PILE LOAD TESTS" or are the actual lengths.

3.2.2 Pile Placement and Tolerances

A pile placement plan shall be developed to show the installation sequence, and the methods proposed for controlling the location and alignment of piles. It shall also include a drawing showing the layout of the any known driving restrictions or special conditions as specified in Section 01100, paragraph 26. The pile placement plan shall be submitted for approval. Piles shall be placed accurately in the correct location and alignments, both laterally and longitudinally, and to the vertical or batter lines indicated. The Contractor shall establish a permanent baseline during pile driving operations to provide for inspection of pile placement by the Contracting Officer. The baseline shall be established prior to driving permanent piles and shall be maintained during the installation of the permanent piles. Prior to driving and with the pile head seated in the hammer, the Contractor shall check each pile for correct alignment. The alignment of battered piles shall be checked and monitored during driving with an accurate batter board level. A final lateral deviation from the correct location at the cutoff elevation of not more than three (3) inches will be permitted. A vertical deviation from the correct cutoff elevations shown on the drawing of not more than one (1) inch will be permitted. A final variation in slope of not more than 1/4 inch per foot of longitudinal axis will be permitted. A final variation in rotation of the pile about its center line of not more than 7.5 degrees will be permitted. The correct relative position of all piles shall be maintained by the use of templates or by other approved means. Piles not located properly or exceeding the maximum limits for rotation, lateral deviation, and/or variation in alignment shall be pulled and redriven at a directed location.

3.2.3 Pile Driving

Piles shall not be driven within one hundred (100) feet of concrete less than seven (7) days old nor within thirty (30) feet of concrete less than twenty-eight (28) days old unless otherwise authorized. Driving shall not result in cracking, crushing, or spalling of concrete. The sequence of installation shall be such that pile heave is minimized. Where heave is anticipated, pile driving shall start at the center of the group and proceed outward and vertical piles shall be driven prior to those battered where practicable. The Contracting Officer shall be notified thirty (30) days prior to the date driving is to begin.

3.2.3.1 Driving Records

The Contractor shall develop a form for recording the pile driving operations, obtain approval of this form, and compile complete records of the operations. Pile driving records shall include pile dimensions and location, pile identification number, casting date, date driven, original pile length, cutoff and tip elevations, batter alignment, description of hammer used, rated hammer energy, observed stroke and rate of hammer operation (blows per minute), air or steam pressure at the hammer, length of pressure hose, penetration under the combined weight of the pile and hammer, number of blows required for each foot of penetration throughout the entire length of each pile and for each inch of penetration in the last foot of penetration, time for start and finish of driving, total driving time in minutes and seconds for each pile, cushion information including changes during driving, and any other information as required or requested. Record shall also include information such as unusual driving conditions, interruptions or delays during driving, observed pile damage, heave detected in adjacent piles, records of restriking, depth and description of voids formed adjacent to the pile, and any other pertinent information.

3.2.3.2 Penetration Criteria

Piles shall be driven to the required depth of penetration as determined by analysis of pile tests as specified in Section 02355, "PILE LOAD TESTS" or as shown in the individual Task Orders, or until the maximum permissible blow count is exceeded. The maximum permissible blow count shall be limited to ten (10) blows per inch, for the last twelve (12) inches of penetration, or as determined by the dynamic pile testing and driveability studies such that the piles are not overstressed. The Contracting Officer shall be immediately notified when the maximum permissible blow count is exceeded.

3.2.3.3 Driving

Permanent and test piles shall be driven with hammers of the same model and manufacturer, same energy and efficiency, and using the same driving system. The hammer shall be operated at all times at the speed and under the conditions recommended by the manufacturer subject to the approval of the Contracting Officer.

Once pile driving has begun, conditions such as alignment and batter shall be kept constant. Each pile shall be driven continuously and without interruption until the required depth of penetration has been attained. Deviation from this procedure will be permitted only for necessary changes to the pile cushion or whenever driving is stopped by causes that reasonably could not have been anticipated. Pile cushion changes will be considered necessary whenever the cushion has become highly compressed, charred, burned, or deteriorated. Changes to the cushion will not be allowed near the end of driving. A pile that cannot be driven to the required depth because of an obstruction, as indicated by a sudden unexplained change in blow count and drifting, shall be pulled and redriven or shall be cut off and abandoned, whichever is directed. A pile which cannot be driven to the required tip elevation

because the maximum permissible blow count or driving stress is exceeded shall be reported to the Contracting Officer. The Contracting Officer will direct the Contractor to cut off the pile, pull and redrive the pile, or perform other corrective measures. Corrective measures may consist of adding a pile at an adjacent location or requiring the Contractor to utilize jetting or preboring when re-driving the pile.

3.2.3.3.1 Scale

A scale (inches) shall be fixed to the hammer's ram guide and a pointed indicator on the ram, near the scale, to allow a reading of the ram drop (see example diagram at the end of this section). Installation of both scale and indicator shall be in such a manner that the drop of the ram can be read by observing the highest and the lowest position of the indicator and scale. Both the scale and the indicator shall be easily legible to observers on the ground during operations. The Contractor shall record in the pile driving record the ram drop of the pile hammer when recording the blows per foot as specified in paragraph 3.2.3.3.

3.2.3.4 Heaved Piles

When driving piles in clusters or under conditions of relatively close spacing, observations shall be made to detect heave of adjacent piles. Heaved piles shall be restruck sufficiently to relieve soil setup and driven to the original penetration criteria.

3.2.3.5 Pulled Piles

Piles damaged or impaired for use during driving shall be pulled and replaced with new piles, or shall be cut off and abandoned and new piles driven as directed. The Contracting Officer may require that any pile be pulled for inspection. Piles pulled at the direction of the Contracting Officer and found to be in suitable condition shall be re-driven at a directed location.

3.2.3.6 Jetting

Jetting shall not be allowed unless approved by the Contracting Officer or specified herein.

3.2.3.7 Preboring

Preboring will not be allowed.

3.2.3.8 Void Backfill

Voids occurring around piles as a result of pile driving or due to any other cause and abandoned holes for piles that have been pulled shall be filled to within 3 feet of the adjacent ground surface with a thick tremie-placed slurry (from bottom to top of hole).

The slurry shall consist of one (1) part portland cement, two (2) parts bentonite, and six (6) parts sand mixed with enough water to produce a slurry viscous enough to thoroughly fill the voids. The upper three (3) feet of the void shall be earth filled and compacted to the same density as the surrounding soil.

