

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE OF PAGES
			J	1
2. AMENDMENT/MODIFICATION NO. 0001	3. EFFECTIVE DATE 04-Apr-03	4. REQUISITION/PURCHASE REQ. NO. W32CS52277893		5. PROJECT NO.(If applicable)
6. ISSUED BY USA ENGINEER DISTRICT, JACKSONVILLE PRUDENTIAL OFFICE BLDG 701 SAN MARCO BLVD CESAJ-CT JACKSONVILLE FL 32207-8175	CODE DACW17	7. ADMINISTERED BY (If other than item 6) BY HAND: DELIVER TO "ISSUED BY" ADDRESS BY MAIL: USAED JACKSONVILLE, PO BOX 4970, ATTN: CESAJ-CT JACKSONVILLE FL 32232-0019		CODE DACW17
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)			X	9A. AMENDMENT OF SOLICITATION NO. DACW17-02-R-0033
			X	9B. DATED (SEE ITEM 11) 11-Mar-2003
				10A. MOD. OF CONTRACT/ORDER NO.
				10B. DATED (SEE ITEM 13)
CODE	FACILITY CODE			
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS				
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended.				
Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.				
12. ACCOUNTING AND APPROPRIATION DATA (If required)				
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.				
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.				
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).				
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:				
D. OTHER (Specify type of modification and authority)				
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.				
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) REFURBISHMENT OF S-352 AND MISCELLANEOUS REPAIRS TO S-351, GLADES COUNTY, HENDRY COUNTY, AND PALM BEACH COUNTY, FLORIDA				
Any enclosures accompanying this amendment should be inserted in the plans and specifications as applicable. All superseded materials should be removed or adequately marked to indicate they have been superseded.				
THE DATE FOR RECEIPT OF PROPOSALS IN BLOCK 13A OF THE SF1442 HAS BEEN CORRECTED TO READ FROM: 23 APR 2003 TO 24 APR 2003. PLEASE REPLACE WITH THE ATTACHED SF1442.				
CONTINUED ON PAGE 2.				
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.				
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
			TEL:	EMAIL:
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA		16C. DATE SIGNED
(Signature of person authorized to sign)		BY		03-Apr-2003
		(Signature of Contracting Officer)		

EXCEPTION TO SF 30
APPROVED BY OIRM 11-84

30-105-04

STANDARD FORM 30 (Rev. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

SECTION SF-30 BLOCK 14 CONTINUATION PAGE

1. SPECIFICATIONS: Specifications for this project have been updated.

a. Either asterisks appear before and after the line or lines where revisions have been made to the text on the enclosed revised or added pages or the text changes have been updated with additions noted with underlined text and deletions noted with line/cross-outs, and pertain only to the changes made by this amendment.

b. The text changes may have necessitated reformatting of subsequent text or pages. If this is the case, those pages have also been issued as amended pages but are not marked with asterisks or underlined text and line/cross-outs.

Section 00010 (Standard Form 1442): DELETE Section 00010, pages 00010-1 through 00010-3 and REPLACE with the attached revised Section 00010, pages 00010-1 through 00010-3.

Section 00010A LINE ITEMS AND PRICING SCHEDULE: DELETE Section 00010A and REPLACE with the attached revised Section 00010A.

Section 01000 GENERAL REQUIREMENTS: DELETE Section 01000 and REPLACE with the attached revised Section 01000.

Section 01270 MEASUREMENT AND PAYMENT: DELETE Section 01270 and REPLACE with the attached revised Section 01270.

Section 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS: DELETE Section 05502 and REPLACE with the attached revised Section 05502.

Section 09965 PAINTING: HYDRAULIC STRUCTURES: DELETE Section 09965 and REPLACE with the attached revised Section 09965.

Section 11288 VERTICAL LIFT GATES: DELETE Section 11288 and REPLACE with the attached revised Section 11288.

2. DRAWINGS: D.O. File No. 400-38,315 dated June 2002 in 89 Sheets + Cover.: DELETE Drawing Nos. 1/1, 2/3, 2/6, 6/1, 12/4, 13/8, 13/9, 15/1 and 15/2 and REPLACE with the attached revised Drawing Nos. 1/1, 2/3, 2/6, 6/1, 12/4, 13/8, 13/9, 15/1 and 15/2. All other Drawing Nos. and Cover remain unchanged.

SOLICITATION, OFFER, AND AWARD <i>(Construction, Alteration, or Repair)</i>	1. SOLICITATION NO. DACW17-02-R-0033	2. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)	3. DATE ISSUED 11-Mar-2003	PAGE OF PAGES
	IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.			

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO. W32CS522277893	6. PROJECT NO.
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7. ISSUED BY USA ENGINEER DISTRICT, JACKSONVILLE PRUDENTIAL OFFICE BLDG 701 SAN MARCO BLVD CESAJ-CT JACKSONVILLE FL 32207	CODE DACW17	8. ADDRESS OFFER TO (If Other Than Item 7) CODE BY HAND: DELIVER TO "ISSUED BY" ADDRESS BY MAIL: USAED JACKSONVILLE, PO BOX 4970, ATTN: CESAJ-CT JACKSONVILLE FL 32232-0019	CODE DACW17
TEL:	FAX:	TEL:	FAX:

9. FOR INFORMATION CALL:	A. NAME PAMELA J OWENS	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) 904-232-1443
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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):

Refurbishment of S-352 and Miscellaneous Repairs to S-351, Glades County, Hendry County, and Palm Beach County, Florida

DESCRIPTION OF WORK: See Page 00010-3

DRAWINGS: D.O. File No. 400-38,315 dated June 2002 in 89 Sheets Plus the Cover

Magnitude of Construction is between \$1,000,000.00 and \$5,000,000.00

This acquisition is 100% HubZone Set-Aside. All qualified HUBZone small businesses are encouraged to participate.

You must be registered in the Central Registration in order to be eligible to receive an award from this solicitation. Call 1-888-227-2423 for information.

11. The Contractor shall begin performance within 30 calendar days and complete it within 90 calendar days after receiving award, notice to proceed. This performance period is mandatory, negotiable. (See Section 00700 _____.)

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? (If "YES," indicate within how many calendar days after award in Item 12B.)

12B. CALENDAR DAYS

YES NO

10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 0 copies to perform the work required are due at the place specified in Item 8 by 04:00 PM (hour) local time 24 Apr 2003 (date). If this is a sealed bid solicitation, offers must 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 reference.

D. Offers providing less than 90 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

SOLICITATION, OFFER, AND AWARD (Continued)

(Construction, Alteration, or Repair)

OFFER (Must be fully completed by offeror)

14. NAME AND ADDRESS OF OFFEROR (Include ZIP Code)

15. TELEPHONE NO. (Include area code)

16. REMITTANCE ADDRESS (Include only if different than Item 14)

See 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 requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)

AMOUNTS

SEE SCHEDULE OF PRICES

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 _____)

AMENDMENT NO.

DATE

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)

20B. SIGNATURE

20C. OFFER DATE

AWARD (To be completed by Government)

21. ITEMS ACCEPTED:

SEE SCHEDULE

22. AMOUNT

23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified)

ITEM 26

25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO

10 U.S.C. 2304(c)

41 U.S.C. 253(c)

26. ADMINISTERED BY

CODE

K3M0H00

27. PAYMENT WILL BE MADE BY

CODE

T0B0200

GULF COAST AREA OFFICE
U.S. ARMY CORPS OF ENGINEERS (CESAJ-CO-G)
B & 4TH STREET, BUILDING 1066
TAMPA, FL 33686-9247
(PHONE: (813) 840-0824)

USACE FINANCE CENTER
5722 INTEGRITY DRIVE
ATTN: CEFC-AO-P
MILLINGTON, TN 38054-5005

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

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, requisitions 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 or incorporated by reference in or attached to this contract.

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

Description of Work:

1. Structure 352 work involves sandblasting and painting of mechanical and gate components offsite, hoist machinery, inspect vertical lift gates connecting the lift eyes to the gate frame, gate repair work, concrete crack repair, replacement of steel handrail system with aluminum handrail system, excavation of 1/2 inch bituminous layer and 6 inch lime rock to replace hydraulic line. Lead paint disposal required when painting of mechanical components offsite since lead primer had been applied when the structure was built.

2. S-351 remove vegetation growth from structural joints, paint miscellaneous items above water line such as H pile anchors and pile caps, paint sheet piling at water line, replace fence on wing wall, concrete crack repair, replacement of steel handrail system with aluminum system, inspect vertical lift gate welds connecting the lifting eyes to the gate frame, performing necessary repairs based on weld inspection and touch-up disturbed paint areas.

SECTION 00010A
LINE ITEMS AND PRICING SCHEDULE

REFURBISHMENT OF S-352 AND MISCELLANEOUS REPAIRS TO S-351
CENTRAL AND SOUTH FLORIDA PROJECT FOR FLOOD CONTROL AND OTHER PURPOSES
GLADES, HENDRY, PALM BEACH COUNTIES, FLORIDA

<u>LINE ITEM</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
0001	<u>BASE FOR S-352:</u>			
0001AA			LUMP SUM	\$ _____
	S-352 DEWATERING SPILLWAY STRUCTURE (SEE SECTION 02140)			
0001AB			LUMP SUM	\$ _____
	EXCAVATE HYDRAULC LINE AND RESLEEVE			
0001AC			LUMP SUM	\$ _____
	HANDLING, TRANSPORTATION, AND DISPOSING HAZARDOUS WASTE			
0001AD			LUMP SUM	\$ _____
	REMOVAL AND REPLACEMENT OF HANDRAILS			
0001AE			LUMP SUM	\$ _____
	REPAIR CONCRETE CRACKS			
0001AF			LUMP SUM	\$ _____
	SANDBLASTING AND PAINTING OF VERTICAL LIFT GATES AND COMPONENTS			
0001AG			LUMP SUM	\$ _____
	SANDBLASTING AND PAINTING OF MECHANICAL HOIST MACHINERY			
0001AH			LUMP SUM	\$ _____
	SANDBLASTING AND PAINTING OF MISCELLANEOUS METALS			
*0001AJ			LUMP SUM	\$ _____ *
	VERTICAL GATE INSPECTION AND REPAIR WORK			
0001AK			LUMP SUM	\$ _____
	MECHANICAL REPAIR WORK			
0001AL			LUMP SUM	\$ _____
	ELECTRICAL REPAIR WORK			
	TOTAL BASE FOR S-352 (LINE ITEMS 0001AA THROUGH 0001AL)			\$ _____
0002	<u>BASE FOR S-351:</u>			
0002AA			LUMP SUM	\$ _____
	S-351 DEWATERING SPILLWAY STRUCTURE			
0002AB			LUMP SUM	\$ _____
	REPAIR CONCRETE CRACKS			
0002AC			LUMP SUM	\$ _____
	REMOVAL AND REPLACEMENT OF FENCE AND GRATING			
0002AD			LUMP SUM	\$ _____
	REMOVAL AND REPLACEMENT OF HANDRAILS			
0002AE			LUMP SUM	\$ _____
	SANDBLASTING AND PAINTING OF MISCELLANEOUS METALS			
0002AF			LUMP SUM	\$ _____
	HANDLING, TRANSPORTATION, AND DISPOSING HAZARDOUS WASTE			
*0002AG				
	VERTICAL LIFT GATE INSECTION AND REPAIR			
	TOTAL BASE FOR S-351 (LINE ITEMS 0002AA THROUGH 0002AG)			\$ _____
	TOTAL (INCLUDES BASE, S-352 & S-351)			\$ _____
	<u>(INCLUDES LINE ITEMS 0001AA THROUGH 0002AG)</u>			*

NOTES:

- (1) ALL OFFERS MUST BE FOR THE ENTIRE WORK AND MUST HAVE EACH BLANK SPACE COMPLETED.
- (2) SEE SECTION 00100, "INSTRUCTIONS, CONDITIONS AND NOTICES TO OFFERORS."

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01000

GENERAL REQUIREMENTS

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- 1.3 LIQUIDATED DAMAGES-CONSTRUCTION
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3.1 GENERAL REQUIREMENTS

-- End of Section Table of Contents --

SECTION 01000

GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 SUBMITTALS

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

SD-02 Shop Drawings

Construction Drawings; G|ED

Contractor shall furnish 6 copies each of Construction Drawings consisting of Concrete Drawings and Dewatering Plan.

1.2 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK

a. Read this paragraph in conjunction with the Clause COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (FAR 52.211-10) of Section 00700 CONTRACT CLAUSES.

1.3 LIQUIDATED DAMAGES-CONSTRUCTION

Refer to the Clause LIQUIDATED DAMAGES-CONSTRUCTION (SEP 2000) (FAR 52.211-12) of Section 00700 CONTRACT CLAUSES.

1.4 CONSTRUCTION DRAWINGS

The Contractor shall submit to the Contracting Officer for approval six (6) copies each of the construction drawings, specified below and as called for in the Technical Requirements. These drawings shall be submitted for approval at least 20 calendar days before work on the applicable feature is commenced. These drawings and necessary dates shall be listed on the Submittal Register as required by the specifications. The submission of construction drawings shall be as previously prescribed for shop drawings and transmittal forms. All construction drawings shall be prepared on sheets 28"x40" in size, unless otherwise approved, and shall have a clear space 3"x4" in size in the lower right hand corner just above the title in which the Contracting Officer may indicate the action taken. These drawings shall be complete and shall contain all required detailed information. If approved by the Contracting Officer, each copy of drawings will be identified as having received such approval by being so stamped and dated. The Contractor shall make any corrections required by the

Contracting Officer and shall resubmit the required number of prints or drawings for approval. Work shall not be started until all required drawings pertaining to the work have been approved. Two (2) copies of final approved drawings will be returned to the Contractor. The approval of drawings by the Contracting Officer shall not be construed as a complete check but will indicate only that the general method of construction and detailing is satisfactory. Approval of such drawings will not relieve the Contractor of responsibility for any error which may exist as the Contractor shall be responsible for the design of adequate protective facilities and satisfactory construction of all work.

1.4.1 Concrete Drawings

The Contractor shall prepare concrete construction drawings. The drawings shall be submitted showing the outline dimensions of each concrete block or pour of a monolith section and the accurate measurement position of each embedded item and/or significant concrete detail excluding reinforcing steel. Each monolith section shall be numbered for identification. A list of the imbedded items shall be included. The Contractor shall also furnish along with the drawings his schedule and sequence of placing concrete for each monolith section.

1.4.2 Dewatering Plan

Refer to paragraph 1.2 of Section 02240 for data to be furnished. This plan is to be furnished for information purposes only and the Contractor is solely responsible for the technical and operational features of his dewatering system.

1.5 PHYSICAL DATA

Read this paragraph in conjunction with the Clause PHYSICAL DATA (FAR 52.236-4) of Section 00700 CONTRACT CLAUSES.

1.5.1 Physical Conditions

The indications of physical conditions on the drawings and in the specifications are the result of site investigations and as-built drawings.

S-351 and S-352 are equipped with a remote telemetry system for operation of the spillway gates. Prior to work being initiated by the Contractor, coordination with the South Florida Water Management District (SFWMD) is required to allow SFWMD to disconnect the remote telemetry system at S-351 and S-352. The spillway gates will then be manually operated by SFWMD or U.S. Army Corps of Engineers (USACE) personnel.

At S-352 prior to removal or connection of any hydraulic lines the Contractor will notify the Contracting Officer, who will coordinate with the chief of the South Florida Operations Office for their presence during the removal/connection of any hydraulic lines. Immediately following the removal/connection of any hydraulic lines, the spillway gate(s) shall be made available to USACE and/or SFWMD for operational testing.

1.5.2 Location

S-351 and S-352 are in Palm Beach County, Florida. A detailed map is shown on the contract drawings for each individual site.

1.5.3 Weather Conditions

The climate of the area that encompasses both S-352 and S-351 is essentially subtropical, marine. Temperatures below freezing are rare. The wet season in the project areas is from May through October. The hurricane season is from June through November. In general, the winter months constitute the dry season and rainfall is usually associated with mid-latitude systems (fronts and low pressure systems) and is distributed in a spatially uniform pattern. The summer months comprise the wet season and rainfall is closely associated with convective activity. These rainfall events are normally of short duration and amounts are quite variable spatially. Much of the volume of summer rainfall occurs on a few distributed days when the rainfall is more uniformly distributed. Occasionally, daily rainfall in the dry season can be quite heavy as mid-latitude systems penetrate into South Florida. The project sites are subject to tropical storms and hurricanes from June through November, and to windy and/or rainy weather throughout the year.

It shall be the Contractor's responsibility to obtain information concerning rain, wind, and wave conditions that could influence his construction operations. Reference is made to the following publications which contain climatological and meteorological observations and data. The publication "Local Climatological Data - Monthly Summary" published by NOAA, Asheville, North Carolina, contains climatological and meteorological observations and data. The Annual Summary gives a summary of the observations for the period of record. This publication is available for review in the office of the U.S. Army Corps of Engineers, Jacksonville District Office, 701 San Marco Blvd, Jacksonville, Florida 32207-8175. Subscription price and ordering information are available from the National Climatic Data Center, Federal Building, Asheville, N.C. 28801.

1.5.4 Transportation Facilities

1.5.4.1 Major Highways, Airports, Port Facilities, and Rail Access

Access to the project sites is indicated on the contract drawings.

1.5.4.2 Contractor Investigation

In addition to the information given in the contract drawings, the Contractor shall make his own investigation of available roads for transportation, load limits for bridges and roads, and other road conditions affecting the transportation of materials and equipment to the site. The Contractor shall investigate the availability of railroad sidings, and shall make all arrangements for use of any sidings for the delivery of any materials and equipment to be used on the work.

1.5.5 Maritime Traffic

Marine Traffic in the project area consists of pleasure, and small

recreational vessels of all types and sizes which can be accommodated by existing depths.

1.5.6 Local Conditions - Water Stages and Tides

1.5.6.1 Water Fluctuations

The below stated water fluctuations are for information only and are not to be utilized in conjunction with any contract related hydrographic surveying. Reference should be made to the water level datum for surveying purposes as noted on the control drawings(s) of the contract plans.