3.2.4 Cutting of Piles

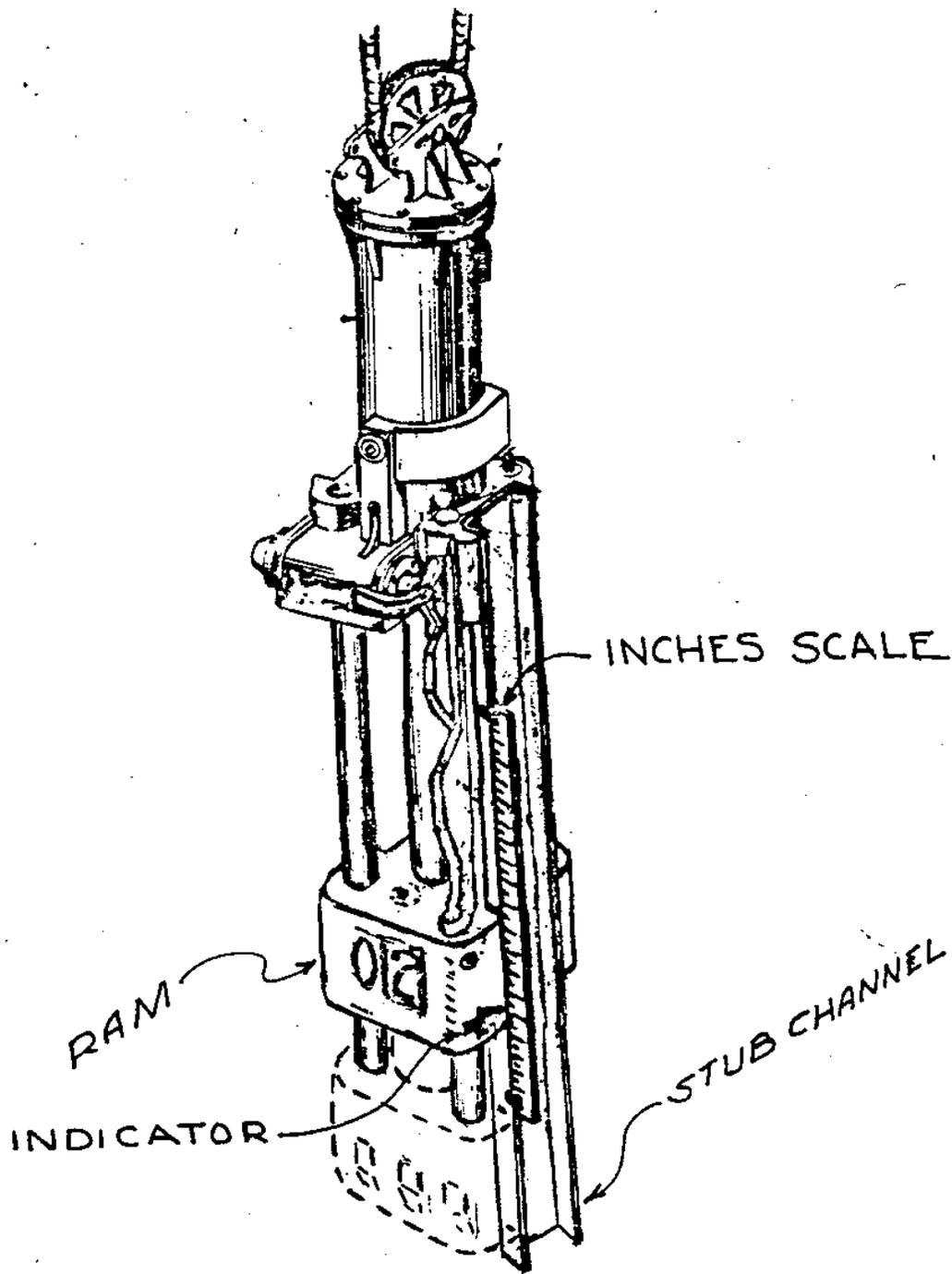
The proposed method for cutting of piles for removal of driving heads must be approved and shall not damage the pile concrete or reinforcement steel left in place. The use of explosives will not be permitted. Driving heads shall not be removed until heaved piles are redriven to the original penetration criteria. Cut off sections of piles shall be removed from the site upon completion of the work.

3.2.5 Splicing

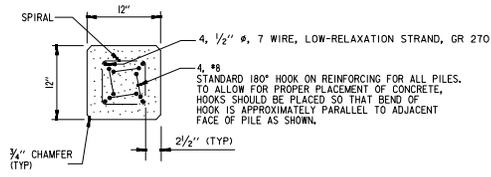
Splicing of driven piles will not be permitted.

3.2.6 Build-Ups

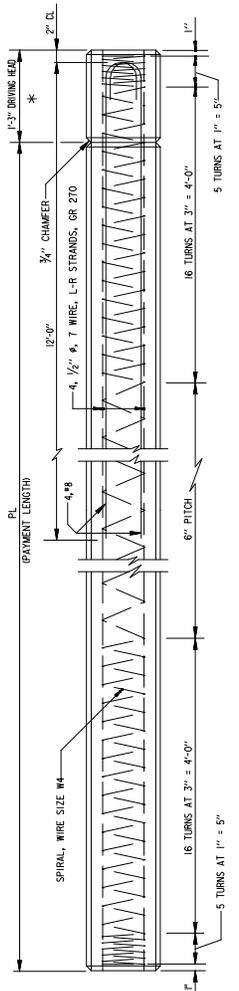
The Contracting Officer may direct the Contractor to repair pile tops damaged during driving by removing the damaged portion and adding a reinforced concrete build-up. Build-ups shall be constructed subsequent to final seating of piles. Build-ups shall conform to the requirements of paragraph 2.2.10.



PILE HAMMER



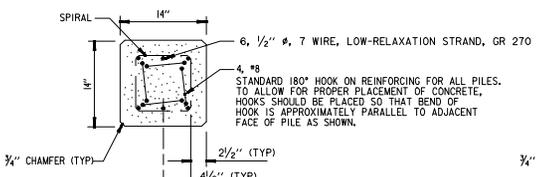
4, $\frac{1}{2}$ " ϕ , 7 WIRE, LOW-RELAXATION STRAND, GR 270
 4, #8 STANDARD 180° HOOK ON REINFORCING FOR ALL PILES. TO ALLOW FOR PROPER PLACEMENT OF CONCRETE, HOOKS SHOULD BE PLACED SO THAT BEND OF HOOK IS APPROXIMATELY PARALLEL TO ADJACENT FACE OF PILE AS SHOWN.



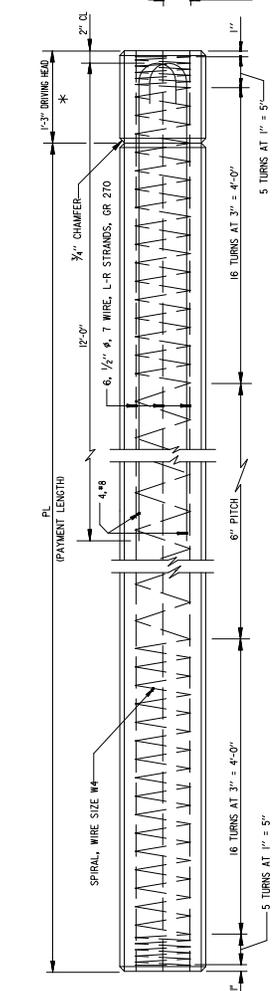
* DRIVING HEAD CONCRETE, STRANDS AND SPIRAL TIES TO BE REMOVED AFTER DRIVING TO EXPOSE HOOKS.

NOTE: GRIND PRESTRESSED STRANDS FLUSH WITH PILE HEAD AND PILE TIP.