1.5.6.2 Water Stages

The following is provided as input for the water stages paragraph. The below stated water fluctuations are for information only and are not to be utilized in conjunction with any contract related hydrographic surveying. Reference should be made to the water level datum for surveying purposes as noted on the control drawings(s) of the contract plans.

a. Water stages lakeside of Structure 351 (S-351 headwater) are mainly affected by fluctuations of Lake Okeechobee, pump back into the lake by various pumping structures, riverine inflow into the lake, rainfall, rainfall runoff, evapotranspiration, water supply releases, and regulatory releases. Lake Okeechobee wind driven tides and wave run up due to tropical cyclones and extra tropical storms also have the potential to influence the water stage lakeside of S-351. Enclosure 1 (See Appendix 01000-B1) represents the exceedance frequencies associated with various water levels consisting of both flood stage and storm surge components at S-351 and is very similar to those at S-352. The table below shows storm surge values that reflect the rise in water surface elevation above initial lake stage.

HURRICANE SURGE-FREQUENCY RELATIONSHIPS

Return Period (yrs)	10	25	50	75	100	150	200
Storm Surge (ft)	1.4	6.0	10.5	11.9	12.4	12.7	12.9

The current Lake Okeechobee Regulation Schedule, Water Supply/Environmental (WSE), was implemented in July 2000 and ranges from 13.5 to 18.5 feet, NGVD, it is shown on Enclosure 2 (See Appendix 01000-B2). This regulation schedule contains the guidelines for Lake Okeechobee lake level management and is referred to for water management operational decisions, which includes operations at S-351.

Lake stages outside of the regulatory range have occurred in the past and will likely occur in the future. The United States Geological Survey (USGS) records the elevation of Lake Okeechobee at many gages in and around Lake Okeechobee, this includes the gage at Structure 352 (S-352) located at Canal Point, Florida. The period of record for this gage spans from 1940 through 2000. For the period of record, the maximum-recorded stage was 19.48 feet, NGVD, on 9 March 1998 and the lowest recorded stage was 8.48 feet, NGVD, on 15 June 1952. According to the "Herbert Hoover Dike Major Rehabilitation Evaluation Report," March 1999, the

average lake stage expected to result from a 100-year storm is 21.3 feet, NGVD, and the standard project flood for the average lake stage is 26.0 feet, NGVD. Enclosure 3 (See Appendix 01000-B3) shows the Lake Okeechobee mean-daily elevation for 1999 and 2000.

b. Water stages downstream of S-351 are mainly influenced by rainfall, rainfall runoff, pumping operations at the adjacent Structure 2 (S-2) pump station, and discharges through the S-351 spillway to and from Lake Okeechobee for water supply and regulatory purposes. The canals downstream of S-351 are normally regulated between 11.5 and 12.0 feet, NGVD. S-351 allows releases to be made from Lake Okeechobee to meet water requirements in the Hillsboro and North New River service areas. It also enables flood flows to be discharged from the agricultural area into Lake Okeechobee when the lake level is low. S-351 also prevents hurricane induced lake tides from entering the Hillsboro or North New River Canals. Under certain conditions it is used to make regulatory releases from Lake Okeechobee into, both, Water Conservation Area 2 via the North New River Canal and Water Conservation Area 1 via the Hillsboro Canal. S-351 is normally closed during pumping operations at S-2.

The USGS records canal elevation downstream of S-351 at the North New River Canal Below S-351, near South Bay, Florida, gage number 02283500. The period of record for this gage spans from 1957 through 2000. For the period of record, the maximum-recorded stage was 14.09 feet, NGVD, on 28 September 1962 and the lowest recorded stage was 6.98 feet, NGVD, on 28 October 1981.

c. S-2 is a four unit pumping plant located in the alignment of Lake Okeechobee South Shore Levee at the intersection of the Hillsboro and the North New River Canals at Lake Okeechobee, adjacent to S-351. The purpose of the structure is to pump surplus water from the agricultural area south and east of the structure into Lake Okeechobee via the Hillsboro and North New River Canals. S-2 will be operated by the South Florida Water Management District (SFWMD) whenever water level at any point in the Hillsboro or North New River Canals, within the agricultural area south of the structure, exceeds the optimum elevation of 13.0 feet, unless the water level in Lake Okeechobee is low enough to permit quantity discharge into the lake through S-351 at a desirable rate. Because of water quality concerns in Lake Okeechobee, at present, S-2 is operated according to the Everglades Agricultural Area Interim Action Plan.

d. Water stages on the lakeside of S-352 are mainly affected by fluctuations of Lake Okeechobee, evapotranspiration, pump back into the lake by various pumping structures, riverine inflow into the lake, rainfall, rainfall runoff, water supply releases, and regulatory releases. The current Lake Okeechobee Regulation Schedule, Water Supply/Environmental (WSE), was implemented in July 2000 and ranges from 13.5 to 18.5 feet, NGVD, it is shown on Enclosure 1 (See Appendix 01000-B1). This regulation schedule contains the guidelines for Lake Okeechobee lake level management and is referred to for water management operational decisions, which includes operations at S-352. The project site is subject to wind tides and wave runoff on Lake Okeechobee due to tropical cyclones and extra tropical storms.

e. Water levels downstream of S-352 are mainly affected by rainfall

runoff, water supply withdrawals, and discharges through S-352. The gated spillway structure provides control of regulatory discharge from Lake Okeechobee, pass sufficient discharge during normal and low flow periods to maintain stages in the downstream canal and satisfy irrigation demands, and to provide for flood protection. S-352 discharges into a 10.3 mile stretch of the West Palm Beach Canal which is the headwater for Structure 5A (S-5A). S-5A has an optimum water control elevation of 11.5 to 12.0 feet, NGVD.

1.6 IDENTIFICATION OF GOVERNMENT-FURNISHED PROPERTY

a. Read this paragraph in conjunction with the Clause IDENTIFICATION OF GOVERNMENT-FURNISHED PROPERTY (FAR 52.245-3) of Section 00700 CONTRACT CLAUSES.

b. Each item of property to be furnished under this clause shall be identified in the Schedule by quantity, item, and description.

SCHEDULE OF GOVERNMENT-FURNISHED PROPERTY

Item No.	Quantity Furnished	Description	Delivery Point
1	1 each	Bottoms dewatering bulkhead	S-77
2	9 each	Standard dewatering bulkheads	S-77
3	2 each	Bottoms dewatering bulkhead	South Florida Operations Office
4	8 each	Standard dewatering bulkheads	South Florida Operations Office
5	4 each	Angles for dewatering bulkheads	South Florida Operations Office

S-351

Items 1 through 2 shall be returned to S-77 site after S-351 dewatering is complete and items 3 through 4 shall be returned to S-354 site after S-352 dewatering is complete, item 5 shall be returned to Contracting Officer's Representative.

1.7 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER (31 OCT 1989)

This provision specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the Clause DEFAULT (FIXED-PRICE CONSTRUCTION) of Section 00700 CONTRACT CLAUSES. In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

a. 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.

b. 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.

1.7.1 Schedule

The following schedule of monthly anticipated adverse weather delays is based upon 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.

The following adverse weather calendar day data are provided for the S-352 and S-351 areas.

The average number of days in each calendar month with rainfall equal to, or greater than, 0.1 inches is provided for the project area in the following table. This information is based on data obtained from the Belle Glade, Florida rain gage located at latitude 26°48', and longitude 80°38'. The data were obtained from **Climatology of the United States No. 20 Climatic Summaries for Selected Sites** publications by the National Climatic Center, NOAA, for the period of record from 1951-1980.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY WORK
DAYS BASED ON 5-DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
4	4	3	4	7	11	11	11	11	7	3	3

1.7.2 Contractor Responsibility

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 50 percent or more of the Contractor's scheduled work day. 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 Clause DEFAULT (FIXED PRICE CONSTRUCTION) of Section 00700 CONTRACT CLAUSES.

1.8 BRIDGE-TO-BRIDGE COMMUNICATION

In order that radio communication may be made with passing vessels, all marine equipment engaged in work under this contract shall be equipped with bridge-to-bridge radio telephone equipment. The radio equipment shall

operate on a single channel very high frequency (VHF), FM, on a frequency of 156.55 MC per second with low power output having a communication range of approximately ten miles. The frequency has been approved by the Federal Communications Commission. Channels #13 and #16 must be monitored at all times.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

3.1 GENERAL REQUIREMENTS

S-351 and S-352 are equipped with a remote telemetry system for operation of the spillway gates. Prior to work being initiated by the contractor, coordination with the South Florida Water Management District (SFWMD) is required to allow SFWMD to disconnect the remote telemetry system at S-351 and S-352. The Contractor shall notify SFWMD 1 week in advance for scheduling purposes followed by a 24 hour notice for conformation of remote telemetry disconnection. The spillway gates will then be manually operated by SFWMD or U.S. Army Corps of Engineers (USACE) personnel. Prior to removal or connection of any hydraulic lines the contractor will notify the Contracting Officer who will coordinate with the Chief, South Florida Operations Office for their presence during the removal/connection of any hydraulic lines. Immediately following the removal/connection of any hydraulic lines, the spillway gate(s) shall be made available to USACE and/or SFWMD for operational testing. In conjunction with water management operations, the contractor will cease maintenance and make the spillway gate available for water management operations if so requested by the Contracting Officer. If requested by the Contracting Officer, the contractor shall return the spillway bay to an operable condition within 72 hours, except as stated below. The contractor shall have a crane available for use at the site to accomplish installation/operation of spillway gate. During hurricane season, if a hurricane or tropical storm threatens the area the Contracting Officer may request the contractor to return the spillway gate back into the spillway bay within 24 hours.

The contractor shall not operate the spillway at S-351 or S-352. All gate operations at S-351 and S-352 will be performed by personnel from SFWMD and/or the USACE. The contractor shall not interfere with or hinder the SFWMD or USACE access to, or operation of, the spillway. The contractor will be limited to maintenance of one spillway bay at a time, and only one spillway gate shall be out of service at any time. In the event that discharges are necessary, the maximum allowable gate opening curves for S-351 and S-352 will be followed respectively. The maximum allowable unbalanced gate opening is 2 feet. The contractor shall notify the Contracting Officer at least two business days in advance of beginning work in each of the spillway bays. The Contracting Officer will coordinate with the Chief, Water Management Section and the Chief, South Florida Operations Office to determine if hydrometeorological conditions permit work to begin in each spillway bay.

In conjunction with SFWMD's Water Supply Contingency Plan, the contractor may be requested to allow the installation/removal of temporary pumps at S-351 which will require the spillway gates to be in place. The

installation and removal times will be provided to the contractor at least 96 hours prior to installation/removal.

With removal of S-351 and S-352 spillway gate, top elevation of bulkhead is of importance. Lake Okeechobee is subject to water surface elevations outside of those shown on Enclosure 2 as well as elevation due to storm surge as shown on Enclosure 1. In the event that hurricane or tropical storm regulations are enacted by government personnel, S-351 and S-352 spillway gates will be closed by government personnel and not opened until notification by Chief, South Florida Operations Office.

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PART 3 EXECUTION (NOT APPLICABLE)

-- End of Section Table of Contents --

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 LUMP SUM PAYMENT ITEMS

Payment items for the work of this contract for which contract lump sum payments will be made are listed in the LINE ITEMS AND PRICING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular lump sum or unit price payment item, shall be included in the listed lump sum item most closely associated with the work involved. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

1.1.1 Dewatering of Structure (Line Item 0001AA)

Payment will be made for costs associated with dewatering the Spill-way Structure, which includes full compensation for furnishing all materials, equipment, and labor required to dewater the structure. Payment will be made in accordance with Section 02240 DEWATERING.

1.1.2 Excavate Hydraulic Line and Resleeve (Line Item 0001AB)

Payment will be made for costs associated with Excavating hydraulic line and resleeving, which includes full compensation for furnishing all materials, equipment, and labor required to excavate, resleeve, backfill, and repair area of excavation. Payment will be made in accordance with Section 02316 EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES

1.1.3 Handling, Transporting, and Disposing Hazardous Waste (Lead) (Line Item 0001AC)

Payment will be made for costs associated with Handling, Transporting, and Disposing Hazardous Waste (Lead), which includes full compensation for furnishing all materials, equipment, and labor required to handle, transport, and dispose of hazardous waste lead products. Payment will be made in accordance with Section 09965A PAINTING: HYDRAULIC STRUCTURES.

1.1.4 Removal and Replacement of Handrails (Line Item 0001AD)

Payment will include full compensation for furnishing all materials, equipment, and labor required to remove and replace handrails, in accordance with Section 05502A METALS: MISCELLANEOUS, STANDARD ARTICLES,

SHOP FABRICATED ITEMS

1.1.5 Repair of Concrete Cracks (Line Item 0002AE)

Payment will be made for costs associated with dewatering the Spill way Structure, which includes full compensation for furnishing all materials, equipment, and labor required to dewater the structure. Payment will be made in accordance with Sections, 02230 Clearing and Grubing and 03900 Restortation of Concrete.

1.1.6 Sandblasting and Painting of Vertical Lift Gates and Components (Line Item 0001AF)

Payment will include full compensation for furnishing all materials, equipment, and labor required to sandblast and paint taintor gate and components, in accordance with Section 09965A PAINTING: HYDRAULIC STRUCTURES and 02210 CLEARING AND GRUBBING.

1.1.7 Sandblasting and Painting of Mechanical Hoist Machinery (Line Item 0001AG)

Payment will include full compensation for furnishing all materials, equipment, and labor required to sandblast and paint mechanical hoist machinery, in accordance with Section 09965A PAINTING: HYDRAULIC STRUCTURES..

1.1.8 Sandblasting and Painting of Miscellanous Metals (Line 0001AH)

Payment will include full compensation for furnishing all materials, equipment, and labor required to sandblast and Miscellaneous Items such as Wall Armor and other items on site noted on drawings requiring painting, in accordance with Section 09965 PAINTING: HYDRAULIC STRUCTURES.

1.1.9 Vertical Lift Gate Inspection and Repair Work (Line Item 0001AJ)

Payment will include full compensation for furnishing all materials, equipment, and labor required to repair inspect and vertical gate, in accordance with Section 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS, 05502055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS and 11288 VERTICAL GATE LIFT REPAIR WORK.

1.1.10 Mechanical Repair Work (Line Item 0001AK)

Payment will be made for costs associated with furnishing all plant, materials, equipment, and labor required to repair the mechanical hoist equipment in accordance with Sections 15000 MECHANICAL WORK S-352 AND Section 15495 HYDRAULIC POWER SYSTEMS.

1.1.11 Electrical Repair Work (Line Item 0001AL)

Payment will include full compensation for furnishing all materials, equipment, and labor required to complete electrical repair work in accordance with Section 16415 ELECTRICAL WORK.

1.1.12 Dewatering of Structure (Line Item 0002AA)

Payment will be made for costs associated with dewatering the Spill-way Structure, which includes full compensation for furnishing all materials, equipment, and labor required to dewater the structure. Payment will be made in accordance with Section 02240 DEWATERING.

1.1.13 Repair of Concrete Cracks (Line Item 0002AB)

Payment will be made for costs associated with dewatering the Spillway Structure, which includes full compensation for furnishing all materials, equipment, and labor required to dewater the structure. Payment will be made in accordance with Sections, 02230 CLEARING AND GRUBING and 03900 RESTORATION OF CONCRETE.

1.1.14 Removal and Replacement of Fence and Grating Replacement (Line Item 0002AC)

Payment will include full compensation for furnishing all materials, equipment, and labor required to remove and replace Fence on Wing walls and replace grating, in accordance with Sections 02821 Fencing, and 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS.

1.1.15 Removal and Replacement of Handrails (Line Item 0002AD)

Payment will include full compensation for furnishing all materials, equipment, and labor required to remove and replace handrails, in accordance with Section 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS

1.1.16 Sandblasting and Painting of Miscellaneous Metals (Line 0002AE)

Payment will include full compensation for furnishing all materials, equipment, and labor required to sandblast and Miscellaneous Items such as Wall Armor and other items on site noted on drawings requiring painting, in accordance with Section 09965 PAINTING: HYDRAULIC STRUCTURES.

1.1.17 Handling, Transporting, and Disposing Hazardous Waste (Lead) (Line Item 0002AF)

Payment will be made for costs associated with Handling, Transporting, and Disposing Hazardous Waste (Lead), which includes full compensation for furnishing all materials, equipment, and labor required to handle, transport, and dispose of hazardous waste lead products. Payment will be made in accordance with Section 09965A PAINTING: HYDRAULIC STRUCTURES.