12" X 12"
 PRESTRESSED PRECAST
 CONCRETE PILE



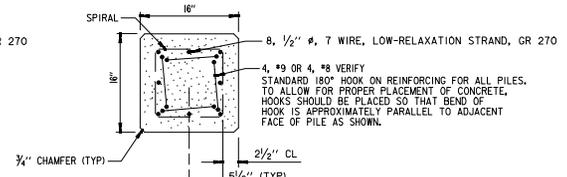
6, $\frac{1}{2}$ " ϕ , 7 WIRE, LOW-RELAXATION STRAND, GR 270
 4, #8 STANDARD 180° HOOK ON REINFORCING FOR ALL PILES. TO ALLOW FOR PROPER PLACEMENT OF CONCRETE, HOOKS SHOULD BE PLACED SO THAT BEND OF HOOK IS APPROXIMATELY PARALLEL TO ADJACENT FACE OF PILE AS SHOWN.



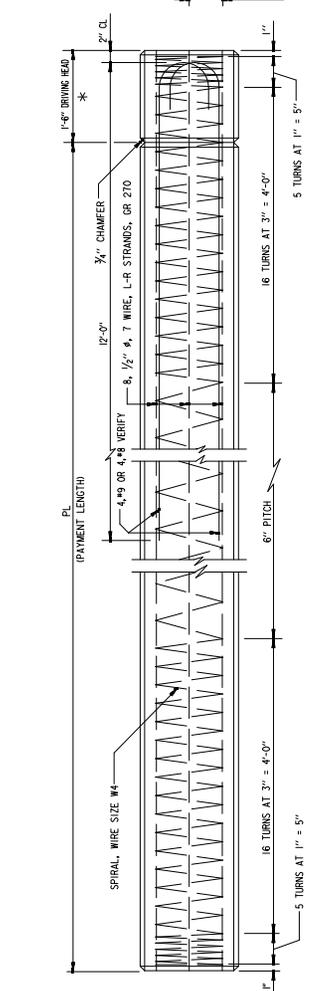
* DRIVING HEAD CONCRETE, STRANDS AND SPIRAL TIES TO BE REMOVED AFTER DRIVING TO EXPOSE HOOKS.

NOTE: GRIND PRESTRESSED STRANDS FLUSH WITH PILE HEAD AND PILE TIP.

14" X 14"
 PRESTRESSED PRECAST
 CONCRETE PILE



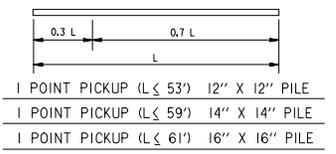
8, $\frac{1}{2}$ " ϕ , 7 WIRE, LOW-RELAXATION STRAND, GR 270
 4, #9 OR 4, #8 VERIFY STANDARD 180° HOOK ON REINFORCING FOR ALL PILES. TO ALLOW FOR PROPER PLACEMENT OF CONCRETE, HOOKS SHOULD BE PLACED SO THAT BEND OF HOOK IS APPROXIMATELY PARALLEL TO ADJACENT FACE OF PILE AS SHOWN.



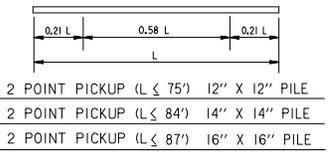
* DRIVING HEAD CONCRETE, STRANDS AND SPIRAL TIES TO BE REMOVED AFTER DRIVING TO EXPOSE HOOKS.

NOTE: GRIND PRESTRESSED STRANDS FLUSH WITH PILE HEAD AND PILE TIP.

16" X 16"
 PRESTRESSED PRECAST
 CONCRETE PILE



1 POINT PICKUP ($L \leq 53'$) 12" X 12" PILE
 1 POINT PICKUP ($L \leq 59'$) 14" X 14" PILE
 1 POINT PICKUP ($L \leq 61'$) 16" X 16" PILE



2 POINT PICKUP ($L \leq 75'$) 12" X 12" PILE
 2 POINT PICKUP ($L \leq 84'$) 14" X 14" PILE
 2 POINT PICKUP ($L \leq 87'$) 16" X 16" PILE

NOTE: PICKUP POINTS TO BE PLAINLY MARKED ON PILES

PILE SCHEDULE						
W/L STATIONS	PILE SIZE	NUMBER OF PILES	PILE BATTER	PILE TIP ELEVATION	PAYMENT LENGTH	
					FLOOD SIDE	PROTECTED SIDE

NOTE: EXACT LENGTHS OF PRESTRESSED CONCRETE PILING SHALL BE DETERMINED AFTER PILE TESTS ARE CONDUCTED. LENGTHS SHOWN ARE FOR ESTIMATING PURPOSES ONLY.

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SECTION 02411 - STEEL SHEET PILING

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SECTION 02411 - STEEL SHEET PILING

PART 1 GENERAL

1.1 SCOPE

The work covered by this Section consists of furnishing all plant, equipment, labor and materials and performing all operations in connection with the installation of Contractor furnished steel sheet piling in accordance with these specifications. Sheet pile penetrations as part of the utility modifications are not part of this scope. Utility sheet pile penetrations are covered in Section 02101, "MODIFICATIONS TO EXISTING UTILITIES".

1.2 RELATED WORK SPECIFIED ELSEWHERE

SUBMITTAL PROCEDURES, Section 01330

CONTRACTOR QUALITY CONTROL, Section 01451

MODIFICATIONS TO EXISTING UTILITIES, Section 02101

METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS, Section 05501

PAINTING, Section 09940

1.3 RESERVED

1.4 BIDDING SCHEDULE LINE ITEMS

1.4.1 Sheet Piling

Bidding Schedule Line Items for "Supply Steel Sheet Piling, Type PZ 22 (Under 65 Foot Long)", "Supply Steel Sheet Piling, Type PZ 27 (Under 65 Foot Long)", "Supply Steel Sheet Piling, Type PZ 35", "Supply Steel Sheet Piling, Type AZ 36", "Supply Steel Sheet Piling, Type AZ 46", "Supply Steel Sheet Piling, Type AZ 48", "Supply Steel Sheet Piling, Type PZC 13 (Over 65 Foot Long)", and "Supply Steel Sheet Piling, Type PZC 18" shall constitute full compensation for furnishing, delivering, and fabricating. The square footage of furnished piling will be based on the theoretical driving width of the pile. Bidding Schedule Line Items for "Drive Steel Sheet Piling, Type PZ 22 (Under 65 Foot Long)", "Drive Steel Sheet Piling, Type PZ 27 (Under 65 Foot Long)", "Drive Steel Sheet Piling, Type PZC 13 (Over 65 Foot Long)", and "Drive Steel Sheet Piles" shall constitute full compensation for handling, driving, cutting holes, backfilling voids, and all other work incidental to acceptably installing the steel sheet piling.

1.4.2 Fabricated Piles, Rolled Corners and Cover Plates

Bidding Schedule Line Item for “Fabricated Piles, Rolled Corners and Cover Plates” shall include all costs associated with fabricating, rolling, welding, bolts, nelson studs, and all other work incidental to supplying these items.

1.4.3 Painting Steel Sheet Piles

Bidding Schedule Line Item for “Paint Steel Sheet Piles” shall include all costs associated with blasting, painting, and testing the steel sheet piles. The square footage of painted sheet piling will be based on the total painted surface area (not nominal surface area).