1.1.18 Vertical Lift Gate Inspection and Repair Work (Line Item 002AG)

Payment will include full compensation for furnishing all materials, equipment and labor required to inspect and repair vertical lift gate, in accordance with Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS, 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS and 11288 Vertical Lift Gate.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

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SECTION 05502

METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53	(1996) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 193/A 193M	(1996b) Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
ASTM A 194/A 194M	(1996) Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
ASTM A 240/A 240M	(1996) Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels
ASTM A 276	(1996) Stainless and Heat-Resisting Steel Bars and Shapes
ASTM A 307	(1994) Carbon Steel Bolts and Studs, 60 000 psi Tensile Strength
ASTM A 312/A 312M	(1995a) Seamless and Welded Austenitic Stainless Steel Pipes
ASTM A 320/A 320M	(1994; R 1995) Alloy Steel Bolting Materials for Low-Temperature Service
ASTM A 484/A 484M	(1994b) General Requirements for Stainless Steel Bars, Billets, and Forgings
ASTM A 668/A 668M	(1996) Steel Forgings, Carbon and Alloy, for General Industrial Use
ASTM A 730	(1993) Forgings, Carbon and Alloy Steel, for Railway Use

ASTM B 121/B 121M (1995) Leaded Brass Plate, Sheet, Strip,
and Rolled Bar

ASTM B 148 (1993a) Aluminum-Bronze Sand Castings

ASTM B 150 (1995a) Aluminum Bronze Rod, Bar, and
Shapes

ASTM B 209 (1996) Aluminum and Aluminum-Alloy Sheet
and Plate

ASTM B 308/B 308M (1996) Aluminum-Alloy 6061-T6 Standard
Structural Shapes

ASTM F 436 (1993) Hardened Steel Washers

ASME INTERNATIONAL (ASME)

ASME B18.2.1 (1981; Supple 1991; R 1992) Square and Hex
Bolts and Screws (Inch Series)

ASME B18.2.2 (1987; R 1993) Square and Hex Nuts (Inch
Series)

ASME B18.3 (1986; R 1995) Socket Cap, Shoulder and
Set Screws (Inch Series) Including
Dimensions of Hexagon and Spline Sockets
and Keys to Match

ASME B18.6.2 (1972; R 1993) Slotted Head Cap Screws,
Square Head Set Screws, and Slotted
Headless Set Screws

ASME B18.6.3 (1972; R 1991) Machine Screws and Machine
Screw Nuts

ASME B18.21.1 (1994) Lock Washers (Inch Series)

ASME B18.22.1 (1965; R 1990) Plain Washers

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FS RR-W-410 (Rev D; Am 1) Wire Rope and Strand

1.2 SUBMITTALS

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

SD-02 Shop Drawings

Shop Fabricated Metal Items; G|ED

Detail handrail drawings for wingwall at S-351 and canal locations at S-351 and S-352 and other fabrication drawings as required for contract, shall be submitted for approval as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

SD-03 Product Data

Miscellaneous Metals and Standard Metal Articles; G|COR

Shop Fabricated Metal Items; G|COR

Lists of materials shall be submitted for approval as specified and in Section 05055a METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

Records which identify the disposition of approved material and fabricated items in the work must be submitted for approval as specified and in Section 05055a METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

SD-04 Samples

Shop Fabricated Metal Items; G|COR

Samples shall be submitted for approval as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS. Samples of standard or fabricated items shall be full size and complete as required for installation in the work, and may be installed in the work, provided each sample is clearly identified and its location recorded.

SD-06 Test Reports

Miscellaneous Metals and Standard Metal Articles; G|COR

Shop Fabricated Metal Items; G|COR

Certified test reports for materials tests and analyses shall be submitted for approval as specified and in Section 05055a METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

1.3 Product Testing of Aluminum Picket Rail

Manufacturers must submit complete tests based on ASTM E 985 or other reconized Standard, which shows that their system meets all preformance requirements outlined in this specifications. Inlieu of product testing, manufacturer may submit calculations certified by a Professeional Engineer, showing system meets all performance requirements outlined in this specification

1.4 FABRICATION AND WORKMANSHIP REQUIREMENTS

Fabrication requirements and workmanship provisions for items specified in this section shall conform with the requirements of Section 05055a METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

1.5 DELIVERY, STORAGE AND HANDLING

a. Deliver materials to the job site in good condition and properly protected against damage to finished surfaces.

b. Storage on site:

1. Store material in a location and in a manner to avoid damage. Stacking shall be done in a way that will prevent bending.

2. Store material in a clean, dry location away from uncured concrete and masonry. Cover with waterproof paper, tarpaulin, or polyethylene sheeting in a manner that will permit circulation of air inside the covering.

c. Keep handling on site to a minimum. Exercise particular care to avoid damage to finishes of material.

PART 2 PRODUCTS

2.1 MISCELLANEOUS METALS AND STANDARD METAL ARTICLES

Miscellaneous metal materials and standard metal articles shall conform to the respective specifications and other designated requirements. Sizes shall be as specified or shown. Where material requirements are not specified, materials furnished shall be suitable for the intended use and shall be subject to approval.

2.1.1 Structural Steel

2.1.2 Steel Plates

ASTM A36

2.1.2.1 Structural

ASTM A 514, Grade 36

2.1.3 Steel Plates

ASTM A 36

2.1.4 Steel Pipes and Pipe Fittings

2.1.4.1 Pipes

ASTM A 53, Type E or S, Grade B, seamless or electric-resistance welded, galvanized, nominal size and weight class or outside diameter and nominal wall thickness as shown, threaded and coupled ends.

2.1.5 Bars and Shapes

Stainless steel bars and shapes shall conform to the following as specified or shown:

- a. ASTM A 276, UNS S30400 with a maximum carbon content of 0.08 percent, Condition A, hot-finished or cold-finished, Class C.

2.1.5.1 Plates, Bars & Shapes for Roller & Track Systems

- a. Fasteners for Bolted Track Plates and Guide Bars - Bolting materials shall conform to ASTM A 193/A 193M or ASTM A 320/A 320M, Class 2, Grade B8 Nuts shall conform to ASTM A 194/A 194M, Grade 8A.

- b. Gate Roller Links and Pins

Pins - ASTM A 276, UNS S21800, Condition A, cold-finished or hot-rolled and machine-finished to the tolerances specified in ASTM A 484/A 484M for cold-finished round bars, Class C.

- c. Seal Plates, Bars, and Retainers; Roller Guide Bars; and Track Plates.

(1) Welded Seal Plates and Bars; Welded Roller Guide Bars; and Welded Track Plates - ASTM A 240/A 240M, UNS S30400, Hot-Rolled and Annealed or Heat Treated, and Blast Cleaned or Pickled Finish; or ASTM A 276, UNS S30400 with a maximum carbon content of 0.08 percent, Condition A, Hot-Finished or Cold-Finished, Class C.

(2) Bolted Seal Plates, Bars, and Retainers; and Bolted Roller Guide Bars - ASTM A 240/A 240M, UNS S30400, Hot-Rolled and Annealed or Heat Treated, and Blast Cleaned or Pickled finish; or ASTM A 276, UNS S30400, Condition A, hot-finished or cold-finished, Class C.

2.1.5.2 Pipe

ASTM A 312/A 312M, seamless or welded, UNS S30400, NPS and schedule number or outside diameter and nominal wall thickness as shown, threaded and coupled ends.

2.1.6 Steel Forgings

2.1.6.1 General Industrial Use

ASTM A 668/A 668M, Class D, carbon content not exceeding 0.35 percent, and an overall chemical composition which results in satisfactory weldability.

2.1.6.1 Railway Use

ASTM A 730, Grade C, carbon content not exceeding 0.35 percent and an overall chemical composition which results in satisfactory weldability.

2.1.7 Aluminum

2.1.7.1 Sheets and Plates

ASTM B 209, Alloy 6061, Temper T6.

2.1.7.2 Structural Shapes

ASTM B 308/B 308M, Alloy 6061, Temper T6.

2.1.8 Bronze

2.1.8.1 Aluminum Bronze Castings

ASTM B 148, Copper Alloy UNS No. C95400.

2.1.8.2 Aluminum Bronze Rods, Bars, and Shapes

ASTM B 150, Copper Alloy UNS No. C61900, Temper M20.

2.1.9 Brass

2.1.9.1 Sheet, Plates, and Bars

ASTM B 121/B 121M, Composition C33500, Temper H01.

2.1.10 Bolts, Nuts, and Washers

Bolts, nuts, and washers shall be of the material, grade, type, class, style and finish indicated or best suited for intended use.

2.1.10.1 Bolts, Nuts, and Washers (Other Than High-Strength)

- a. Bolts and Nuts - ASTM A 307, Grade A, hot-dip galvanized
- b. Bolts - ASME B18.2.1.
- c. Nuts - ASME B18.2.2.
- d. Washers
 - (1) Plain Washers - ASME B18.22.1, Type B.
 - (2) Lock Washer - ASME B18.21.1.
 - (3) Beveled Washers - ASTM F 436, Type 3, Beveled.

2.1.10.2 Stainless Steel Bolts, Nuts and Washers

- a. Bolting materials shall conform to ASTM A 193 or ASTM A 320 CLASS 3 GRADE B: (ANSI TYPE 304)

b. Nuts shall be made from Armco Nitronic 60, conforming to ASME B 18.2.2

c. Washers shall be made from Austenitic Steel in accordance with requirements of ASME 18.22.1

2.1.10.3 Screws

Screws shall be of the material, grade, type, style, and finish indicated or best suited for use intended.

2.1.11 Cap Screws

ASME B18.2.1, ASME B18.3, or ASME B18.6.2 as required.

2.1.11.1 Machine Screws

ASME B18.6.3.

2.1.11.2 Set Screws

ASME B18.6.2.

2.1.11.3 Expansion Anchors

Type as required by manufacture, except that nail driven types will not be acceptable.

2.1.11.4 Wire Rope

FS RR-W-410, Type I, Class 3, Construction Corrosion Resistant Steel, wire sizes as shown.

2.2 SHOP FABRICATED METAL ITEMS

Shop fabricated metal items shall conform to the requirements and details as specified or shown and to the workmanship provisions and other applicable fabrication requirements as specified in Section 05055a METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.2.1 Railings

Railings shall be of the type specified and shown with picket rails and shall be furnished and installed complete with all fittings, brackets, fasteners, sleeves, anchors, and other appurtenances as shown and as required for proper installation. Aluminum handrail to be assembled by means of mechanical fittings. No pop rivets, sheet metal screws, expoxies or welded connections will be accepted. Railing replacement shall be aluminum at all locations. Railing system shall have a permanently installed picket rails. The picket rails shall not allow more than a four inch sphere to pass through openings vertically.

2.2.1.1 Materials

Aluminum railings shall be of pipe or tube as specified in paragraph PIPES AND TUBES. ~~Steel railings shall be steel as specified pipe.~~ Sleeves and other appurtenances shall be of the same material as the rails and posts or approved compatible materials.

2.2.1.2 PERFORMANCE REQUIREMENTS

A. General: All railings shall be supplied to conform to applicable sections of OSHA, Florida Building Code and EM385-1-1. In engineering handrail and railing systems to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:

1. Aluminum: AA "Specifications for Aluminum Structures."

B. Structural Performance of Handrails and Railing Systems: Engineer, fabricate, and install handrails and railing systems to withstand the following structural loads without exceeding the allowable design working stress of the materials for handrails, railing systems, anchors, and connections. Apply each load to produce the maximum stress in each of the respective components comprising handrails and railing systems.

1. Toprail of Guardrail System: Capable of withstanding the following loads applied as indicated:

a. Uniform load of 50 pounds per lineal foot applied horizontally at right angles to the top rail.

2. Infill Area of Guardrail Systems: Capable of withstanding the following loads applied as indicated:

a. Reactions due to the above load need not be combined with those loads on the toprail of guardrail system.

3. Handrails: The mounting of handrails shall be such that the completed handrail and supporting structure are capable of withstanding the following loads applied as indicated:

a. Concentrated load of 200 pounds applied in any direction at any point on the handrail.

b. These loads shall not be assumed to act cumulatively with those loads on the infill area of guardrail system.

C. Thermal Movements: Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in engineering, fabricating, and installing of joints, overstressing of components and connections, and other detrimental effects. Base engineering calculations on actual surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.

1. Temperature Change (Range): 120 deg. F ambient; 180 deg. F material surfaces.

D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

2.2.1.3 Fabrication

All handrail system to consist of top rail and intermediate rails with vertical pickets between intermediates. Pickets are to be friction fit into drilled holes at intermediate rails. ~~Rigid joints in railings~~ shall be of slip-on fittings assembly and shall be flush-finished. Assembled threaded joints shall have no exposed threads. Slip-on fittings shall be tight-fitting. Fasteners for slip-on fittings shall be the self-locking, concealed type. Manufactured in compliance with ASTM B 26 aluminum-magnesium alloy 535. Fasteners for aluminum fittings shall be of aluminum or stainless steel. ~~Fasteners for steel fittings shall be of stainless steel.~~ Expansion joints in railings shall be an outer-sleeved slip-joint, with one end of the sleeve secured to one rail and the ends of the adjoining rails separated a minimum of 1 inch in the installed position. Expansion joints shall be located in rails near the intersection of rails and posts. Bends in railings shall be made in a manner that railings are not crushed and shall maintain their original cross-sectional shape. Railings shall be free of burrs, sharp corners, and sharp edges. Railing finish shall be anodized aluminum. Manufacturer design calculations, showing that the installed railings are capable of withstanding a design working load of 200 pounds applied in any direction at any point on the top rail without permanent deformation, must be submitted and approved prior to installation. during installation set screws shall be treated with Loctite permanent thread locks to prevent removal.

2.2.1.4 RAILING SYSTEM (Picket Railing)

~~a. Railing system shall be permanently anchored.~~

~~b. Top Rails~~

~~1. Fabricate Top Rails from anodized aluminum tube with nominal size of 2 in. outside diameter with minimum schedule 40 pipe.~~

~~c. Bottom Rails~~

~~1. Fabricate Bottom Rail from anodized aluminum tube with nominal size of 2 inch diameter minimum schedule 40.~~

~~d. Pickets~~

~~1. Fabricate picket panels from anodized aluminum tube with minimum nominal size of ¾ inch wide with minimum schedule 80 pipe.~~

~~2. Pickets to be equally spaced between Posts at 4 in. max.~~

~~openings~~

~~e. Posts~~

- ~~1. Fabricate posts from anodized aluminum tube with a minimum nominal size of 2 inches wide and minimum schedule 80 post.~~
- ~~2. If required, provide post reinforcement to meet loading criteria.~~

~~f. Connection Splices~~

- ~~1. Internal connection splices shall be of extruded aluminum.~~

~~g. Mounting Base Plates~~

- ~~1. Base plates shall be of aluminum attached to ends of Posts by means of mechanical attachment. Screws shall be of stainless flat socket head machine screws.~~

Components

a. Rails and Posts

Extruded Aluminum Pipe ASTM 8429

Aluminum alloy 6063-T6. Finish AA M10C22A41

Posts - 2" EPS Schedule 90

Rails - 2" IPS Schedule 40

Pickets - 3/4" IPS Schedule 10

b. Mechanical Contractors

Post and handrail connector fittings

Sand cast of alum alloy 535 (ASTM 826)

Supplied with anodize finish 7 mil, minimum thickness

Design - Fittings shall be the type which fastens to the exterior of the pipe by means of a stainless steel internal/external knurl cup point set screw (ASTM F880). No other fasteners will be accepted.

Flanges

Sand cast from aluminum alloy 535 (ASTM B26)

Supplied with anodize finish .7 and minimum thickness

Design - Flanges shall be the type which fastens to the exterior of the pipe by means of a stainless steel knurl internal/external

cup point set screw (ASTM F880)

All anchoring hardware mil be 300 sues stainless steel.

c. Fasteners

a. All fasteners to be 302 or 304 stainless steel

b. Set screws shall be treated with Loctie permanent threadlocked during installation.

2.2.1.5 FASTENERS

a. Fasteners for Anchoring Railings to Other Construction: Select fasteners of the type, grade, and class required to produce connections that are suitable for anchoring railing to other types of construction indicated and capable of withstanding design loadings. All exposed fasters shall be made grouted and made tamper resistant to resist removal.

1. For aluminum railings, provide fasteners fabricated from type 304 stainless steel.

b. Fasteners for Interconnecting Railing Components: Use fasteners of same basic metal as the fastened metal, unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.

c. Cast-in-Place and Post-Installed Anchors: Anchors of type indicated below, fabricated from corrosion-resistant materials with capability to sustain, without failure, the loads determined by local code requirements.

1. list anchors required

2.2.1.6 GROUT AND ANCHORING CEMENT

a. Non-shrink, Non-metallic Grout: Premixed, factory-packaged, non-shrink, non-metallic, non-staining, non-corrosive grout. Provide grout specifically recommended by manufacturer for interior and exterior applications. Minimum 28 day compressive strength of 3000 psi.

b. (Picket Railing Railing)

Fabricate handrails and railing systems with non-welded, internal and mechanical connections to comply with manufacturer's printed requirements, project design requirements, details, dimensions, finish and member sizes, including post spacing and anchorage, but not less than the structural requirements to support loading.

1. Clearly mark component units for site assembly and installation.

2. Use connections that maintain structural capacity of joined members.

- c. Provide weep holes or other means to exit entrapped water from hollow sections of railing members exposed to exterior, condensation, or moisture from other sources.
- d. Form all changes in rail direction by mitered, uniform radius bend within allowable tolerance of pipe size.
- e. Cut materials square and remove burrs from all exposed edges, with no chamfer.
- f. Make exposed joints butt tight and flush.
- g. Close exposed visible ends of Top Rails and Handrails by use of an end cap.
- h. Verify dimensions on site prior to shop fabrication.

2.2.1.7 FINISHES, GENERAL

- a. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designating finishes.
- b. Protect mechanical finishes on exposed surfaces from damage per manufacturer's recommendations.
- c. Appearance of Finished Work

2.2.1.8 ALUMINUM FINISH

Anodized finish shall be Class I provided in accordance with AA-M12 C22 A41.

2.2.1.9 Installation

Railings shall be installed as specified and shown. Railing posts anchored to concrete surfaces perpendicular to the posts shall be rigidly secured to flange fittings anchored to concrete with expansion anchors. Railing posts anchored to concrete surfaces parallel to the posts shall be rigidly secured to flange fittings anchored to concrete with expansion anchors. Railing posts anchored to structural metal shall be structural metal shall be separated from material with neoprene pad. Ends of rails anchored to concrete or masonry shall be rigidly secured to flange fittings anchored to concrete or masonry with expansion anchors

2.2.2 Cover Plates

Grating and cover plates shall be of the material and size shown, and shall be fabricated in sectional panels of the width and length shown, or as appropriate, to accurately fit within the supporting recess frames. Openings through panels shall be provided as shown or as required. Cover plates shall be galvanized after fabrication.

2.2.2.1 Cover Plates

Cover plates shall be as specified in paragraph STEEL FLOOR PLATE. Cover plate panels shall be provided with holes for insertion of removal tool. Sharp edges and burrs shall be removed from plates.

PART 3 EXECUTION

3.1 PREPARATION

Supply items to be cast in concrete, embedded in masonry.

3.2 DISSIMILAR METALS

- a. When aluminum components come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with a heavy coat of a asphalt paint or provide a heavy vinyl tape barrier.
- b. When aluminum components come into contact with cement or lime mortar, exposed aluminum surfaces shall be painted with two-part epoxy.