1.4.4 Sheet Pile Penetrations

Bidding Schedule Line Item for “Sheet Pile Penetrations” shall include all sheet pile penetrations required except for utility modification work which is included in the Bidding Schedule Line Item for “Modifications to Existing Utilities”.

1.5 REFERENCES

The following standards of the issues listed below and referred to thereafter by basic designation only from a part of this specification to the extent indicated by the references thereto:

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A 36	(2005) Carbon Structural Steel
A 325	(2004b) Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
A 328	(2005) Steel Sheet Piling
A 490	(2004a) Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
A 563	(2004a) Carbon and Alloy Steel Nuts
A 572	(2006) High-Strength Low-Alloy Columbian-Vanadium Structural Steel
A 588	(2005) High-Strength Low-Alloy Structural Steel with 50 ksi [345 MPa] Minimum Yield Point to 4-in. [100-mm] Thick

- A 709 (2006) Structural Steel for Bridges
- A 852 (2003) Quenched and Tempered Low-Alloy Structural Steel Plate with 70 ksi [485 MPa] Minimum Yield Strength to 4 in. [100 mm] Thick
- F 436 (2004) Hardened Steel Washers

1.6 QUALITY ASSURANCE

Requirements for material tests, workmanship and other measures for quality assurance shall be as specified herein and in Section 05501, "METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS".

1.6.1 Materials Tests

Sheet piling and appurtenant materials shall be tested and certified by the manufacturer to meet the specified chemical, mechanical and section property requirements prior to delivery to the site.

1.7 SUBMITTALS

The Contractor shall submit descriptions of sheet piling driving equipment, shop drawings, test procedures, test reports and certificates, sheet piling driving records and other submittals to the Contracting Officer for approval as required. Submittals and associated work not satisfactory to the Contracting Officer will be rejected. The following shall be submitted in accordance with Section 01330, "SUBMITTAL PROCEDURES".

1.7.1 Equipment Descriptions

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

1.7.2 Shop Drawings

Shop drawings for sheet piling, including fabricated sections, shall be submitted for approval and shall show complete piling dimensions and details, driving sequence and location of installed piling. Shop drawings shall include details and dimensions of templates and other temporary guide structures for installing piling, and shall provide details of the method of handling piling to prevent permanent deflection, distortion or damage to piling interlocks. Shop drawings shall include details of the transition between the existing sheet piling and new sheet piling. Shop drawings shall show the clear distances that will be maintained between sheet pile driving equipment and

adjacent buildings, and overhead electrical transmission and distribution lines or other obstacles. Clearances shall be based on the survey required in Section 01100, "GENERAL PROVISIONS", paragraph entitled, "PILE DRIVING UNDER SPECIAL CONDITIONS".

1.7.3 Survey

In conjunction with the shop drawing submittal, the Contractor shall submit the survey information required in Section 01100, "GENERAL PROVISIONS", paragraph entitled, "PILE DRIVING UNDER SPECIAL CONDITIONS".

1.7.4 Materials Test Certificates

Materials test certificates shall be submitted for each shipment and identified with specific lots prior to installing piling. Identification data should include piling type, dimensions, section properties, heat analysis number, chemical composition, mechanical properties and mill identification mark.

1.7.5 Driving Records

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.

1.8 QUALITY CONTROL

1.8.1 General

The Contractor shall establish and maintain quality control for pile driving operations to assure compliance with the requirements of this Section and maintain records of his quality control for all construction operations including, but not limited to, the following:

- (1) Accurate location, alignment and plumbness of piling.
- (2) Full and proper engagement of interlocks.
- (3) Driving (pile hammer and rate of operation).
- (4) Final position; depth of penetration; tip and cut- off elevations.
- (5) Uplift and vertical tolerances after driving.

(6) Location and elevation of any obstruction encountered and action directed by Contracting Officer.

(7) Pulled piles and re-driving.

(8) Length of cover plate and weld size.

(9) Manufacture and driving of fabricated sections.

(10) Cutting and splicing (welding).

(11) Stockpiling and storage.

(12) Removal and disposal of damaged piles.

1.8.2 Reporting

The original and two (2) copies of these records and tests, as well as the records of corrective action taken, shall be furnished the Government daily. Format of the report shall be as prescribed in Section 01451, "CONTRACTOR QUALITY CONTROL".

1.9 DELIVERY, STORAGE AND HANDLING

Materials delivered to the site shall be new and undamaged and shall be accompanied by certified test reports. The manufacturer's logo and mill identification mark shall be provided on the sheet piling as required by the referenced specifications. Sheet piling shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion or damage to the interlocks. Storage of sheet piling should also facilitate required inspection activities.

PART 2 MATERIALS

2.1 STEEL SHEET PILING

Steel for PZ sheet piling shall conform to the requirements ASTM A 328. Steel for AZ sheet piling shall conform to the requirements of ASTM A 572, Grade 60. Steel for PZC sheet piling shall conform to the requirements of ASTM A 572, Grade 50. Sheet piling, including special fabricated sections, shall be of the type and dimensions required, and be of a design such that when in place they will be continuously interlocked throughout their entire length. All sheet piling shall be provided with standard pulling holes located approximately four (4) inches below the top of the pile, unless otherwise shown or directed. Steel sheet piling shall be hot rolled and shall have the properties equivalent to those listed in the following table:

PROPERTIES OF SECTIONS

Type of section	Nominal web thickness (inches)	Section modulus (in ³ /ft of wall)	Moment of inertia (in ⁴ /ft of wall)	Nominal section depth (inches)	theoretical driving width (inches)
PZ 22	0.375	18.1	84.4	9	22
PZ 27	0.375	30.2	184.2	12	18
PZ 35	0.500	48.9	369.4	15.1	22.64
AZ 36	0.551	67.0	606.3	18.1	24.8
AZ 46	1.000	85.47	808.8	19	23.0
AZ 48	0.591	89.3	847.1	19.0	22.8
PZC 13	0.375	24.2	152.0	12.56	27.88
PZC 18	0.375	33.5	255.51	15.25	25.0

2.1.1 Substitute Sheet Pile Sections

The Contractor may elect to substitute for the sheet piling specified above, in accordance with paragraphs 2.1.2 or 2.1.3. Combinations of substitute piling types shall not be permitted.

2.1.2 New Z-Type Cold Rolled Steel Sheet Piling, ASTM A 328

Cold rolled sheet piling for the new floodwall will not be allowed.

2.1.3 Hot Rolled Z-Type Steel Sheet Piling, ASTM A 572

At no additional cost to the Government, new Z- type hot rolled steel sheet piling conforming to applicable of ASTM A 572, Grade 60, with a minimum material thickness of 0.335-inches, a maximum overall width of 27-inches and meeting the following section properties, may be substituted in kind for the listed sections:

Type of Section	Substitute section	
	Minimum section modulus (in. ³ /ft. of wall)	nominal depth (inches)
AZ 36	66.0	18 +/- 6%
AZ 48	81.0	18 +/- 6%

2.1.4 Substitute Sheet Piling Submittals

When proposing substitute piling, the Contractor shall submit, for approval, the following items at no additional cost to the Government:

- (1) Complete shop drawings of the proposed sections showing the dimensions and details of the alternate piling including all fabricated and corner sections.
- (2) For the floodwall/bulkhead wall, a complete layout of the alternate sheet piling and raked piles. The P.I. Stations, bulkhead transitions, gate monolith lengths or other tie-in points shall remain unchanged. Typical concrete bulkhead cap lengths may be altered to better accommodate the substitute piling driving widths. It shall be the Contractor's responsibility to make any adjustments necessary in his formwork so that the architectural treatment of the concrete is properly maintained.

2.2 Sheet Piling Lengths

All new sheet piling shall be provided in full lengths.

2.3 Rolled Corners

Rolled corners, formed with new sheet piling, shall be of the types and dimensions required. Any proposed variations from the details shown on the Task Order Drawings shall be submitted for approval of the Contracting Officer's Representative (COR). The sheet pile types shall be as required for the corners being manufactured and shall conform to the requirements of ASTM A 328 or ASTM A 572, Grade 60 and all other requirements stated above for new piling.

2.4 Fabricated Sections

Fabricated sections, including special corners, transition piles and tee sections, shall conform to the requirements stated herein, and the piling manufacturer's recommendations for fabricated sections. Metalwork fabrication for sheet piling sections shall conform to the requirements of Section 05501, "METALWORK

FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS". Steel plates and angles used to fabricate the special sections for grade 35 steel sheet pile shall conform to ASTM A 36. Steel plates used to fabricate special sections, corners and tees for A 572 sheet pile shall conform to the same material specification and have the same grade as the sheet pile. Unless noted otherwise, all fabricated connections shall be made with 7/8-inch diameter bolts, meeting the requirements of ASTM A 325, type 3, or ASTM A 490, type 3. Nuts shall meet the requirements of A 563, grade C3 or DH3. Washers shall meet the requirements of ASTM F 436, and shall be manufactured from weathering steel meeting the requirements of ASTM A 588 or A 709. Bolts shall be spaced six (6) inches on centers for the length of the section except for two (2) feet at each end where they shall be spaced three (3) inches on centers. Welding of the longitudinal joint will not be allowed. Shop drawings and details for the fabricated connection shall be submitted for approval.

2.5 Studs

Studs shall be as specified in Section 05501, "METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS".

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Placing and Driving

3.1.1.1 Placing

Except at the bulkhead wall, any excavation required within the area where sheet pilings are to be installed shall be completed prior to placing sheet pilings. Pilings shall be carefully located. Pilings shall be placed as true to line as possible. Suitable temporary wales, templates, or guide structures shall be provided to insure that the piles are placed and driven to the correct alignment. Piles shall be placed in a plumb position with each pile interlocked with adjoining piles for its entire length, so as to form a continuous diaphragm throughout the length of each run of piling wall. Interlocks shall be properly engaged. The Contractor's personnel shall not sit or place themselves on top of the sheet piling during the handling, installation, and removal of the piling.

3.1.1.2 Driving

All piles shall be driven to the depths required and shall extend to the cut-off elevation indicated. A tolerance of 1-1/2-inches above or below the indicated cut-off elevation will be permitted. Pilings shall be driven by approved methods so as not to subject the pilings to damage and to insure proper interlocking throughout their lengths. Pile hammers shall be maintained in proper alignment during driving operations by use of leads or guides attached to the hammer. A protecting cap shall be employed in

driving, when required, to prevent damage to the tops of pilings. Pilings damaged during driving or driven out of interlock shall be removed and replaced. All piles shall be driven without the aid of a water jet, unless otherwise authorized. Adequate precautions shall be taken to insure that piles are driven plumb. Sheet piling shall not be driven more than 1/4-inch per foot out of plumb in the plane of the wall nor more than 1/8-inch per foot out of plumb perpendicular to the plane of the wall. If at any time the forward or leading edge of the piling wall is found to be out-of- plumb more than 1/4-inch per foot in the plane of the wall or 1/8- inch per foot perpendicular to the plane of the wall, the assembled piling 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 1-1/4-inch per foot of length. Unless specifically indicated otherwise, each run of piling wall shall be driven to grade progressively from the start and pilings in each run shall be driven alternately in increments of depth to the required depth or elevation. On each day of sheetpile driving, the Contractor shall stab only the number of piles that can be driven to grade by the end of the day, and all piling stabbed shall be driven to grade by the end of each working day except that the last two piles may remain tapered up to receive the next days piles. No pile shall be driven to a lower elevation than those behind it in the same run except when the piles behind it cannot be driven deeper or in areas where there will be wall penetrations or obstructions are encountered. In this case, piling will be allowed to remain above final grade until the obstruction is removed or the penetration is completed. Alternately, if it is determined that an obstruction cannot be removed, the Contractor shall make such changes in design alignment of the pile structure as may be deemed necessary by the Contracting Officer to insure the adequacy and stability of the structure. Payment for the additional labor and materials necessitated by such changes will be made at the applicable contract prices. If the piling next to the one being driven tends to follow below final grade, it may be pinned to the next adjacent piling. The Contractor is advised that buried stumps or similar debris may be encountered periodically on the sheet pile wall alignment and appropriate consideration should be given to hard driving conditions should they occur. Piles shall not be driven nor pulled within one hundred (100) feet of concrete less than seven (7) days old nor within thirty (30) feet of concrete less than twenty-eight (28) days old.

3.1.2 Emergency Locking System on Pile Driving Head

All pile driving equipment shall be equipped so as to prevent piles from falling when a single or multiple power failure occurs after the pile driving head is attached to the pile. The jaws of vibratory hammers shall be equipped with devices such that upon loss of hydraulic pressure, the jaws will not release the pile.

3.1.3 Cutting Off and Splicing

Piles extending above grade in excess of the specified tolerance, and which cannot be driven deeper, shall be cut off to the required grade. The Contractor shall also trim

the tops of piles excessively battered during driving, when directed to do so, at no cost to the Government. Cut-offs shall become the property of the Contractor and shall be removed from the worksite. Piles driven below the elevations indicated for the top of piles and piles which, because of damaged heads, have been cut off to permit further driving and are then too short to reach the required top elevation, shall be extended to the required top elevation by welding an additional length, when directed, without cost to the Government. Should splicing of additional lengths be necessary, the splice shall consist of an approved butt joint with a weld that fully penetrates the web. Welded extensions shall be a minimum of 6-inches in length. Piles adjoining spliced piles shall be full length unless otherwise approved. When piles are to be driven in sections and spliced together, they shall be delivered on site in full lengths and cut for splicing only after delivery. Only those portions of the originally uncut pile shall be spliced together to form the final in-place full-length pile. Splices for these piles shall conform to the details approved. Welding of splices shall conform to the requirements of Section 05501, "METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS". Ends of pilings to be spliced together shall be squared before splicing to eliminate dips or camber. Pilings shall be spliced together with concentric alignment of the interlocks so that there are no discontinuities, dips or camber at the abutting interlocks. Spliced pilings shall be free sliding and able to obtain the maximum swing with contiguous pilings. The Contractor may cut holes in the piles for bolts, rods, drains or utilities at locations and of sizes required. All cutting shall be done in a neat and workmanlike manner. Bolt holes in steel piling shall be drilled or may be burned and reamed by approved methods, which will not damage the remaining metal. Holes, other than bolt holes, shall be reasonably smooth and of the proper size for rods and other items to be inserted.