3.3 INSTALLATION

- a. Install in accordance with shop drawings and manufacturer's instructions.
- b. Erect work square and level, horizontal or parallel to rake of steps or ramp, and free from distortion or defects detrimental to appearance or performance.
- c. ~~Expansion joints shall be provided as needed to allow for thermal expansion or contraction.~~ Expansion and Contraction
 - a. Top rail of the handrail system shall be spliced at a maximum of every 24' by means of an internal coupling. A 3/8" gap should be provided between the rails at each splice. Provide splices with 3/8 " gap in all rails over expansion joints in concrete.

3.4 Site Visit

The handrail manufacturer shall have qualified, representative present during the first day of installation. This representative will also make additional visits throughout the course of installation.

3.5 CLEANING

- a. As installation is completed, wash thoroughly using plain water containing a mild soap or detergent. When preferred, an anodized finish shall be cleaned with white gasoline, kerosene or distillate. Aluminum with a painted finish shall be cleaned with plain water containing a mild soap or detergent.

- b. Do not use an acid solution, steel wool or other harsh abrasives.
- c. If stains remain after washing, remove paint finish and restore in accordance with NAAMM Metal Finishes Manual. Finish must not be removed from anodized aluminum. Reanodizing can only be done by removing railing and returning it to the anodizer.

3.6 REPAIR OF DEFECTIVE WORK

- a. Remove stained or otherwise defective work and replace with material that meets specification requirements.

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 - 2.2.3 Formula V-766e, Vinyl-Type White (or Gray) Impacted Immersion Coating
 - 2.2.4 Formula V-103C, Vinyl-Type Black-Finish Impacted Immersion Coating
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SECTION 09965

PAINTING: HYDRAULIC STRUCTURES

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- | | |
|-------------|---|
| ANSI Z87.1 | (1989; Errata; Z87.1a) Occupational and Educational Eye and Face Protection |
| ANSI Z358.1 | (1990) Emergency Eyewash and Shower Equipment |

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- | | |
|-------------|--|
| ASTM D 12 | (1988; R 1998) Raw Tung Oil |
| ASTM D 153 | (1986; R 1996e1) Specific Gravity of Pigments |
| ASTM D 281 | (1995) Oil Absorption of Pigments by Spatula Rub-Out |
| ASTM D 304 | (1995; R 1999) n-Butyl Alcohol (Butanol) |
| ASTM D 520 | (1984; R 1995e1) Zinc Dust Pigment |
| ASTM D 561 | (1982; R 1999) Carbon Black Pigment for Paint |
| ASTM D 740 | (1994; R 1997) Methyl Ethyl Ketone |
| ASTM D 841 | (1997) Nitration Grade Toluene |
| ASTM D 962 | (1981; R 1999) Aluminum Powder and Paste Pigments for Paints |
| ASTM D 1045 | (1995) Sampling and Testing Plasticizers Used in Plastics |
| ASTM D 1152 | (1989; R 1997) Methanol (Methyl Alcohol) |

ASTM D 1153	(1994; R 1997) Methyl Isobutyl Ketone
ASTM D 1186	(1993) Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base
ASTM D 1200	(1994; R 1999) Viscosity by Ford Viscosity Cup
ASTM D 1210	(1996) Fineness of Dispersion of Pigment-Vehicle Systems by Hegman-Type Gage
ASTM D 1308	(1987; R 1998) Effect of Household Chemicals on Clear and Pigmented Organic Finishes
ASTM D 1400	(1994) Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base
ASTM D 1475	(1998) Density of Paint, Varnish, Lacquer, and Related Products
ASTM D 1640	(1995; R 1999) Drying, Curing, or Film Formation of Organic Coatings at Room Temperature
ASTM D 2369	(1998) Volatile Content of Coatings
ASTM D 2917	(1991; R 1998) Methyl Isoamyl Ketone
ASTM D 3721	(1983; R 1999) Synthetic Red Iron Oxide Pigment
ASTM D 4206	(1996) Sustained Burning of Liquid Mixtures Using the Small Scale Open-Cup Apparatus
ASTM D 4417	(1993; R 1999) Field Measurement of Surface Profile of Blast Cleaned Steel
ASTM E 1347	(1997) Color and Color-Difference Measurement by Tristimulus (Filter) Colorimetry

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.20	Access to Employee Exposure and Medical Records
29 CFR 1910.94	Ventilation

29 CFR 1910.134	Respiratory Protection
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1910, Subpart I	Personal Protective Equipment
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.62	Lead
40 CFR 50.6	National Primary and Secondary Ambient Air Quality Standards for Particulate Matter
40 CFR 50.12	National Primary and Secondary Ambient Air Quality Standards for Lead
40 CFR 50, App B	Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere
40 CFR 58, App E	Probe Siting Criteria for Ambient Air Quality Monitoring
40 CFR 60, App A, Mtd 22	Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares
40 CFR 117	Determination of Reportable Quantities for Hazardous Substances
40 CFR 122	EPA Administered Permit Programs: The National Pollutant Discharge Elimination System
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 261, App III	Chemical Analysis Test Methods
40 CFR 261, App II, Mtd 1311	Toxicity Characteristic Leaching Procedure (TCLP)
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 262.22	Number of Copies
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 302	Designation, Reportable Quantities, and Notification

SSPC SP 6 (1994) Commercial Blast Cleaning

SSPC SP 7 (1994) Brush-Off Blast Cleaning

1.2 SUBMITTALS

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

SD-03 Product Data

Accident Prevention Plan; G|COR

The Contractor shall submit an Accident Prevention Plan in accordance with the requirements of Section 01 of EM 385-1-1. The plan shall include, but is not limited to, each of the topic areas listed in Appendix A therein and the requirements of paragraph SAFETY AND HEALTH PROVISIONS; each topic shall be developed in a concise manner to include management and operational aspects.

Confined Space Procedures; G|COR

The Contractor shall submit detailed written standard operating procedures for confined spaces in accordance with 29 CFR 1910.146 and EM 385-1-1, Section 6I, and as further described in this paragraph.

a. The procedures shall include certificates of calibration for all testing and monitoring equipment. The certificates of calibration shall include: type of equipment, model number, date of calibration, firm conducting calibration, and signature of individual certifying calibration.

b. The procedures shall include methods of inspection of personal protective equipment prior to use.

c. The procedures shall include work practices and other engineering controls designed to reduce airborne hazardous chemical exposures to a minimum.

d. The procedures shall include specification of the design and installation of ventilation systems which shall provide adequate oxygen content and provide for the dilution of paint solvent vapor, lead, and other toxic particulates within the confined space. In addition, the contractor shall include plans to evaluate the adequacy of air flow patterns.

Respiratory Protection Program; G|COR

The Contractor shall submit a comprehensive written respiratory protection program in accordance with 29 CFR 1910.134, 29 CFR

1926.62, and Section 05.E of EM 385-1-1.

Airborne Sampling Plan; G|COR

The contractor shall submit an Airborne Sampling Plan detailing the NIOSH Pub No. 98-119, Factory Mutual, or Underwriters Laboratories approved equipment, equipment calibration procedures, sampling methods, sampling to be performed, and analytical procedures to be used based on the type of work to be performed and anticipated toxic contaminants to be generated. The contractor shall include the name of the accredited laboratory, listed by the American Industrial Hygiene Association (AIHA), to be used to conduct the analysis of any collected air samples.

Ventilation Assessment; G|COR

The contractor shall submit a plan to provide ventilation assessment as required by paragraph PAINT APPLICATION, subparagraph VENTILATION.

Medical Surveillance Plan; G|COR

The Contractor shall submit a Medical Surveillance Plan as required in paragraph MEDICAL STATUS and provide a statement from the examining physician indicating the name of each employee evaluated and any limitations which will preclude the employee from performing the work required. The statement shall include the date of the medical evaluation, the physician's name, signature, and telephone number.

Worker Protection Plan; G|COR

The Contractor shall submit a Worker Protection Plan in accordance with the requirements of 29 CFR 1926.62. The plan shall address all necessary aspects of worker protection and shall include activities emitting lead, means to achieve compliance, alternative technologies considered, air monitoring program, implementation schedule, work practice program, administrative controls, multicontractor site arrangements, and jobsite inspections.

Environmental Compliance Plan; G|COR

The Contractor shall submit an Environmental Compliance Plan. The plan shall incorporate the submittals for Water Quality Plan, Soil Quality Plan, Ambient Air Monitoring Plan, and Visible Emissions Monitoring Plan. The submitted plan shall also address all aspects of establishing and demarcating regulated areas, ventilation/containment system performance verification, and reporting of accidental releases.

Waste Classification, Handling, and Disposal Plan; G|COR

The contractor shall submit a Waste Classification, Handling,

and Disposal Plan in accordance with the requirements of 40 CFR 261 and 40 CFR 262 and paragraph Waste Classification, Handling, and Disposal.

Containment Plan; G|ED

The Contractor shall submit a plan for containing debris generated during paint removal operations in accordance with the requirements of paragraph Containment. The plan shall include drawings, load-bearing capacity calculations, and wind load calculations. When the design is such that the spent abrasive is allowed to accumulate in quantities greater than 1,000 pounds, and/or impart a significant wind load on the structure, the contractor shall have the drawings approved by a registered structural engineer. The drawings and calculations shall be stamped with the engineer's seal. The contractor shall also identify the type and placement of water booms, methods for anchoring the booms, and the procedures for removing debris.

Visible Emissions Monitoring Plan; G|COR

The Contractor shall submit a Visible Emissions Monitoring Plan in accordance with the paragraph Visible Emissions Monitoring. The plan shall include the provisions for halting work and correcting the containment in the event unacceptable emissions are observed. General statements shall not be used; specific methods, procedures, and details are required.

Ambient Air Monitoring Plan; G|COR

The Contractor shall submit a plan for monitoring emissions of particulate matter 10 microns or less in size (PM-10). The plan shall comply with the requirements of EPA regulation 40 CFR 50.6 and paragraph PM-10 Monitoring. The plan shall also include provisions for halting work and correcting the containment in the event unacceptable emissions occur. The Contractor shall submit a plan for monitoring emissions of Total Suspended Particulates (TSP). The plan shall comply with the requirements of EPA regulation 40 CFR 50.12 and paragraph TSP Monitoring. The plan shall also include provisions for halting work and correcting the containment in the event unacceptable emissions occur.

Water Quality Plan; G|COR

For all job sites where lead-containing or other hazardous paint will be removed, the Contractor shall submit a Water Quality Plan. The plan shall include provisions for halting work if spills or emissions are observed entering into bodies of water or found in areas where storm water runoff could carry the debris into bodies of water or storm sewers. The plan shall also address cleanup and reporting procedures.

Soil Quality Plan; G|COR

For all job sites where lead-containing or other hazardous paint will be removed, the Contractor shall submit a Soil Quality Plan. The plan shall include provisions for halting the work should soil contamination occur, correcting the deficiencies responsible for the contamination, and provide procedures for removing and replacing contaminated soil.

SD-04 Samples

Specification and Proprietary Paints; G|ED

The Contractor shall submit samples of all special paint formula, Military, Master Painter Institute, Commercial Item Description, and SSPC paints. For products that are specified to be applied in accordance with the manufacturer's recommendations the Contractor shall submit the paint producers product data sheet or other written instructions for those products. When the required quantity of any type is 50 gallons or less, the Contractor shall submit in lieu of the liquid paint sample:

a. A certified test report showing the results of required tests made on the material and a statement that it meets all of the specification requirements.

b. A certified test report showing the results of required tests made on a previous batch of paint produced by the same firm using the same ingredients and formulation except for minor differences necessitated by a color change and a statement that the previous batch met all of the specification requirements. A report of tests on the proposed batch showing the following properties applicable to the material specifications shall be furnished: color, gloss, drying time, opacity, viscosity, weight per gallon (liter), and fineness of grind.

Thinners; G|ED

Samples shall be submitted of the thinners which are those solvents used to reduce the viscosity of the paint.

SD-06 Test Reports

PM-10 Monitoring Report; G|COR

The Contractor shall submit reports of the PM-10 monitoring tests as described in paragraph PM-10 Monitoring.

TSP Monitoring Report; G|COR

The Contractor shall submit reports of the TSP monitoring tests as described in paragraph TSP Monitoring.

Airborne Sampling Report; G|COR

The Contractor shall submit reports of airborne sampling tests

as required by paragraph Airborne Sampling.

Soil Quality Report; G|COR

The Contractor shall submit the results of the prework and post work soil quality tests in accordance with the requirements of paragraph Soil Quality.

Inspection and Operation Records; G|COR

The Contractor shall submit records of inspections and operations performed in accordance with paragraph INSPECTION. Submittals shall be made on a daily basis.

SD-07 Certificates

Qualifications and Experience; G|COR

The Contractor shall submit certification pursuant to paragraph QUALIFICATIONS for all job sites. Submittal of the qualifications and experience of any additional qualified and competent persons employed to provide on-site environmental, safety, and health shall also be provided. Acceptance of this submission must be obtained prior to the submission of other required environmental, safety, and health submittal items.

Qualified Painting Contractor; G|COR

The Contractor shall submit a copy of their current SSPC QP 1 certification.

Qualified Hazardous Paint Removal Contractor; G|COR

The Contractor shall submit a copy of their current SSPC QP 2 certification.

Qualified Shop Painting Contractor; G|COR

The Contractor shall submit a copy of thier current SSPC QP3 Certificate

Qualified Coating Thickness Gages; G|COR

Documentation of manufacturer's certification shall be submitted for all coating thickness gages.

1.3 QUALIFICATIONS

Qualifications and experience shall comply with the following.

1.3.1 Certified Professional

The Contractor shall utilize a qualified and competent person as defined in Section 01 of EM 385-1-1 to develop the required safety and health

submittal and to provide on-site safety and health services during the contract period. The person shall be a Certified Industrial Hygienist (CIH), an Industrial Hygienist (IH), or a Certified Safety Professional (CSP) with a minimum of 3 years of demonstrated experience in similar related work. The Contractor shall certify that the Certified Industrial Hygienist (CIH) holds current and valid certification from the American Board of Industrial Hygiene (ABIH), that the IH is considered board eligible by written confirmation from the ABIH, or that the CSP holds current and valid certification from the American Board of Certified Safety Professionals. The CIH, IH, or CSP may utilize other qualified and competent persons, as defined in EM 385-1-1, to conduct on-site safety and health activities as long as these persons have a minimum of 2 years of demonstrated experience in similar related work and are under the direct supervision of the CIH, IH, or CSP. For lead containing jobsites, the competent and qualified person shall have successfully completed an EPA or state accredited lead-based paint abatement Supervisor course specific to the work to be performed and shall possess current and valid state and/or local government certification, as required.

1.3.2 Certified Laboratory

The Contractor shall provide documentation which includes the name, address, and telephone number of the laboratories to be providing services.

In addition, the documentation shall indicate that each laboratory is an EPA National Lead Laboratory Accreditation Program (NLLAP) accredited laboratory and that each is rated proficient in the NIOSH/EPA Environmental Lead Proficiency Analytical Testing Program (ELPAT) and will document the date of current accreditation. Certification shall include accreditation for heavy metal analysis, list of experience relevant to analysis of lead in air, and a Quality Assurance and Quality Control Program.

1.3.3 Qualified Painting Contractor

The Contractor shall be a certified SSPC-QP 1 Painting Contractor for field work and certified SSPC-QP 3 if components are painted in Contractor's shop.

1.3.4 Qualified Hazardous Paint Removal Contractor

The Contractor shall be a certified SSPC-QP 2 Painting Contractor, qualified for all types of paint removal Category A.

1.3.5 Qualified Paint Applicator

Documentation of certification shall be submitted for all paint applicators. Prior to the initiation of any work all paint applicators shall be tested and certified as meeting the requirements of the qualified paint applicator. Certification shall be administered by the government approved independent third party Test Agency. Applicators failing the certification test shall not be permitted to apply any paint on the project.

1.3.5.1 Test Plate

The test plate shall consist of a 6 feet by 6 feet steel plate with a 3/8 inch minimum thickness. The test plate shall have at least six bolts,

three with bolt heads exposed and three with threads exposed, a 12-inch wide flange and a 6-inch diameter pipe each 18 inches long welded perpendicular to the test panel and a 6-inch deep T-beam with sealed ends welded horizontal across the test panel one foot up from the bottom all within the area to be painted on one side. Bolts shall be 1 inch minimum diameter.

1.3.5.2 Certification Test Procedure

Certification testing of paint applicators shall be conducted at the job site in coordination with the Contracting Officer. The Contractor shall supply the fabricated test plates to be used for the tests and shall provide crane service, rigging, and any other work necessary to provide accessibility for the certification testing and inspection. In preparation, the Contractor shall clean and prepare the test plates in accordance with the requirements of the contracted work. Abrasive blasting shall be performed with the blast media to be used in the contract. The paints to be applied shall be the Contractor supplied materials and shall be those previously tested and approved for use on the contract. Paints shall be applied as specified in the contract. The painter being tested shall mix and thin the paints to be used in the test and shall set up and adjust the application equipment for use. Each painter shall apply each of the types of paint comprising the specified system. The test plate shall be painted in a near vertical position.

1.3.5.3 Certification Criteria

The paint applicator shall be evaluated based on the conformance of the applied paint system to the requirements of the specifications. Deficiencies in the coatings, improper mixing or improper application methods are basis for failure. The Test Agency shall be the sole judge as to the acceptability of each paint applicators performance.

1.3.6 Coating Thickness Gage Qualification

Documentation of certification shall be submitted for all coating thickness gages. Magnetic flux thickness gages as described in ASTM D 1186 shall be used to make all coating thickness measurements on ferrous metal substrates.

Eddy current thickness gages as described in ASTM D 1400 shall be used to measure coating thickness on all nonferrous metal substrates. Gages shall have an accuracy of +/- 3 percent or better. Gages to be used on the job shall be certified by the manufacturer as meeting these requirements.

1.4 SAMPLING AND TESTING

The Contractor shall allow at least 30 days for sampling and testing. Sampling may be at the jobsite or source of supply. The Contractor shall notify the Contracting Officer when the paint and thinner are available for sampling. Sampling of each batch shall be witnessed by the Contracting Officer unless otherwise specified or directed. A 1-quart sample of paint and thinner shall be submitted for each batch proposed for use. The sample shall be labeled to indicate formula or specification number and nomenclature, batch number, batch quantity, color, date made, and applicable project contract number. Testing will be performed by the

Government. Costs for retesting rejected material will be deducted from payments to the Contractor at the rate of 400 dollars for each paint sample retested and 300 dollars for each thinner retested.