3.1.4 Inspection of Driven Piling

The Contractor shall inspect the interlocked joints of driven pilings extending above ground. Pilings found to be damaged or driven out of interlock shall be removed and replaced.

3.1.5 Pulling and Redriving

The Contractor may be required to pull selected piles after driving, for test and inspection, to determine the condition of the piles. Any pile so pulled and found to be damaged to the extent that its usefulness in the structure is impaired shall be removed from the work and the Contractor shall furnish and drive a new pile to replace the damaged pile. Piles pulled and found to be in satisfactory condition shall be redriven at no additional cost to the Government.

3.1.6 Void Backfill

Where voids adjacent to the steel sheet piling are induced by pile driving or pulling operations, the Contractor shall pump out all seepage and rain water and backfill with

a tremie-placed slurry. The slurry shall consist of one (1) part cement, two (2) parts bentonite, and six (6) parts sand mixed with enough water to produce a slurry viscous enough to thoroughly fill the voids.

3.2 PAINTING

3.2.1 T-Wall Sheet Piling

The upper ten (10) feet of all T-Wall or L-Wall sheet piling shall be painted with coal-tar epoxy in accordance with Section 09940, PAINTING” and shall extend one (1) inch minimum (two (2) inches maximum) beyond the bottom elevation of the concrete floodwall. The unpainted portion of sheet piling which shall be embedded in concrete shall be free from surface contaminants such as oil, loose particles, or similar debris that would inhibit bonding between the concrete and sheet piling.

3.2.2 Other Sheet Piling

The remaining sheet piling shall be painted with coal-tar epoxy in accordance with Section 09940, PAINTING” and shall extend from five (5) feet below the ground surface to the top of the sheet pile, unless top is embedded in concrete where it shall extend one (1) inch minimum (two (2) inches maximum) beyond the bottom elevation of the concrete. The unpainted portion of sheet piling which shall be embedded in concrete shall be free from surface contaminants such as oil, loose particles, or similar debris that would inhibit bonding between the concrete and sheet piling.

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SECTION 02451 - STEEL PIPE PILES

PART 1 GENERAL

1.1 SCOPE

The work covered by this Section consists of furnishing all plant, equipment, labor, and materials required to perform all operations in connection with the installation of steel pipe piles in accordance with these specifications.

1.2 RELATED WORK SPECIFIED ELSEWHERE

SUBMITTAL PROCEDURES, Section 01330

CONTRACTOR QUALITY CONTROL, Section 01451

PILE LOAD TESTS, Section 02355

PAINTING, Section 09940

1.3 BIDDING SCHEDULE LINE ITEMS

1.3.1 Pipe Piles

Bidding Schedule Line Items for "Supply 16-inch, 0.50-inch WT Pipe Piles", "Supply 18-inch, 0.4125-inch WT Pipe Piles", and "Supply 24-inch, 0.375-inch WT Pipe Piles" shall include the supplying, painting, , and other incidental items specified herein. Bidding Schedule Line Items for "Drive 24-inch, 0.375-inch WT Pipe Piles" and "Drive Steel Pipe Piles" shall constitute full compensation for furnishing all plant, labor, equipment, material, and all other costs incidental thereto required to drive the piles as specified herein.

1.3.2 Dolphin Pipe Piles

Bidding Schedule Line Item for "Dolphin Structure Piles" shall constitute full compensation for furnishing all plant, labor, equipment, material, and all other costs incidental thereto. Driving of the dolphin piles shall be included in the Bidding Schedule Line Item for "Drive 24-inch, 0.375-inch WT Pipe Piles".

1.3.3 Field Pile Splices

Bidding Schedule Line Item for "16-inch, 0.50-inch WT Pipe Pile Splice", "18-inch, 0.4125-inch WT Pipe Pile Splice", and "24-inch, 0.375-inch WT Pipe Pile Splice" shall constitute full compensation for furnishing all plant, labor, equipment, material, and testing of field splices and all other costs, incidental thereto. Splices performed by the

pipe pile supplier shall be included in the applicable Bidding Schedule Line Item in paragraphs 1.3.1 and 1.3.2 above for supplying the piles.

1.3.4 Painting Steel Pipe Piles

Bidding Schedule Line Items for “Paint 16-inch Steel Pipe Piles”, “Paint 18-inch Steel Pipe Piles”, and “Paint 24-inch Steel Pipe Piles” shall constitute full compensation for furnishing all additional plant, labor, equipment, material, and other costs required for blasting, painting and testing the steel pipe piles.

1.3.5 Tension Pile Connection

Bidding Schedule Line Items for “16-IN Pipe Tension Pile Connection”, “18-IN Pipe Tension Pile Connection”, and “24-IN Pipe Tension Pile Connection” shall constitute full compensation for furnishing all additional plant, labor, equipment, weld testing, material, and other costs required to install the tension connectors on the pipe piles.

1.4 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)

A 252 (1998(2002)) Welded And Seamless Steel Pipe Piles

A 572 (2006) High-Strength Low-Alloy Columbian-Vanadium Structural Steel

AMERICAN WELDING SOCIETY (AWS)

D1.1/D1.1M (2006) STRUCTURAL WELDING CODE-STEEL

AMERICAN PIPE INSTITUTE (API)

RP-2A-WSD (2000) Recommended Practice For Planning, Designing And Constructing Fixed Offshore Platforms – Working Stress Design

1.5 SUBMITTALS

The following shall be submitted in accordance with Section 01330, “SUBMITTAL PROCEDURES”.

1.5.1 Equipment Descriptions

The Contractor shall submit descriptions of pile driving equipment, delivery, storage and handling methods, placement plans, pile removal plans, driving records, quality control records, and other submittals to the Contracting Officer for approval as required. Submittals shall be adequately detailed to thoroughly depict intended methods or processes. Submittals not satisfactory to the Contracting Officer will be rejected. Complete descriptions of pile driving equipment, including hammers, power packs, extractors, leads, and other appurtenances shall comply with the requirements of paragraph 3.1.1 and shall be submitted for approval at least thirty (30) days prior to commencement of work.

1.5.2 Pile Fabrication

1.5.2.1 Shop Drawings

Shop drawings for piles shall provide details and dimensions of all shop and field fabrications. The Contractor shall provide splice details and location. The required non-destructive testing (NDT) of welds shall be specified herein.

1.5.2.2 Mill Test Reports

Certified copies of mill test reports shall be submitted for each material shipment and be identified with specific lots. Test reports shall indicate all pertinent data on strength, ductility, notch toughness, chemical analysis, heat treatment, and NDT.

1.5.2.3 Materials Test Reports

Certified copies of material test reports shall be submitted for all required material tests, noting the specific standards followed in the performance of tests.

1.5.2.4 Welding Procedure Specifications (WPS)

A welding procedure specification for each field weld shall be submitted to the Contracting Officer and approved before fabrication is commenced.

1.5.2.5 Weld Inspector Qualifications

For field welds the welding inspector qualifications shall be submitted for information prior to performing field welds.

1.5.2.6 Non Destructive Testing Of Field Welds

The inspection and NDT shall comply with AWS D1.1/D1.1M, Section 6. Test results, including sketches of defects, shall be submitted within seven (7) days of testing.