1.5 SAFETY AND HEALTH PROVISIONS

Work shall be performed in accordance with the requirements of 29 CFR 1910, 29 CFR 1926, EM 385-1-1, and other references as listed herein. Matters of interpretation of the standards shall be submitted to the Contracting Officer for resolution before starting work. Where the regulations conflict, the most stringent requirements shall apply. Paragraph SAFETY AND HEALTH PROVISIONS supplements the requirements of EM 385-1-1, paragraph (1). In any conflict between Section 01 of EM 385-1-1 and this paragraph, the provisions herein shall govern.

1.5.1 Abrasive Blasting

The Contractor shall comply with the requirements in Section 06.H of EM 385-1-1.

1.5.1.1 Hoses And Nozzles

In addition to the requirements in Section 20 of EM 385-1-1, hoses and hose connections of a type to prevent shock from static electricity shall be used. Hose lengths shall be joined together by approved couplings of a material and type designed to prevent erosion and weakening of the couplings. The couplings and nozzle attachments shall fit on the outside of the hose and shall be designed to prevent accidental disengagement.

1.5.1.2 Workers Other Than Blasters

Workers other than blasting operators working in close proximity to abrasive blasting operations shall be protected by utilizing MSHA/NIOSH-approved half-face or full-face air purifying respirators equipped with high-efficiency particulate air (HEPA) filters, eye protection meeting or exceeding ANSI Z87.1 and hearing protectors (ear plugs and/or ear muffs) providing a noise reduction rating of at least 20 dBA or as needed to provide adequate protection.

1.5.2 Cleaning with Compressed Air

Cleaning with compressed air shall be in accordance with Section 20.B.5 of EM 385-1-1 and personnel shall be protected as specified in 29 CFR 1910.134.

1.5.3 Cleaning with Solvents

1.5.3.1 Ventilation

Ventilation shall be provided where required by 29 CFR 1910.146 or where the concentration of solvent vapors exceeds 10 percent of the Lower Explosive Limit (LEL). Ventilation shall be in accordance with 29 CFR 1910.94, paragraph (c)(5).

1.5.3.2 Personal Protective Equipment

Personal protective equipment shall be provided where required by 29 CFR 1910.146 and in accordance with 29 CFR 1910, Subpart I.

1.5.4 Pretreatment of Metals and Concrete with Acids

1.5.4.1 Personal Protective Equipment

Personnel shall be protected in accordance with 29 CFR 1910, Subpart I.

1.5.4.2 Emergency Equipment

In addition to the requirements of Section 05 of EM 385-1-1, the Contractor shall provide an eyewash in accordance with ANSI Z358.1, paragraph (6).

1.5.5 Mixing Epoxy and Polyurethane Resin Formulations

1.5.5.1 Exhaust Ventilation

Local exhaust ventilation shall be provided in the area where the curing agent and resin are mixed. This ventilation system shall be capable of providing at least 100 linear fpm of capture velocity measured at the point where the curing agent and resin contact during mixing.

1.5.5.2 Personal Protective Equipment

Exposure of skin and eyes to epoxy resin components shall be avoided by wearing appropriate chemically resistant gloves, apron, safety goggles, and face shields meeting or exceeding the requirements of ANSI Z87.1.

1.5.5.3 Medical Precautions

Individuals who have a history of sensitivity to epoxy or polyurethane resin systems shall be medically evaluated before any exposure can occur. Individuals who are medically evaluated as exhibiting a sensitivity to epoxy resins shall not conduct work tasks or otherwise be exposed to such chemicals. Individuals who develop a sensitivity shall be immediately removed from further exposure and medically evaluated.

1.5.5.4 Emergency Equipment

A combination unit, comprised of an eyewash and deluge shower, within close proximity to the epoxy or polyurethane resin mixing operation shall be provided in accordance with ANSI Z358.1, paragraph (9).

1.5.6 Paint Application

1.5.6.1 Ventilation

When using solvent-based paint in confined spaces, ventilation shall be provided to exchange air in the space at a minimum rate of 5,000 cubic feet per minute per spray gun in operation. It may be necessary to install both a mechanical supply and exhaust ventilation system to effect adequate air changes within the confined space. All air-moving devices shall be located

and affixed to an opening of the confined space in a manner that assures that the airflow is not restricted or short circuited and is supplied in the proper direction. Means of egress shall not be blocked. Ventilation shall be continued after completion of painting and through the drying phase of the operation. If the ventilation system fails or the concentration of volatiles exceeds 10 percent of the LEL (except in the zone immediately adjacent to the spray nozzle), painting shall be stopped and spaces evacuated until such time that adequate ventilation is provided.

An audible alarm that signals system failure shall be an integral part of the ventilation system. The effectiveness of the ventilation shall be checked by using ventilation smoke tubes and making frequent oxygen and combustible gas readings during painting operations. Exhaust ducts shall discharge clear of the working areas and away from possible sources of ignition.

1.5.6.2 Explosion Proof Equipment

Electrical wiring, lights, and other equipment located in the paint spraying area shall be of the explosion proof type designed for operation in Class I, Division 1, Group D, hazardous locations as required by the NFPA 70. Electrical wiring, motors, and other equipment, outside of but within 20 feet of any spraying area, shall not spark and shall conform to the provisions for Class I, Division 2, Group D, hazardous locations. Electric motors used to drive exhaust fans shall not be placed inside spraying areas or ducts. Fan blades and portable air ducts shall be constructed of nonferrous materials. Motors and associated control equipment shall be properly maintained and grounded. The metallic parts of air-moving devices, spray guns, connecting tubing, and duct work shall be electrically bonded and the bonded assembly shall be grounded.

1.5.6.3 Further Precautions

- a. Workers shall wear nonsparking safety shoes.
- b. Solvent drums taken into the spraying area shall be placed on nonferrous surfaces and shall be grounded. Metallic bonding shall be maintained between containers and drums when materials are being transferred.
- c. Insulation on all power and lighting cables shall be inspected to ensure that the insulation is in excellent working condition and is free of all cracks and worn spots. Cables shall be further inspected to ensure that no connections are within 50 feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.

1.5.6.4 Ignition Sources

Ignition sources, to include lighted cigarettes, cigars, pipes, matches, or cigarette lighters shall be prohibited in area of solvent cleaning, paint storage, paint mixing, or paint application.

1.5.7 Health Protection

1.5.7.1 Air Sampling

The Contractor shall perform air sampling and testing as needed to assure that workers are not exposed to contaminants above the permissible exposure limit. In addition, the Contractor shall provide the Contracting Officer with a copy of the test results from the laboratory within five working days of the sampling date and shall provide results from direct-reading instrumentation on the same day the samples are collected.

1.5.7.2 Respirators

During all spray painting operations, spray painters shall use approved SCBA or SAR (air line) respirators, unless valid air sampling has demonstrated contaminant levels to be consistently within concentrations that are compatible with air-purifying respirator Assigned Protection Factor (APF). Persons with facial hair that interferes with the sealing surface of the facepiece to face seal or interferes with respirator valve function shall not be allowed to perform work requiring respiratory protection. Air-purifying chemical cartridge/canister half- or full-facepiece respirators that have a particulate prefilter and are suitable for the specific type(s) of gas/vapor and particulate contaminant(s) may be used for nonconfined space painting, mixing, and cleaning (using solvents). These respirators may be used provided the measured or anticipated concentration of the contaminant(s) in the breathing zone of the exposed worker does not exceed the APF for the respirator and the gas/vapor has good warning properties or the respirator assembly is equipped with a NIOSH-approved end of service life indicator for the gas(es)/vapor anticipated or encountered. Where paint contains toxic elements such as lead, cadmium, chromium, or other toxic particulates that may become airborne during painting in nonconfined spaces, air-purifying half- and full-facepiece respirators or powered air-purifying respirators equipped with appropriate gas vapor cartridges, in combination with a high-efficiency filter, or an appropriate canister incorporating a high-efficiency filter, shall be used.

1.5.7.3 Protective Clothing and Equipment

All workers shall wear safety shoes or boots, appropriate gloves to protect against the chemical to be encountered, and breathable, protective, full-body covering during spray-painting applications. Where necessary for emergencies, protective equipment such as life lines, body harnesses, or other means of personnel removal shall be used during confined-space work.

1.6 MEDICAL STATUS

Prior to the start of work and annually thereafter, all Contractor employees working with or around paint systems, thinners, blast media, those required to wear respiratory protective equipment, and those who will be exposed to high noise levels shall be medically evaluated for the particular type of exposure they may encounter. Medical records shall be maintained as required by 29 CFR 1910.20. The evaluation shall include:

- a. Audiometric testing and evaluation of employees who will work in a noise environment with a time weighted average greater than or equal to

90 dBA.

b. Vision screening (employees who use full-facepiece respirators shall not wear contact lenses).

c. Medical evaluation shall include, but shall not be limited to, the following:

(1) Medical history including, but not limited to, alcohol use, with emphasis on liver, kidney, and pulmonary systems, and sensitivity to chemicals to be used on the job.

(2) General physical examination with emphasis on liver, kidney, and pulmonary system.

(3) Determination of the employee's physical and psychological ability to wear respiratory protective equipment and to perform job-related tasks.

(4) Determination of baseline values of biological indices for later comparison to changes associated with exposure to paint systems and thinners or blast media, which include: liver function tests to include SGOT, SGPT, GGPT, alkaline phosphates, bilirubin, complete urinalysis, EKG (employees over age 40), blood urea nitrogen (bun), serum creatinine, pulmonary function test, FVC, and FEV, chest x-ray (if medically indicated), blood lead and ZPP (for individuals where it is known there will be an exposure to materials containing lead), other criteria that may be deemed necessary by the Contractor's physician, and Physician's statements for individual employees that medical status would permit specific task performance.

(5) For lead-based paint removal, the medical requirements of 29 CFR 1926.62 shall also be included.

1.7 CHANGE IN MEDICAL STATUS

Any employee whose medical status has changed negatively due to work related chemical and/or physical agent exposure while working with or around paint systems and thinners, blast media, or other chemicals shall be evaluated by a physician, and the Contractor shall obtain a physicians statement as described in paragraph MEDICAL STATUS prior to allowing the employee to return to those work tasks. The Contractor shall notify the Contracting Officer in writing of any negative changes in employee medical status and the results of the physicians reevaluation statement.

1.8 ENVIRONMENTAL PROTECTION

In addition to the requirements of section 01354 the Contractor shall comply with the following environmental protection criteria.

1.8.1 Waste Classification, Handling, and Disposal

The Contractor shall be responsible for assuring the proper disposal of all

hazardous and nonhazardous waste generated during the project. Waste generated from abrasive blasting lead-containing paints with recyclable steel or iron abrasives shall be disposed of as a hazardous waste or shall be stabilized with proprietary pre-blast additives regardless of the results of 40 CFR 261, App II, Mtd 1311. Where stabilization is preferred, the contractor shall employ a proprietary blast additive, that has been blended with the blast media prior to use. Hazardous waste shall be placed in properly labeled closed containers and shall be shielded adequately to prevent dispersion of the waste by wind or water. Any evidence of improper storage shall be cause for immediate shutdown of the project until corrective action is taken. Nonhazardous waste shall be stored in closed containers separate from hazardous waste storage areas. All hazardous waste shall be transported by a licensed transporter in accordance with 40 CFR 263 and 49 CFR 171, Subchapter C. All nonhazardous waste shall be transported in accordance with local regulations regarding waste transportation. In addition to the number of manifest copies required by 40 CFR 262.22, one copy of each manifest will be supplied to the Contracting Officer prior to transportation.

1.8.2 Containmentment

The Contractor shall contain debris generated during paint removal operations in accordance with the requirements of SSPC Guide 6, Class A1. Where required the containment air pressure shall be verified by instrument. Where required the minimum air movement velocity shall be 100 fpm for cross-draft ventilation or 60 fpm for downdraft ventilation.

1.8.3 Visible Emissions Monitoring

The time of emissions shall be measured in accordance with 40 CFR 60, App A, Mtd 22. Visible emissions shall be monitored for not less than 15 minutes of every hour. Visible emissions for each hour shall be calculated by extrapolation. In no case shall visible emissions extend greater than 150 feet in any direction horizontal from the containment. In no case shall visible emissions be observed in the area of any sensitive receptor. If such emissions occur the job shall be shut down immediately and corrective action taken. The foreman shall be notified whenever visible emissions exceed 40 seconds in a 1 hour period. The foreman shall be notified and the job shall be shut down and corrective action taken whenever visible emissions exceed 75 seconds in a 2 hour period. Total observed visible emissions from the containment shall not exceed 1 percent of the work day. Shutdown and corrective action shall be taken by the Contractor to prevent such an occurrence. The Contractor shall document each time that the work is halted due to a violation of the visible emissions criteria. Documentation shall include the cause for shutdown and the corrective action taken to resolve the problem.

1.8.4 Air Quality Monitoring

1.8.4.1 PM-10 Monitoring

The Contractor shall perform PM-10 monitoring. The positioning of air monitoring equipment shall be in accordance with 40 CFR 58, App E, Subpart (8). In addition, a minimum of two PM-10 monitors shall be used at the

project site, one down wind from the project and one in the area of greatest public access (e.g., playground, school yard, or homeowner's yard). When the project is in an area where there are critical receptors nearby, monitoring shall be conducted throughout the entire period that abrasive blasting and cleanup operations are performed. Otherwise, monitoring shall be performed 4 of the first 8 days and on a regular basis thereafter for a sum total of 25 percent of the time surface preparation and debris cleanup are performed. Failure to meet air quality regulatory limits shall require air monitoring to be repeated immediately after corrective actions have been taken. The Contractor shall also conduct preproject PM-10 monitoring. The preproject PM-10 monitoring shall be conducted a minimum of 2 weeks prior to the beginning of the project. The monitoring shall continue for a minimum of 3 days to establish background levels. A report of the results shall be submitted to the Contracting Officer within 48 hours and shall include:

- (1) Name and location of jobsite.
- (2) Date of monitoring.
- (3) Time of monitoring (i.e., time monitoring begins and ends each day).
- (4) Identification and serial number of monitoring units.
- (5) Drawing showing specific location of monitoring units.
- (6) Drawing showing specific location of paint removal operation and the method of removal or work activity being performed.
- (7) Wind direction and velocity.
- (8) A flow chart verifying the rate of air flow across the filter throughout the sampling period.
- (9) Name and address of laboratory.
- (10) Laboratory test procedure.
- (11) Laboratory test results.
- (12) Signatures of field and laboratory technicians conducting the work.

1.8.4.2 TSP Monitoring

The Contractor shall perform TSP monitoring. The positioning of air monitoring equipment shall be in accordance with 40 CFR 58, App E, Subpart (8). In addition, a minimum of two TSP monitors shall be used at the project site, one down wind from the project and one in the area of greatest public access (e.g. playground, school yard, or homeowner's yard).

TSP-lead monitoring shall be conducted in accordance with 40 CFR 50, App B.

When the project is in an area where there are critical receptors nearby, monitoring shall be conducted throughout the entire period that abrasive

blasting and cleanup operations are performed. Otherwise, monitoring shall be performed 4 of the first 8 days and on a regular basis thereafter for a sum total of 25 percent of the time surface preparation and debris cleanup are performed. Failure to meet air quality regulatory limits shall require air monitoring to be repeated immediately after corrective actions have been taken. The Contractor shall also conduct preproject TSP monitoring. The preproject TSP monitoring shall be conducted a minimum of 2 weeks prior to the beginning of the project. The monitoring shall continue for a minimum of 3 days to establish background levels. A report of the results shall be submitted to the Contracting Officer within 48 hours and shall include:

- (1) Name and location of jobsite.
- (2) Date of monitoring.
- (3) Time of monitoring (i.e., time monitoring begins and ends each day).
- (4) Identification and serial number of monitoring units.
- (5) Drawing showing specific location of monitoring units.
- (6) Drawing showing specific location of paint removal operation and the method of removal or work activity being performed.
- (7) Wind direction and velocity.
- (8) A flow chart verifying the rate of air flow across the filter throughout the sampling period.
- (9) Name and address of laboratory.
- (10) Laboratory test procedure.
- (11) Laboratory test results.
- (12) Signatures of field and laboratory technicians conducting the work.

1.8.5 Water Quality

The Contractor shall conduct operations in such a manner that lead-containing and other hazardous paint debris do not contaminate the water and so that NPDES permits per EPA regulation 40 CFR 122 are not required for the project. In the event that there are any releases of lead paint debris into the waterways, with reportable quantities of hazardous substances designated pursuant to Section 311 of the Clean Water Act, they shall be reported to the EPA in accordance with 40 CFR 117 and 40 CFR 355. Releases or spills that carry into waterways or storm sewers shall be thoroughly documented. The documentation shall include the time and location of the release, amount of material released, actions taken to clean up the debris, amount of debris recovered, and corrective action taken to avoid a reoccurrence. Releases shall also be reported to the

Coast Guard and other state and local authorities as appropriate. If the release is equivalent to 10 pounds or more of lead-containing material in a 24-hour period, it is considered to be a reportable quantity under CERCLA.

The Contractor shall comply with 40 CFR 302.

1.8.6 Soil Quality

The Contractor shall establish and implement practices and procedures for preventing contamination of the soil from the removal of lead-containing or other hazardous paints. Unless otherwise directed by the Contracting Officer, soil shall be considered to have been contaminated by the Contractor's operation if an increase in the total lead content of 100 PPM or greater over background levels occurs. For purposes of computing the increase compute the mean background levels and the mean post-removal levels. The 100 PPM criteria is met if the difference between the means is less than 100 PPM plus the 95 percent confidence limit. Soil sampling and testing shall be conducted prior to the beginning of the project and after the project is completed. Interim testing may also be performed in the event the Contractor or Contracting Officer wants to confirm that the containment system and work practices continue to provide satisfactory protection of the soil. Unless otherwise directed by the Contracting Officer, the following minimum test locations shall be selected for soil analysis. Two locations shall be selected beneath or immediately adjacent to the structure being prepared, and additional samples shall be taken within 100 feet in each direction of the project (i.e., N, S, E, W) in which soil is present. The number of soil sample locations shall be sufficient to adequately characterize the soil contaminant levels within and around the project area. Five composite samples shall be collected at each location. Each of the five samples shall be comprised of five individual plugs of soil combined in a single bag. The composite samples at each location shall be collected using the following procedure:

- a. Place a 1-square foot template at each location.
- b. Remove a sample of soil 3/4 inch in diameter and 1/2 inch in depth at the center of the template and at each of the four corners. Place the five soil plugs into a single bag. This represents one of the three samples to be removed at a given location.
- c. Move the template 1 inch in any direction and repeat the process to collect the second sample. Place all plugs in a separate bag. Move the template 1 inch farther to collect the third sample.
- d. Identify each sample bag with the date, specific location of the sample, name and signature of the sampling technician, and complete chain of custody records.
- e. It is critical that the specific location of each sample be thoroughly measured and documented as the final project testing (and any interim testing) must be sampled in the precise locations.

Three samples collected at each location shall be analyzed. One of the remaining two samples shall be maintained by the Contractor for the duration of the project and the other by the Contracting Officer in the

event reanalysis is required. Lead-containing samples shall be analyzed in accordance with EPA testing guidance as published in 40 CFR 261, App III, by a laboratory listed by the American Industrial Hygiene Association (AIHA) as being proficient in conducting the test. The Contractor shall note that if it is determined that contamination of the soil has occurred as a result of the paint removal operations, TCLP testing will be employed to determine if the soil must be handled and disposed of as a hazardous waste. The initial sampling of the soil for total lead content does not establish whether the soil would be considered hazardous by TCLP testing. As a result, at the Contractor's option, additional prework soil samples may be removed (minimum of 105 grams is required for a single test at each site) to conduct TCLP testing to establish whether the soil would be classified as hazardous prior to project startup. In the event that there is a release of lead paint debris onto the soil and if the release is 10 pounds or more of lead-containing material in a 24-hour period, it is considered to be a reportable quantity under CERCLA. The Contractor shall comply with 40 CFR 302. The Contractor shall thoroughly document the occurrence of any spills of lead debris into the soil. The documentation shall include the time and location of the release, amount of material released, actions taken to clean up the debris, amount of debris reclaimed, and corrective action taken to avoid a reoccurrence. The documentation shall be provided to the Contracting Officer and shall also include the results of laboratory testing.

1.9 PAINT PACKAGING, DELIVERY, AND STORAGE

Paints shall be processed and packaged to ensure that within a period of one year from date of manufacture, they will not gel, liver, or thicken deleteriously, or form gas in the closed container. Paints, unless otherwise specified or permitted, shall be packaged in standard containers not larger than 5 gallons, with removable friction or lug-type covers. Containers for vinyl-type paints shall be lined with a coating resistant to solvents in the formulations and capable of effectively isolating the paint from contact with the metal container. Each container of paint or separately packaged component thereof shall be labeled to indicate the purchaser's order number, date of manufacture, manufacturer's batch number, quantity, color, component identification and designated name, and formula or specification number of the paint together with special labeling instructions, when specified. Paint shall be delivered to the job in unbroken containers. Paints that can be harmed by exposure to cold weather shall be stored in ventilated, heated shelters. All paints shall be stored under cover from the elements and in locations free from sparks and flames.

PART 2 PRODUCTS

2.1 SPECIAL PAINT FORMULAS

Special paints shall have the composition as indicated in the formulas listed herein. Where so specified, certain components of a paint formulation shall be packaged in separate containers for mixing on the job.

If not specified or otherwise prescribed, the color shall be that naturally obtained from the required pigmentation.

2.2 PAINT FORMULATIONS

Special paint formulas shall comply with the following:

2.2.1 Formula V-102e, Vinyl-Type Ready-Mixed Aluminum Impacted Immersion Coating

INGREDIENTS	PERCENT BY MASS
Vinyl Resin, Type 3	18.2
Aluminum Powder	8.3
Diisodecyl Phthalate	3.1
Methyl Isobutyl Ketone	33.8
Toluene	36.6
	<hr/>
	100.0

a. The paint shall be furnished with the aluminum pigment mixed into the vehicle.

b. The viscosity of the paint shall be between 60 and 90 seconds using ASTM D 1200 and a No. 4 Ford cup.

2.2.2 Formula V-106d, Vinyl-Type Red Oxide (Light or Dark Color) Impacted Immersion Coating

INGREDIENTS	PERCENT BY MASS
Vinyl Resin, Type 3	5.50
Vinyl Resin, Type 4	11.20
Synthetic Iron Oxide (Red) (Light or Dark Color)	15.80
Diisodecyl Phthalate	2.90
Methyl Isobutyl Ketone	31.00
Toluene	33.54
Propylene Oxide	0.06
	<hr/>
	100.00

a. The pigment shall be dispersed by means of pebble mills or other approved methods to produce a fineness of grind (ASTM D 1210) of not less than 7 on the Hegman scale. Grinding in steel-lined or steel-ball mills will not be permitted. No grinding aids, antissettling agents, or any other materials, other than those listed in the formula, will be permitted.

b. The viscosity of the paint shall be between 60 and 90 seconds using ASTM D 1200 and a No. 4 Ford cup.

c. The paint shall be furnished in two colors which are obtained by the alternative use of synthetic red iron oxide pigments of different shade. The dark paint shall reasonably approximate color 10076 of FED-STD-595, and light colored paint shall be readily distinguishable in the field from the dark. The two shades shall be furnished in the volume ratio designated by the purchaser.

2.2.3 Formula V-766e, Vinyl-Type White (or Gray) Impacted Immersion Coating

INGREDIENTS	PERCENT BY MASS
Vinyl Resin, Type 3	5.6
Vinyl Resin, Type 4	11.6
Titanium Dioxide and (for Gray)	
Carbon Black	13.0
Diisodecyl Phthalate	2.9
Methyl Isobutyl Ketone	32.0
Toluene	34.7
Ortho-Phosphoric Acid	0.2
	<hr/>
	100.0

a. The dispersion of pigment shall be accomplished by means of pebble mills or other approved methods to produce a fineness of grind (ASTM D 1210) of not less than 7 on the Hegman scale. Grinding in steel-lined or steel-ball mills will not be permitted. No grinding aids, antissettling agents, or any other materials except those shown in the formula will be permitted. The paint shall show the proper proportions of specified materials when analyzed by chromatographic and/or spectrophotometric methods. The ortho-phosphoric acid shall be measured accurately and diluted with at least four parts of ketone to one part of acid and it shall be slowly incorporated into the finished paint with constant and thorough agitation.

b. The viscosity of the paint shall be between 60 and 90 seconds using ASTM D 1200 and a No. 4 Ford cup.

c. The white and gray paints shall be furnished in the volume ratio designated by the purchaser. The gray paint shall contain no pigments other than those specified. Enough carbon black shall be included to produce a dry paint film having a reflectance of 20-24 (ASTM E 1347). The resulting gray color shall approximate color 26231 of FED-STD-595.

2.2.4 Formula V-103C, Vinyl-Type Black-Finish Impacted Immersion Coating

INGREDIENTS	PERCENT BY MASS
Vinyl Resin Type 3	20.0
Carbon Black	1.5
Diisodecyl Phthalate	3.4
Methyl Isobutyl Ketone	36.0
Toluene	39.1
	<hr/>
	100.0

a. The carbon black shall be dispersed to a fineness of grind (ASTM D 1210) of not less than 7 on the Hegman scale. A paste composed of carbon black milled into a Type 3 vinyl resin dissolved in an appropriate solvent may be used provided the finished product has the specification composition and grind. Material shall be free from seeding, gelling, and other deleterious effects. No grinding aids,

antissettling agents, or any other materials except those shown in the formula will be permitted.

b. The viscosity of the paint shall be between 60 and 90 seconds using ASTM D 1200 and a No. 4 Ford cup.

2.2.5 Formula VZ-108d, Vinyl-Type Zinc-Rich Impacted Immersion Coating

INGREDIENTS	PERCENT BY WEIGHT	POUNDS	GALLONS
COMPONENT A			
Vinyl Resin, Type 3	16.6	109.2	9.65
Methyl Isobutyl Ketone	80.6	528.9	79.30
Suspending Agent E	0.7	4.6	0.28
Suspending Agent F	0.4	2.7	0.19
Methanol	0.5	3.3	0.50
Synthetic Iron Oxide (Red)	1.2	7.9	0.19
	100.0	656.6	90.11
COMPONENT B			
Silane B	100.0	4.1	0.47
COMPONENT C			
Zinc Dust	100.0	550.0	9.42
			100.00
			(mixed paint)

a. The iron oxide and suspending agents shall be dispersed into the vehicle (Component A) to a fineness of grind of not less than 4 on the Hegman scale (ASTM D 1210). Grinding in steel-lined containers or using steel-grinding media shall not be permitted. The sole purpose of the iron oxide pigment is to produce a contrasting color. A red iron oxide-type 3 vinyl resin vehicle paste may be used in place of dry iron oxide provided compensating adjustment are made in the additions of Type 3 resin and methyl isobutyl ketone. The finished product with zinc dust added shall produce a paint which has a red tone upon drying and a reflectance of not more than 16 (ASTM E 1347).

b. VZ-108d paint shall be supplied as a kit. Each kit shall consist of 4.5 gallons (33.1 pounds) of Component A in a 5-gallon lug closure type pail, 27.5 pounds of zinc dust (Component C) packaged in a 1-gallon plastic pail, and 3 fluid ounces of silane (Component B) packaged in a glass bottle of suitable size having a polyethylene lined cap. The bottle of silane shall be placed on the zinc dust in the 1-gallon pail. In addition to standard labeling requirements, each container of each component shall be properly identified as to component type and each container label of Component A shall carry the following: MIXING AND APPLICATION INSTRUCTIONS: WARNING - THIS PAINT WILL NOT ADHERE TO

STEEL SURFACES UNLESS COMPONENT B IS ADDED. Remove the 3 ounces of bottled Component B (silane) from the Component C (zinc dust) container and add to the base paint Component A) with thorough stirring. Then sift the zinc dust into the base paint while it is being vigorously agitated with a power-driven stirrer and continue the stirring until the zinc dust has been dispersed. The mixed paint shall at some point be strained through a 30-60 mesh screen to prevent zinc dust slugs from reaching the spray gun nozzle. The paint shall be stirred continuously during application at a rate that will prevent settling. If spraying is interrupted for longer than 15 minutes, the entire length of the hose shall be whipped vigorously to redisperse the zinc. If the spraying is to be interrupted for more than 1 hour, the hose shall be emptied by blowing the paint back into the paint pot. Thinning will not normally be required when ambient temperatures are below about 80 degrees F, but when the ambient and steel temperatures are higher, methyl isoamyl ketone (MIAK) or methyl isobutyl ketone (MIBK) should be used. If paint is kept covered at all times, its pot life will be about 8 days.

2.2.6 Formula C-200a, Coal Tar-Epoxy (Black) Paint

The paint shall conform to SSPC Paint 16 manufactured with Type 1 pitch. In addition to standard labeling, container labels shall include the term, Corps of Engineers Formula C-200a.

2.2.7 Formula P-38, Aluminum Phenolic Finish Coat

This material shall be a ready-mixed aluminum paint. The pigment shall be leafing aluminum powder or paste conforming to the requirements of ASTM D 962 Types I or II, Class B, Medium. The vehicle shall be a phenolic resin varnish of 33-gallon oil length. The resin portion of the vehicle shall be a dry granular phenol-formaldehyde resin made from aliphatic para-substituted phenols with substituting groups containing four to eight carbon atoms. The oil portion of the vehicle shall consist of not less than 80% tung oil conforming to ASTM D 12 and the remainder shall be alkali refined linseed oil. The vehicle shall not contain rosin derivatives. Paint solvents shall consist of aliphatic and aromatic hydrocarbons as necessary. The paint shall meet the requirements of paragraphs Quantitative Requirements and Water Resistance.

2.2.7.1 Quantitative Requirements

The paint shall have the following properties.

<u>Characteristics</u>	<u>Requirement (minimum/maximum)</u>
Pigment, percent by weight of paint	13 / --
Volatile, percent by weight of paint, ASTM D 2369	-- / 45
Nonvolatile vehicle, percent by weight of paint	42 / --
Viscosity, seconds, ASTM D 1200	35 / 45
Flash point, Degrees F (C), ASTM D 4206	86 (30) / --
Leafing, percent	50 / --
Density, pounds per gallon, ASTM D 1475	8 / --
Dry, set-to-touch, hours, ASTM D 1640	0.5 / 2

Dry, to recoat, hours, ASTM D 1640

-- / 16

2.2.7.2 Water Resistance

Prepare a test panel by spray applying two coats of paint to a 3 by 6 inch solvent cleaned matte-finish steel test plate. Each coat shall have a dry film thickness of approximately 2.0 mils. Allow 24 hours dry time between coats. Air dry the prepared panel 72 hours and immerse in distilled water at 73 +/- 2F for 72 hours in accordance with ASTM D 1308. The test paint shall exhibit no wrinkling or blistering immediately upon removal of the panel from the water. The paint shall be no more than slightly affected when examined two hours after removal and after 24 hours shall show no more than a slight visible whitening or dulling in comparison to the unexposed film.

2.3 INGREDIENTS FOR SPECIAL PAINT FORMULAS

The following ingredient materials and thinners apply only to those special paints whose formulas are shown above in detail.

2.3.1 Pigments and Suspending Agents

2.3.1.1 Aluminum Powder

For vinyl paint aluminum powder shall conform to ASTM D 962, Type 1, Class B.

2.3.1.2 Carbon Black

Carbon black shall conform to ASTM D 561, Type I or II.

2.3.1.3 Zinc Dust

Zinc dust pigment shall conform to ASTM D 520, Type II.

2.3.1.4 Iron Oxide

Iron oxide, (Dry) synthetic (red), shall conform to ASTM D 3721. In addition, the pigment shall have a maximum oil absorption of 24 and a specific gravity of 4.90 to 5.20 when tested in accordance with ASTM D 281 and ASTM D 153, Method A, respectively. When the pigment is dispersed into specified vinyl paint formulation, the paint shall have color approximating FED-STD-595 color 10076 (dark red paint), and shall show no evidence of incompatibility or reaction between pigment and other components after 6 months storage.

2.3.1.5 Titanium Dioxide

Titanium dioxide in vinyl paint Formula V-766e shall be one of the following: Kronos 2160 or 2101, Kronos, Inc.; Ti-Pure 960, E.I. Dupont DeNemours and Co., Inc.

2.3.1.6 Suspending Agent E

Suspending Agent E shall be a light cream colored finely divided powder having a specific gravity of 2 to 2.3. It shall be an organic derivative of magnesium aluminum silicate mineral capable of minimizing the tendency of zinc dust to settle hard without increasing the viscosity of the paint appreciably. MPA-14, produced by RHEOX, Inc., has these properties.

2.3.1.7 Suspending Agent F

Suspending Agent F shall be a light cream colored finely divided powder having a specific gravity of approximately 1.8. It shall be an organic derivative of a special montmorillonite (trialkylaryl ammonium hectorite). Bentone 27, produced by RHEOX, Inc., has these properties.

2.3.2 Resins, Plasticizer, and Catalyst

2.3.2.1 Diisodecyl Phthalate

Diisodecyl Phthalate shall have a purity of not less than 99.0 percent, shall contain not more than 0.1 percent water, and shall have an acid number (ASTM D 1045) of not more than 0.10.

2.3.2.2 Vinyl Resin, Type 3

Vinyl resin, Type 3, shall be a vinyl chloride-acetate copolymer of medium average molecular weight produced by a solution polymerization process and shall contain 85 to 88 percent vinyl chloride and 12 to 15 percent vinyl acetate by weight. The resin shall have film-forming properties and shall, in specified formulations, produce results equal to Vinylite resin VYHH, as manufactured by the Union Carbide Corporation.

2.3.2.3 Vinyl Resin, Type 4

Vinyl resin, Type 4, shall be a copolymer of the vinyl chloride-acetate type produced by a solution polymerization process, shall contain (by weight) 1 percent interpolymerized dibasic acid, 84 to 87 percent vinyl chloride, and 12 to 15 percent vinyl acetate. The resin shall have film-forming properties and shall, in the specified formulations, produce results equal to Vinylite resin VMCH, as manufactured by the Union Carbide Corporation.

2.3.2.4 Ortho-phosphoric Acid

Ortho-phosphoric acid shall be a chemically pure 85-percent grade.

2.3.3 Solvent and Thinners

2.3.3.1 Methanol

Methanol (methyl alcohol) shall conform to ASTM D 1152.

2.3.3.2 Methyl Ethyl Ketone

Methyl ethyl ketone (MEK) shall conform to ASTM D 740.

2.3.3.3 Methyl Isobutyl Ketone

Methyl isobutyl ketone (MIBK) shall conform to ASTM D 1153.

2.3.3.4 Methyl Isoamyl Ketone

Methyl isoamyl ketone (MIAK) shall conform to ASTM D 2917.

2.3.3.5 Toluene

Toluene shall conform to ASTM D 841.

2.3.4 Silane B

Silane B for Formula VZ-108d shall be N-beta-(aminoethyl)-gamma-aminopropyltrimethoxy silane. Silane A-1120, produced by the C.K. Witco Corporation, and Silane Z-6020, produced by Dow Corning Corporation, are products of this type.

2.3.5 Propylene Oxide

Propylene oxide shall be a commercially pure product suitable for the intended use.

2.4 TESTING

2.4.1 Chromatographic Analysis

Solvents in vinyl paints and thinners shall be subject to analysis by programmed temperature gas chromatographic methods and/or spectrophotometric methods, employing the same techniques that give reproducible results on prepared control samples known to meet the specifications. If the solvent being analyzed is of the type consisting primarily of a single chemical compound or a mixture of two or more such solvents, interpretation of the test results shall take cognizance of the degree of purity of the individual solvents as commercially produced for the paint industry.