1.5.3 Delivery, Storage, and Handling Plans

Plans for the proposed methods of delivery, storage, and handling of piles shall comply with the requirements of paragraphs 1.7.1 and 1.7.2 and shall be submitted for review and approval at least thirty (30) days prior to delivery of piles to the job site.

1.5.4 Placement Plans

Placement plans shall show the proposed methods for controlling location and alignment of piles as required in paragraph 3.1.2.1 and shall be submitted for review and approval at least thirty (30) days prior to delivery of piles to the job site.

1.5.5 Driving Records

Original records of pile driving operations of each pile driven shall be submitted daily. Recorded data for piles shall include the data specified in paragraph 3.1.2.2, unusual driving conditions, interruptions or delays during driving, and any other pertinent information. The format for driving records shall be in accordance with the format provided by the Contracting Officer.

1.6 QUALITY CONTROL

1.6.1 General

Requirements for materials, tests, machinery, workmanship, and other measures required for quality control shall be as specified in these specifications. The Contractor shall provide continuous inspection of all operations for quality control and record the results for submission to the Contracting Officer in order to show compliance with the requirements of this Section. The Contractor's quality control records shall include but not be limited to the following items:

- (1) Materials;
- (2) Delivery, storage, and handling;
- (3) Placing (location, alignment, etc.);
- (4) Driving records;
- (5) Cutting;
- (6) Record keeping;
- (7) Splices;
- (8) Welding;

(9) Non-destructive testing

1.6.2 Reporting

The original and two (2) copies of these records and tests, including the records of corrective action taken, shall be furnished to the Government daily. Format of the reports shall be as prescribed in Section 01451, "CONTRACTOR QUALITY CONTROL".

1.7 DELIVERY, STORAGE, AND HANDLING

1.7.1 Delivery and Storage

Materials delivered to the site shall be in a new and undamaged condition and shall be accompanied by certified test reports. The manufacturer's logo and mill identification mark shall be stamped on each unspliced pile at a minimum of two (2) locations. Delivery and storage plans shall be submitted for approval as specified in paragraph 1.5.3. Piles shall be stacked during delivery and storage so that each pile is maintained in a straight position and is supported every ten (10) feet or less along its length (ends inclusive) to prevent exceeding the maximum permissible camber or sweep. Piles shall not be stacked more than ten (10) feet high unless approved by the Contracting Officer.

1.7.2 Handling

The method of handling piles shall be submitted for approval as required in paragraph 1.5.3. Piles shall be lifted using a cradle or multiple point pick-up to ensure that the maximum permissible sweep is not exceeded due to insufficient support, except that a one-point pick-up may be used for lifting piles that are not extremely long. Piles shall not be dragged across the ground. The Contractor shall inspect the camber, and sweep of piles for damage before transporting them from the site storage area to the driving area. Sweep shall be checked by placing piles and casings on a firm, level surface and rotating them. The maximum permissible sweep shall be two (2) inches over the length of the pile. The Contractor shall, in the presence of the Government inspector, check piles for damages and excessive sweep immediately prior to placement. Damaged piles or piles with sweep exceeding two (2) inches will be rejected for use and replaced at no additional cost to the Government.

PART 2 PRODUCTS

2.1 MATERIALS

Pipe piles, open ended, shall be the sizes and wall thicknesses as required and shall conform to ASTM A 252, Grade 2 or Grade 3. Pipe piles shall be seamless or welded. Pipe pile segments shall be fabricated in accordance with ASTM A 252

except spiral welded pipes shall not be used. Pile tension connectors shall be fabricated from steel meeting the requirements of ASTM A 572. Details of tension connection for the dolphin piles are attached at the end of this section. The tension connections for the other diameter pipes are similar. Dolphin piles shall be twenty-four (24) inches in diameter and 3/8-inch wall thickness.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Pile Driving Equipment

The Contractor shall select the proposed pile driving equipment and submit descriptions of the proposed equipment for approval. Equipment approval will be based on wave equation analysis and the engineering judgment of the Contracting Officer. Approval of hammer does not relieve the Contractor of duty to install piles to required tip. If the required pile tip is not achieved an alternate system must be approved. Stress predicated by wave equation analysis shall not exceed 0.80 Fy of the steel. Changes in the selected pile driving system will not be allowed after the system has been approved by the Contracting Officer except as directed by the Contracting Officer.

3.1.1.1 Pile Driving Hammers

Pile driving hammers shall be of an impact type hammer.

3.1.1.1.1 Vibratory Hammers

Vibratory hammers shall not be used to drive the pipe piles.

3.1.1.1.2 Hydraulic Impact Hammers

Pipe piles shall be driven by an approved hydraulic impact hammer. The size and capacity of the hammer shall be as recommended by the manufacturer for the pile weights and soil formations to be penetrated. The hammer shall be operated at all times at the hydraulic pressure and at the speed recommended by the manufacturer. Hydraulic capacity shall be sufficient to operate the hammer continuously at full rated speed. Hammers shall have a gage to monitor operating pressure, oil flow pressure, energy per blow, number of blows per foot, and number of blows per minute. This gage shall be operational during the driving of piles and shall be mounted in an accessible location for monitoring by the Contractor and Contracting Officer. The Contractor shall submit the following information for each hydraulic impact hammer proposed:

- (1) Make and model;

- (2) Ram weight (pounds);
- (3) Anvil weight (pounds);
- (4) Total hammer weight in air;
- (5) Rated stroke (inches);
- (6) Rated energy range (foot-pounds);
- (7) Rated speed (blows per minute);
- (8) Hydraulic operating data, operating pressure, and oil flow;
- (9) Pile driving cap, make, and weight (pounds);
- (10) Cushion block, dimensions, and material type, if applicable; and,
- (11) Power pack description.

The Contractor shall record the mean blow energy per foot and the number of blows per foot as specified in the Pile Driving Record.

3.1.1.2 Pile Driving Leads or Templates

The Contractor shall provide lateral support of the pile during driving and pulling. At least one (1) intermediate support for the pile in the leads or in a template shall be provided to reduce the unbraced length of the pile during driving and pulling.

3.1.1.3 Pile Extractors

Pile extractors may be vibratory and/or impact pile driving hammers. Impact hammers are required for pulling piles not extractable with vibratory hammers. For the use of the vibratory hammer, weight indicator shall be attached to the crane during extraction.

3.1.1.4 Jetting Equipment

Jetting will not be allowed.

3.1.1.5 Following

A follower will not be allowed.

3.1.1.6 Pre-drilling

Piles shall not be pre-drilled

3.1.2 Test Piles

Pipe piles shall be tested in accordance with Section 02355, "PILE LOAD TESTS".

3.1.2.1 Placement

Pile plans shall be submitted for approval as required in paragraph 1.5.4. Piles shall be placed accurately in the correct location and alignments, both laterally and longitudinally, and to the vertical lines or batter as required. The Contractor shall establish a permanent base line during pile driving operations to provide for inspection of pile placement by the Contracting Officer. Prior to driving and with the pile head seated in the hammer, the Contractor shall ensure that each pile has been aligned correctly. A final variation in plumb of not more than three (3) inches from top to bottom is permitted. The correct relative position of all piles shall be maintained by the use of templates or by other approved means. Piles not located properly or exceeding the maximum limits for rotation, lateral deviation, and/or variation in alignment shall be pulled and redriven at no additional cost to the Government.