2.4.2 Vinyl Paints

Vinyl paints shall be subject to the following adhesion test. When V-766 or V-106 formulations are tested, 5 to 7 mils (dry) shall be spray applied to mild steel panels. The steel panels shall be essentially free of oil or other contaminants that may interfere with coating adhesion. The test panels shall be dry blast cleaned to a White Metal grade which shall be in compliance with SSPC SP 5. The surface shall have an angular profile of 2.0 to 2.5 mils as measured by ASTM D 4417, Method C. When V-102 or V-103 formulations are tested, they shall be spray applied over 1.5 to 2.5 mils (dry) of V-766 or V-106 known to pass this test. When VZ-108 is tested, the coating shall be mixed in its proper proportions and then spray applied to a dry film thickness of 1.5 to 2.5 mils above the blast profile. The VZ-108 shall be top coated with a V-766 known to pass this test. In all cases, the complete system shall have a total dry film thickness of 5 to 7 mils above the blast profile. After being air dried for 2 hours at room

temperature, the panel shall be dried in a vertical position for 16 hours at 120 degrees F. After cooling for 1 hour, the panel shall be immersed in tap water at 85 to 90 degrees F for 48 to 72 hours. Immediately upon removal, the panel shall be dried with soft cloth and examined for adhesion as follows: With a pocket knife or other suitable instrument, two parallel cuts at least 1 inch long shall be made 1/4 to 3/8 inch apart through the paint film to the steel surface. A third cut shall be made perpendicular to and passing through the end of the first two. With the tip of the knife blade, the film shall be loosened from the panel from the third cut between the parallel cuts for a distance of 1/8 to 1/4 inch. With the panel being held horizontally, the free end of the paint film shall be grasped between the thumb and forefinger and pulled vertically in an attempt to remove the film as a strip from between the first two cuts. The strip of paint film shall be removed at a rate of approximately 1/10 inch per second and shall be maintained in a vertical position during the process of removal. The adhesion is acceptable if the strip of paint breaks when pulled or if the strip elongates a minimum of 10 percent during its removal. Paints not intended to be self-priming shall exhibit no delamination from the primer.

PART 3 EXECUTION

3.1 CLEANING AND PREPARATION OF SURFACES TO BE PAINTED

3.1.1 General Requirements

Surfaces to be painted shall be cleaned before applying paint or surface treatments. Deposits of grease or oil shall be removed in accordance with SSPC SP 1, prior to mechanical cleaning. Solvent cleaning shall be accomplished with mineral spirits or other low toxicity solvents having a flash point above 100 degrees F. Clean cloths and clean fluids shall be used to avoid leaving a thin film of greasy residue on the surfaces being cleaned. Items not to be prepared or coated shall be protected from damage by the surface preparation methods. Machinery shall be protected against entry of blast abrasive and dust into working parts. Cleaning and painting shall be so programmed that dust or other contaminants from the cleaning process do not fall on wet, newly painted surfaces, and surfaces not intended to be painted shall be suitably protected from the effects of cleaning and painting operations. Welding of, or in the vicinity of, previously painted surfaces shall be conducted in a manner to prevent weld spatter from striking the paint and to otherwise reduce coating damage to a minimum; paint damaged by welding operations shall be restored to original condition. Surfaces to be painted that will be inaccessible after construction, erection, or installation operations are completed shall be painted before they become inaccessible.

3.1.2 Ferrous Surfaces Subject to Atmospheric Exposures

Ferrous surfaces that are to be continuously in exterior or interior atmospheric exposure and other surfaces as directed shall be cleaned by means of power tools or by dry blasting with SSPS AB-1, Type I or Type II Class A, grade 2 to the brush-off grade or by blasting to a commercial grade. Cleaning and priming shall be done in the shop unless otherwise directed or permitted. Power tool cleaning shall conform to the requirements of SSPC SP 3. Brush-off blast cleaning shall conform to the

requirements of SSPC SP 7. Commercial blast cleaning shall conform to the requirements of SSPC SP 6. Welds and adjoining surfaces within a few inches (centimeters) thereof shall be cleaned of weld flux, spatter, and other harmful deposits by blasting, power impact tools, power wire brush, or such combination of these and other methods as may be necessary for complete removal of each type of deposit. The combination of cleaning methods need not include blasting when preparation of the overall surfaces is carried out by the power tool method. However, brush scrubbing and rinsing with clean water, after mechanical cleaning is completed, will be required unless the latter is carried out with thoroughness to remove all soluble alkaline deposits. Wetting of the surfaces during water-washing operations shall be limited to the weld area required to be treated, and such areas shall be dry before painting. Welds and adjacent surfaces cleaned thoroughly by blasting alone will be considered adequately prepared provided that weld spatter not dislodged by the blast stream shall be removed with impact or grinding tools. All surfaces shall be primed as soon as practicable after cleaning but prior to contamination or deterioration of the prepared surfaces. To the greatest degree possible, steel surfaces shall be cleaned (and primed) prior to lengthy outdoor storage.

3.1.3 Ferrous Surfaces Subject to Severe Exposure

Ferrous surfaces subject to extended periods of immersion or as otherwise required shall be dry blast-cleaned to SSPC SP 5. The blast profile, unless otherwise specified, shall be SSPS AB-1, Type I or Type II Class A, grade 2 1.5 to 2.5 mils as measured by ASTM D 4417, Method C. Appropriate abrasive blast media shall be used in accordance with SSPS AB-1, Type I or Type II Class A, grade 2 to produce the desired surface profile and to give an angular anchor tooth pattern. If recycled blast media is used, an appropriate particle size distribution shall be maintained so that the specified profile is consistently obtained. Steel shot or other abrasives that do not produce an angular profile shall not be used. Weld spatter not dislodged by blasting shall be removed with impact or grinding tools and the areas reblasted prior to painting. Surfaces shall be dry at the time of blasting. Blast cleaning to SSPC SP 5 shall be done in the field and, unless otherwise specifically authorized, after final erection. Within 8 hours after cleaning, prior to the deposition of any detectable moisture, contaminants, or corrosion, all ferrous surfaces blast cleaned to SSPC SP 5 shall be cleaned of dust and abrasive particles by brush, vacuum cleaner, and/or blown down with clean, dry, compressed air, and given the first coat of paint. Upon written request by the Contractor, the Contracting Officer may authorize mill or shop cleaning of assembled or partially assembled components specified to receive one of the vinyl-type paint systems or Systems No. 21-A-Z employing the epoxy zinc-rich primer. The surfaces, if shop blasted, shall be shop coated with the first and second coats of the specified paint system except that the epoxy zinc-rich primed surfaces shall receive an extra single spray coat of the zinc primer at the time field painting is started, as specified in the paint system instructions. The shop coating shall be maintained in good condition by cleaning and touching up of areas damaged during the construction period. If pinpoint or general rusting appears, surfaces shall be reblasted and repainted at no added cost to the Government. Prior to the field application of subsequent coats, soiled areas of the shop coating shall be thoroughly cleaned and all

welds or other unpainted or damaged areas shall be cleaned and coated in a manner to make them equivalent to adjacent, undamaged paint surfaces.

3.1.4 Damp and Wet Ferrous Metal Surfaces

Ferrous surfaces that are wet with condensation or standing or running water, shall be blast-cleaned to SSPC SP 5. The blast profile, unless otherwise specified, shall be 1.5 to 3.0 mils as measured by ASTM D 4417, Method C. Appropriate abrasive blast media shall be used to produce the desired surface profile and to give an angular anchor tooth pattern. Steel grit or shot media shall not be used. Weld spatter not dislodged by blasting shall be removed with impact or grinding tools and the areas reblasted prior to painting. Surfaces shall be as dry as possible at the time of blasting. Immediately after cleaning and prior to the formation of extensive corrosion products, all ferrous surfaces blast cleaned to SSPC SP 5 shall be cleaned of residual abrasive particles, and given the first coat of paint. A slightly visible rust bloom shall be permitted on surfaces to be painted.

3.1.5 Galvanized, Aluminum, Aluminum Alloy, or Copper Surfaces

Where surfaces are specified to be painted, they shall be first washed with clean mineral spirits and then pretreated with a primer conforming to SSPC Paint 27 in accordance with the following instructions. The pretreatment primer shall be mixed by adding one volume of acid component (diluent) to four volumes of resin component (base solution) slowly and with constant stirring. After mixing, the material shall be used within 8 hours. The pretreatment primer shall be spray applied at a coverage rate of 250 to 300 square feet per gallon (of resin component) to give a dry film thickness of 0.3 to 0.5 mil. Small areas may be coated by brush or swab. Care shall be exercised in spray application to avoid the deposition of dry particles on the surface. A wet spray shall be maintained at all times by additional thinning with Normal Butanol ASTM D 304. The acid component (diluent), over and above the amount prescribed above, shall not be used for thinning purposes. Surfaces shall receive the first coat of paint after at least 1 but not more than 24 hours drying of the pretreatment primer film.

3.2 PAINT APPLICATION

3.2.1 General

The finished coating shall be free from holidays, pinholes, bubbles, runs, drops, ridges, waves, laps, excessive or unsightly brush marks, and variations in color, texture, and gloss. Application of initial or subsequent coatings shall not commence until the Contracting Officer has verified that atmospheric conditions and the surfaces to be coated are satisfactory. Each paint coat shall be applied in a manner that will produce an even, continuous film of uniform thickness. Edges, corners, crevices, seams, joints, welds, rivets, corrosion pits, and other surface irregularities shall receive special attention to ensure that they receive an adequate thickness of paint. Spray equipment shall be equipped with traps and separators and where appropriate, mechanical agitators, pressure gauges, pressure regulators, and screens or filters. Air caps, nozzles, and needles shall be as recommended by the spray equipment manufacturer for

the material being applied. Airless-type spray equipment may be used only on broad, flat, or otherwise simply configured surfaces, except that it may be employed for general painting if the spray gun is equipped with dual or adjustable tips of proper types and orifice sizes. Airless-type equipment shall not be used for the application of vinyl paints.

3.2.2 Mixing and Thinning

Paints shall be thoroughly mixed, strained where necessary, and kept at a uniform composition and consistency during application. Paste or dry-powder pigments specified to be added at the time of use shall, with the aid of powered stirrers, be incorporated into the vehicle or base paint in a manner that will produce a smooth, homogeneous mixture free of lumps and dry particles. Where necessary to suit conditions of the surface temperature, weather, and method of application, the paint may be thinned immediately prior to use. Thinning shall generally be limited to the addition of not more than 1 pint per gallon of the proper thinner; this general limitation shall not apply when more specific thinning instructions are provided. Paint that has been stored at low temperature, shall be brought up to at least 70 degrees F before being mixed and thinned, and its temperature in the spray tank or other working container shall not fall below 60 degrees F during the application. Paint that has deteriorated in any manner to a degree that it cannot be restored to essentially its original condition by customary field-mixing methods shall not be used and shall be removed from the project site. Paint and thinner that is more than 1 year old shall be resampled and resubmitted for testing to determine its suitability for application.

3.2.3 Atmospheric and Surface Conditions

Paint shall be applied only to surfaces that are above the dew point temperature and that are completely free of moisture as determined by sight and touch. Paint shall not be applied to surfaces upon which there is detectable frost or ice. Except as otherwise specified, the temperature of the surfaces to be painted and of air in contact therewith shall be not less than 45 degrees F during paint application nor shall paint be applied if the surfaces can be expected to drop to 32 degrees F or lower before the film has dried to a reasonably firm condition. During periods of inclement weather, painting may be continued by enclosing the surfaces and applying artificial heat, provided the minimum temperatures and surface dryness requirements prescribed previously are maintained. Paint shall not be applied to surfaces heated by direct sunlight or other sources to temperatures that will cause detrimental blistering, pinholing, or porosity of the film.

3.2.4 Time Between Surface Preparation and Painting

Surfaces that have been cleaned and/or otherwise prepared for painting shall be primed as soon as practicable after such preparation has been completed but, in any event, prior to any deterioration of the prepared surface.

3.2.5 Method of Paint Application

Unless otherwise specified, paint shall be applied by brush or spray to ferrous and nonferrous metal surfaces. Special attention shall be directed toward ensuring adequate coverage of edges, corners, crevices, pits, rivets, bolts, welds, and similar surface irregularities. Other methods of application to metal surfaces shall be subject to the specific approval of the Contracting Officer. Paint on plaster, concrete, or other nonmetallic surfaces shall be applied by brush, roller, and/or spray.

3.2.6 Coverage and Film Thickness

Film thickness or spreading rates shall be as specified hereinafter. Where no spreading rate is specified, the paint shall be applied at a rate normal for the type of material being used. In any event, the combined coats of a specified paint system shall completely hide base surface and the finish coats shall completely hide undercoats of dissimilar color.

3.2.6.1 Measurement on Ferrous Metal

Where dry film thickness requirements are specified for coatings on ferrous surfaces, measurements shall be made with a gage qualified in accordance with paragraph Coating Thickness Gage Qualification. They shall be calibrated and used in accordance with ASTM D 1186. They shall be calibrated using plastic shims with metal practically identical in composition and surface preparation to that being coated, and of substantially the same thickness (except that for measurements on metal thicker than 1/4 inch, the instrument may be calibrated on metal with a minimum thickness of 1/4 inch. Frequency of measurements shall be as recommended for field measurements by ASTM D 1186 and reported as the mean for each spot determination. The instruments shall be calibrated or calibration verified prior to, during, and after each use.

3.2.6.2 Measurements on Nonferrous Metal

Where dry film thickness requirements are specified for coatings applied to nonferrous metal surfaces, measurements shall be made using a gage qualified in accordance with paragraph Coating Thickness Gage Qualification. They shall be calibrated and used in accordance with ASTM D 1400. Calibration shall be on metal identical in composition and surface preparation to that being coated and of substantially the same thickness (except that for measurements on metal thicker than 1/4 inch, the instrument may be calibrated on metal with a minimum thickness of 1/4 inch). Frequency of measurements shall be as recommended for field measurements by ASTM D 1400 and reported as the mean for each spot determination. The instruments shall be calibrated or calibration verified prior to, during, and after each use.

3.2.7 Progress of Painting Work

Where field painting on any type of surface has commenced, the complete painting operation, including priming and finishing coats, on that portion of the work shall be completed as soon as practicable, without prolonged delays. Sufficient time shall elapse between successive coats to permit them to dry properly for recoating, and this period shall be modified as necessary to suit adverse weather conditions. Paint shall be considered

dry for recoating when it feels firm, does not deform or feel sticky under moderate pressure of the finger, and the application of another coat of paint does not cause film irregularities such as lifting or loss of adhesion of the undercoat. All coats of all painted surfaces shall be unscarred and completely integral at the time of application of succeeding coats. At the time of application of each successive coat, undercoats shall be cleaned of dust, grease, overspray, or foreign matter by means of airblast, solvent cleaning, or other suitable means. Cement and mortar deposits on painted steel surfaces, not satisfactorily removed by ordinary cleaning methods, shall be brush-off blast cleaned and completely repainted as required. Undercoats of high gloss shall, if necessary for establishment of good adhesion, be scuff sanded, solvent wiped, or otherwise treated prior to application of a succeeding coat. Field coats on metal shall be applied after erection except as otherwise specified and except for surfaces to be painted that will become inaccessible after erection.

3.2.8 Contacting Surfaces

When riveted or ordinary bolted contact is to exist between surfaces of ferrous or other metal parts of substantially similar chemical composition, such surfaces will not be required to be painted, but any resulting crevices shall subsequently be filled or sealed with paint. Contacting metal surfaces formed by high-strength bolts in friction-type connections shall not be painted. Where a nonmetal surface is to be in riveted or bolted contact with a metal surface, the contacting surfaces of the metal shall be cleaned and given three coats of the specified primer. Unless otherwise specified, corrosion-resisting metal surfaces, including cladding therewith, shall not be painted.

3.2.9 Drying Time Prior to Immersion

Minimum drying periods after final coat prior to immersion shall be: epoxy systems at least 5 days, vinyl-type paint systems at least 3 days, and cold-applied coal tar systems at least 7 days. Minimum drying periods shall be increased twofold if the drying temperature is below 65 degrees F and/or if the immersion exposure involves considerable abrasion.

3.2.10 Protection of Painted Surfaces

Where shelter and/or heat are provided for painted surfaces during inclement weather, such protective measures shall be maintained until the paint film has dried and discontinuance of the measures is authorized. Items that have been painted shall not be handled, worked on, or otherwise disturbed until the paint coat is fully dry and hard. All metalwork coated in the shop or field prior to final erection shall be stored out of contact with the ground in a manner and location that will minimize the formation of water-holding pockets; soiling, contamination, and deterioration of the paint film, and damaged areas of paint on such metalwork shall be cleaned and touched up without delay. The first field coat of paint shall be applied within a reasonable period of time after the shop coat and in any event before weathering of the shop coat becomes extensive.

3.2.11 Vinyl Paints

3.2.11.1 General

Vinyl paints shall be spray applied, except that areas inaccessible to spraying shall be brushed. All of the vinyl paints require thinning for spray application except the zinc-rich vinyl paint (Formula VZ 108d) which will normally require thinning only under certain weather conditions. Thinners for vinyl paints shall be as follows:

APPROXIMATE AMBIENT AIR TEMPERATURE
(Degrees F)

Below 50	MEK
50 - 70	MIBK
Above 70	MIAC

The amount of thinner shall be varied to provide a wet spray and avoid deposition of particles that are semidry when they strike the surface. Vinyl paints shall not be applied when the temperature of the ambient air and receiving surfaces is less than 35 degrees F nor when the receiving surfaces are higher than 125 degrees F. Each spray coat of vinyl paint shall consist of a preliminary extra spray pass on edges, corners, interior angles, pits, seams, crevices, junctions of joining members, rivets, weld lines, and similar surface irregularities followed by an overall double spray coat. A double spray coat of vinyl-type paint shall consist of applying paint to a working area of not less than several hundred square feet (meters) in a single, half-lapped pass, followed after drying to at least a near tack-free condition by another spray pass applied at the same coverage rate and where practicable at right angles to the first. Rivets, bolts, and similar surface projections shall receive sprayed paint from every direction to ensure complete coverage of all faces. Pits, cracks, and crevices shall be filled with paint insofar as practicable, but in any event, all pit surfaces shall be thoroughly covered and all cracks and crevices shall be sealed off against the entrance of moisture. Fluid and atomization pressures shall be kept as low as practicable consistent with good spraying results. Unless otherwise specified, not more than 2.0 mils, average dry film thickness, of vinyl paint shall be applied per double spray coat. Except where otherwise indicated, an undercoat of the vinyl-type paint may receive the next coat any time after the undercoat is tack-free and firm to the touch, provided that no speedup or delay in the recoating schedule shall cause film defects such as sags, runs, air bubbles, air craters, or poor intercoat adhesion. Neither the prime coat nor any other coat shall be walked upon or be subjected to any other abrading action until it has hardened sufficiently to resist mechanical damage.