3.1.2.2 Driving

Piles shall be driven with a hammer approved in accordance with paragraph 3.1.1. Piling shall not be driven within one hundred (100) feet of concrete less than seven (7) days old nor within thirty (30) feet of concrete less than twenty-eight (28) days old.

3.1.2.2.1 Reserved

3.1.2.2.2 Impact Hammer

A complete and accurate driving record of piles shall be compiled and submitted as required in paragraph 1.5.5. The driving record for impact hammers shall include pile dimensions and location, pile identification number, date driven, original pile length, tip elevation, description of hammer used, rate of hammer operation, number of blows required for each foot of penetration throughout the entire length of each pile and for each inch of penetration in the last foot of penetration, total driving time in minutes and seconds for each pile, and other pertinent information as required or requested by the Contracting Officer. The hammers shall be operated at all times at the speed and under the conditions recommended by the manufacturer subject to the approval of the Contracting Officer. Once pile driving has begun, all conditions (such as alignment, batter, cushion, etc.) shall be kept constant. Each pile shall be driven continuously and without interruption until the required depth of penetration has been attained. Deviation from this procedure will be permitted only when driving is stopped by causes that reasonably could not have been anticipated. Jetting shall not be used

to assist driving piles. A pile that cannot be driven to the required depth because of an obstruction shall be pulled and redriven as directed by the Contracting Officer. Piles damaged or impaired for use during driving shall be pulled and replaced with new piles and new piles driven as directed by the Contracting Officer without additional cost to the Government. The Contracting Officer may require that any pile be pulled for inspection. Piles pulled at the request of the Contracting Officer and found to be damaged shall be replaced by new piles at the Contractor's expense. After piles are driven, they shall be cut off square at the indicated cut off elevation.

3.1.2.3 Pile Splicing

Splice details shall be included in the shop drawing submittal. Welding shall comply with Section 10 of API RP-2A. Welding procedure specifications shall be submitted. Damaged portions of the driven pile segment shall be removed as directed by the COR. The abutting ends shall be prepared as shown on the drawings and comply with paragraph 11.1.2.a of API RP-2A. An AWS Certified Weld Inspector (CWI) shall perform a visual test (VT) as specified in paragraph 13.4.3.a of API RP-2A as the work progresses. The entire splice length shall be inspected by ultrasonic testing (UT). The UT technique shall comply with AWS D1.1/D1.1M, Part F and acceptance criteria is as specified in AWS D1.1/D1.1M, Subsection 6.13.3.1. Repairs shall be done in accordance with AWS D1.1/D1.1M, Section 5.26, and repairs shall be retested. A maximum of one (1) splice per pile will be allowed. The splice shall be located in the middle third of the pile. The splice, inspection and any repairs and retesting shall be completed within a five (5) hour period. Any additional driving requirements and repairs resulting from pile damage shall be provided by the Contractor at no additional cost when the five (5) hour period is exceeded.

3.1.2.4 Damaged Piles

Driving of piles shall not subject them to damage. Piles which are damaged by reason of internal defects or by improper driving so as to impair them for the purpose intended shall be removed and replaced. The Contracting Officer may require the Contractor to pull certain piles after driving for inspection to determine the condition of the piles. Any pile so pulled and found to be damaged to such extent as, in the opinion of the Contracting officer, would impair its usefulness, shall be removed from the site and the Contractor shall furnish and drive a new pile to replace the damaged piles. Piles pulled and found to be sound and in a satisfactory condition as determined by the Contracting Officer's Representative shall be redriven. Any holes which remain as a result of pulling operations shall be filled with the materials specified in paragraph 3. 2.

3.2 VOID BACKFILL

Where voids are induced by pile driving or pulling and removal operations, the Contractor shall backfill the voids with a tremie-placed cement-bentonite-sand slurry. The slurry shall consist of one (1) part cement, two (2) parts bentonite, and six (6)

parts sand mixed with enough water to produce a slurry viscous enough to thoroughly fill the voids.

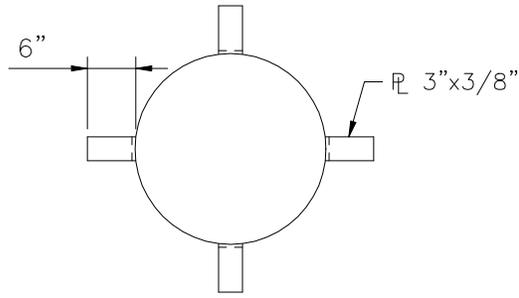
3.3 PAINTING

3.3.1 Pipe Piling

The upper ten (10) feet of the pipe shall be painted with coal-tar epoxy in accordance with Section 09940, "PAINTING" and shall extend one (1) inch minimum (two (2) inches maximum) beyond the bottom elevation of the concrete floodwall. The unpainted portion of pipe piling which shall be embedded in concrete shall be free from surface contaminants such as oil, loose particles, or similar debris that would inhibit bonding between the concrete and pipe piling.

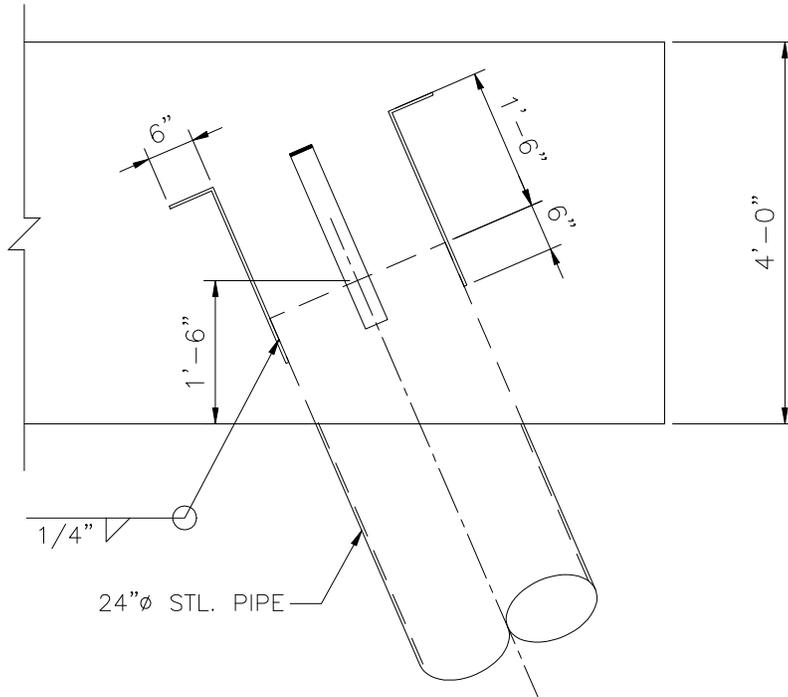
3.3.2 Dolphin Pipe Piling

The entire length of the pipe piles used for the dolphins shall be painted with coal-tar epoxy in accordance with Section 09940, "PAINTING".



PLAN

SCALE: 3/4" = 1'-0"



SECTION

SCALE: 3/4" = 1'-0"

TENSION ANCHOR DETAIL