3.2.11.2 Vinyl Zinc-Rich Primer

Primer shall be field mixed combining components A, B, and C. Mixing shall be in accordance with label instructions. After mixing, the paint shall be kept covered at all times to avoid contamination and shall be applied within 8 days after it is mixed. When the ambient and/or steel temperature is below about 80 degrees F, the paint will not normally require thinning; however, the paint shall at all times contain sufficient volatiles

(thinners) to permit it to be satisfactorily atomized and to provide a wet spray and to avoid deposition of particles that are semidry when they reach the surface. The paint shall be stirred continuously during application at a rate that will prevent the zinc dust from settling. When spraying is resumed after any interruption of longer than 15 minutes, the entire length of the material hose shall be whipped vigorously until any settled zinc is redispersed. Long periods of permitting the paint to remain stagnant in the hose shall be avoided by emptying the hoses whenever the painting operation is to be suspended for more than 1 hour. The material (paint) hoses shall be kept as short as practicable, preferably not more than 50 feet in length. Equipment used for spraying this zinc primer shall not be used for spraying other vinyl-type paints without first being thoroughly cleaned, since many of the other paints will not tolerate zinc contamination; no type of hot spray shall be used. An average dry film thickness of up to 2.5 mils may be applied in one double-spray coat. Unless specifically authorized, not more than 8 days shall elapse after application of a VZ-108d zinc-rich coat before it receives a succeeding coat.

3.2.11.3 Vinyl Paints

Vinyl Paints (Formulas V-102e, V-103c, V-106d, and V-766e) are ready-mixed paints designed to be spray applied over a wide range of ambient temperatures by field thinning with the proper type and amount of thinner. For spray application, they shall be thinned as necessary up to approximately 25 percent (1 quart per gallon of base paint) with the appropriate thinner; when ambient and steel temperatures are above normal, up to 40-percent thinning may be necessary for satisfactory application.

3.2.12 Coal Tar-Epoxy (Black) Paint (Formula C-200a)

3.2.12.1 Mixing

Component B shall be added to previously stirred Component A and thoroughly mixed together with a heavy-duty mechanical stirrer just prior to use. The use of not more than 1 pint of xylene thinner per 1 gallon of paint will be permitted to improve application properties and extend pot life. The pot life of the mixed paint, extended by permissible thinning, may vary from 2 hours in very warm weather to 5 or more hours in cool weather. Pot life in warm weather may be extended by precooling the components prior to mixing; cooling the mixed material; and/or by slow, continuous stirring during the application period. The mixed material shall be applied before unreasonable increases in viscosity take place.

3.2.12.2 Application

Spray guns shall be of the conventional type equipped with a fluid tip of approximately 0.09 inch in diameter and external atomization, seven-hole air cap. Material shall be supplied to the spray gun from a bottom withdrawal pot or by means of a fluid pump; hose shall be 1/2 inch in diameter. Atomization air pressure shall not be less than 80 psi. High-pressure airless spray equipment may be used only on broad, simply configured surfaces. Brush application shall be with a stiff-bristled tool heavily laden with material and wielded in a manner to spread the coating

smoothly and quickly without excessive brushing. The coverage rate of the material is approximately 110 square feet per gallon per coat to obtain 20 mils (dry thickness) in a two-coat system. The paint shall flow together and provide a coherent, pinhole-free film. The direction of the spray passes (or finish strokes if brushed) of the second coat shall be at right angles to those of the first where practicable.

3.2.12.3 Subsequent Coats

Except at the high temperatures discussed later in this paragraph, the drying time between coal tar-epoxy coats shall not be more than 72 hours, and application of a subsequent coat as soon as the undercoat is reasonably firm is strongly encouraged. Where the temperature for substrate or coating surfaces during application or curing exceeds or can be expected to exceed 125 degrees F as the result of direct exposure to sunlight, the surfaces shall be shaded by overhead cover or the interval between coats shall be reduced as may be found necessary to avoid poor intercoat adhesion. Here, poor intercoat adhesion is defined as the inability of two or more dried coats of coal tar-epoxy paint to resist delamination when tested aggressively with a sharp knife. Under the most extreme conditions involving high ambient temperatures and sun-exposed surfaces, the drying time between coats shall not exceed 10 hours, and the reduction of this interval to a few hours or less is strongly encouraged. Where the curing time of a coal tar-epoxy undercoat exceeds 72 hours of curing at normal temperatures, 10 hours at extreme conditions, or where the undercoat develops a heavy blush, it shall be given one of the following treatments before the subsequent coat is applied:

- a. Etch the coating surface lightly by brush-off blasting, using fine sand, low air pressure, and a nozzle-to-surface distance of approximately 3 feet.
- b. Remove the blush and/or soften the surface of the coating by wiping it with cloths dampened with 1-methyl-2-pyrrolidone. The solvents may be applied to the surface by fog spraying followed by wiping, but any puddles of solvent must be mopped up immediately after they form. The subsequent coat shall be applied in not less than 15 minutes or more than 3 hours after the solvent treatment.

3.2.12.4 Ambient Temperature

Coal tar-epoxy paint shall not be applied when the receiving surface or the ambient air is below 50 degrees F nor unless it can be reasonably anticipated that the average ambient temperature will be 50 degrees F or higher for the 5-day period subsequent to the application of any coat.

3.2.12.5 Safety

In addition to the safety provisions in paragraph SAFETY AND HEALTH PROVISIONS, other workmen as well as painters shall avoid inhaling atomized particles of coal tar-epoxy paint and contact of the paint with the skin.

3.3 PAINT SYSTEMS APPLICATION

The required paint systems and the surfaces to which they shall be applied are shown in this paragraph, and/or in the drawings. Supplementary information follows.

3.3.1 Fabricated and Assembled Items

Items that have been fabricated and/or assembled into essentially their final form and that are customarily cleaned and painted in accordance with the manufacturer's standard practice will be exempted from equivalent surface preparation and painting requirements described herein, provided that:

- a. Surfaces primed (only) in accordance with such standard practices are compatible with specified field-applied finish coats.
- b. Surfaces that have been primed and finish painted in accordance with the manufacturer's standard practice are of acceptable color and are capable of being satisfactorily touched up in the field.
- c. Items expressly designated herein to be cleaned and painted in a specified manner are not coated in accordance with the manufacturer's standard practice if different from that specified herein.

3.3.2 Surface Preparation

The method of surface preparation and pretreatment shown in the tabulation of paint systems is for identification purposes only. Cleaning and pretreatment of surfaces prior to painting shall be accomplished in accordance with detailed requirements previously described.

3.3.3 System No. 3-A-Z

Paint shall be spray applied to an average dry film thickness of a minimum of 6.5 mils for the completed system, and the thickness at any point shall not be less than 5.5 mils. The dry film thickness of the zinc-rich coat shall be approximately 2.5 mils. Specified film thickness, including the prescribed total, shall be attained in any event, and any extra coats needed to attain specified thickness shall be applied at no additional cost to the Government. Attaining of the specified film thickness in fewer than the prescribed number of coats or spray passes will be acceptable provided heavier applications do not cause an increase in pinholes, bubbles, blisters, or voids in the dried film and also provided that not more than 2.0 mils (dry film thickness) per double spray coat nor more than 1.0 mil per single spray pass of nonzinc paint shall be applied at one time.

3.3.4 System No. 6-A-Z

Epoxy zinc-rich primer 19B shall be applied in accordance with the manufacturer's directions in a single, half-lapped spray coat to an average dry film thickness of a minimum of 3.0 mils. The thickness at any point shall not be less than 2.5 mils or greater 8 mils for the primer. After a minimum drying period of 6 hours and no more than 96 hours, at least two coats of coal tar epoxy paint shall be applied to provide a minimum thickness at any point of 16 mils for the completed system. If the epoxy

zinc-rich paint has been applied in the shop or otherwise has been permitted to cure for longer than 96 hours, it shall be abraded and recoated with an additional thin tack coat of the zinc-rich paint, which in turn shall be overcoated within 96 hours with the first coat of coal tar-epoxy paint. The specified film thicknesses shall be attained in any event, and any additional coats needed to attain specified thickness shall be applied at no additional cost to the Government.

~~3.3.5 System No. 8~~

~~The coating shall be mixed and applied in accordance with the manufacturer's written instructions. The coating shall be applied in one or more coats to achieve an average dry film thickness of a minimum of 12 mils. Minimum thickness at any point shall be not less than 9 mils. Roller application is preferred. Application to vertical surfaces by airless spray may be performed provided all condensed water droplets are removed by wiping with a terry cloth towel immediately prior to spray application. Application to horizontal surfaces or surfaces otherwise covered by standing or running water shall be by roller. Brush application shall be limited to inside corners, bolt heads and other surface irregularities that are difficult to coat by roller. Subsequent coats shall be applied in the shortest recommended recoat interval. The minimum manufacturer recommended ambient and surface temperatures shall be maintained during application and curing of the coating.~~

3.3.5 System No. 21-A-Z

The epoxy zinc-rich paint 19B shall be applied in a single half-lapped spray coat to an average dry film thickness of a minimum of 4.0 mils, and a thickness at any point of not less than 2.5 mils or greater than 8.0 mils. After a drying period of not less than 6 hours nor more than 96 hours, at least two coats of epoxy polyamide paint shall be applied to produce an average dry film thickness totaling 12 mils. If the epoxy zinc-rich paint has been applied in the shop or otherwise has been permitted to cure for longer than 96 hours, it shall be abraded and recoated with an additional thin tack coat of the zinc-rich paint, which in turn shall be overcoated within 96 hours with the first coat of the epoxy polyamide paint. When applying MIL-DTL-24441, the type of thinner, amount of thinning, and required induction time shall be as recommended by the manufacturer. The drying time between non-zinc coats shall not be less than 12 hours nor more than 96 hours.

3.3.6 Protection of Nonpainted Items and Cleanup

Walls, equipment, fixtures and all other items in the vicinity of the surfaces being painted shall be maintained free from damage by paint or painting activities. Paint spillage and painting activity damage shall be promptly repaired.

3.4 INSPECTION

The Contractor shall inspect, document, and report all work phases and operations on a daily basis. As a minimum the daily report shall contain the following:

- a. Inspections performed, including the area of the structure involved and the results of the inspection.
- b. Surface preparation operations performed, including the area of the structure involved, the mode of preparation, the kinds of solvent, abrasive, or power tools employed, and whether contract requirements were met.
- c. Thinning operations performed, including thinners used, batch numbers, and thinner/paint volume ratios.
- d. Application operations performed, including the area of the structure involved, mode of application employed, ambient temperature, substrate temperature, dew point, relative humidity, type of paint with batch numbers, elapsed time between surface preparation and application, elapsed time for recoat, condition of underlying coat, number of coats applied, and if specified, measured dry film thickness or spreading rate of each new coating.

3.5 FINAL CLEANING AND CLEARANCE TESTING FOR LEAD CONTAMINANTS

All facilities and surfaces within or directly adjacent to the regulated area shall be cleaned and decontaminated using phosphate detergents and HEPA vacuums as necessary to provide surfaces that are clean of residual lead dust. Clearance testing shall be performed. A sufficient number of wipe tests shall be performed to document the level of residual lead contamination. No surface shall have greater than 8,000 micrograms of lead per square foot.

3.6 PAINTING SCHEDULES

SYSTEM NO. 3-A-Z

Items or surfaces to be coated:
 Vertical lift gates, exposed surfaces
 of needle dam griders.

SURFACE PREPARATION	1st COAT	2nd COAT	3rd COAT	4th COAT
White metal blast cleaning	Vinyl zinc-rich VZ-108d (double spray coat)	White Vinyl V-766e (double spray coat)	Aluminum Vinyl V-102e (double spray coat)	Aluminum Vinyl V-102e as needed to obtain the required thickness)

SYSTEM NO. 6-A-Z

Items or surfaces to be coated: Steel Sheet Pile, Steel H Piles

SURFACE	1st & 2nd		
PREPARATION	COAT	3rd COAT	4th COAT
White metal blast cleaning	MIL-DTL-24441 /19B	Coal tar- epoxy C-200a (black)	Coal tar- epoxy C-200a (black)

~~SYSTEM NO. 8~~

~~Items or surfaces to be coated: Steel Sheet Pile to be used 2 feet above
 waterline to 2 feet below below waterline~~

SURFACE			
PREPARATION	1st COAT	2nd COAT	
SSPC SP 5	Paint (for wet	Additional coats	
	surfaces)	as recommended by	
	CID A-A-3130	the manufacturer	

SYSTEM NO. 21-A-Z

Items or surfaces to be coated: Gate Operating Machinery including Frames
 and Componets

SURFACE	1st & 2nd	3rd & 4th	
PREPARATION	COAT	COAT	5th COAT
As specified for each type of surface	MIL-DTL-24441 /19B	MIL-DTL-24441, to obtain Color No. White	(as needed specified thickness) top coat light gray

3.7 Lead Paint Sampling Testing Results

See APPENDIX 09965-A at the end of this Section (pages).

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SECTION 11288

VERTICAL LIFT GATES

PART 1 GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

1.1.1 Metalwork Fabrication and Machine Work

Section 05055a Metalwork Fabrication, Machine Work, Miscellaneous Provisions.

1.1.2 Metals

Section 05502a Metals: Miscellaneous, Standard Articles, Shop Fabricated Items.

1.1.3 Sandblasting and Painting

Section 09965A Painting: Hydraulic Structures.

1.1.4 Hoist Assembly

Section 15000 Mechanical Work S-352.

1.2 Vertical Lift Gate Inspection

Vertical lift gate inspection shall be performed for all vertical lift gates.

1.2.1 S-352 Spillway

Spillway shall have the vertical lift gates inspected after the gate is commercially sandblasted at the Contractor's offsite paint shop. The welds on the gates, which support the lifting hooks, shall be tested by visual and nondestructive methods after the weld surfaces have been commercially sandblasted. Paint application shall be applied as required by Section 09965 Painting: Hydraulic Structures.

1.2.2 S-351 Spillway

Spillway shall have the vertical lift gates inspected on site at the spillway gate bays. The welds on the gate which support the lifting hooks shall have paint removed were required to allow visual and nondestructive testing performed. Reinspection by visual and nondestructive inspection of any repairs made and repeated repaired if result reveal defects and defficiencies. Prepare surface in accordance with Section 09965 Painting: Hydrualic Structures to remove any accummulated rust to a degree necessary to touch-up any distrubed areas with system 3-AZ.

1.3 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 276	(2002 Rev A) Stainless and Heat-Resisting Steel Bars and Shapes
ASTM D 395	(2001) Rubber Property - Compression Set
ASTM D 412	(1998 Rev A) Vulcanized Rubber and Thermoplastic Rubber and Thermoplastic Elastomers - Tension
ASTM D 413	(1998) Rubber Property - Adhesion to Flexible Substrate
ASTM D 471	(1998) Rubber Property - Effect of Liquids
ASTM D 572	(1999) Rubber - Deterioration by Heat and Oxygen
ASTM D 2240	(2002 Rev A) Rubber Property - Durometer Hardness

1.4 SUBMITTALS

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

SD-02 Shop Drawings

Detail Drawings; G|COR

Submit detail drawings.

SD-03 Product Data

Materials; G|COR

Submit system of identification which shows the disposition of specific lots of approved materials and fabricated items in the work before completion of the contract.

Welding; G|ED

Submit schedules of welding procedures for structural steel.

Materials; G|ED

Submit material orders, material lists, and material shipping bills.

SD-06 Test Reports

Tests, Inspections, and Verifications G|COR

Submit certified material test reports with all material delivered to the site.

Acceptance Trial Operation and Test; G|ED

Submit operation and test results before completion of the contract.

SD-09 Reports

Inspection Report;

A full report documenting the results of the visual and nondestructive inspection of reflecting existing conditions of the members prior to any repair work shall be preposed by the weld inspector or testing agency performing the inspections.

Inspection of Roller Shaft, Stiffner, Skin Plate, and other gate elements ; G|ED

Nondestructive Inspection Plan G|ED

Work plan describing procedures to be used and welds to be inspected shall be submitted and approved prior to commencement of inspection.

1.5 QUALIFICATION OF WELDERS AND WELDING OPERATORS

Qualification of welders and welding operators shall conform to the requirements of Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

1.6 DELIVERY, STORAGE, AND HANDLING

Acceptance trail operation and test; submit operation test results before completion of Contract. (Submit in section report after Commerical Sand Blast of each gate.

Delivery, handling, and storage of materials and fabricated items shall conform to the requirements specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

1.7 Repair Instruction

The Government will furnish instructions regarding repair of damaged members and defective welds, if any, to the Contractor for repair of vertical lift gate.

1.8 Qualification of Weld Inspectors

The Contractor shall certify that any inspectors performing the inspections shall have the American Society of Nondestructive Testing (ASNT)

PART 2 PRODUCTS

2.1 TESTS, INSPECTIONS, AND VERIFICATIONS

2.1.1 Inspections

Prior to final surface preparation and painting, visual and nondestructive inspection shall be performed. Visual and nondestructive inspection shall also be performed, on any welded repairs made to ensure that adequate repair has been made. The COR may require supplemental examination of any joint or coupon cut from any location in any repaired joint. The visual and nondestructive inspections shall be performed by a testing agency adequately equipped and competent to perform such services, or by the Contractor using suitable equipment and qualified personnel.

2.1.2 Visual Examination

Full visual inspection of all members and welds shall be performed. Members shall be examined for signs of corrosion, bent, missing or damaged members, or any other condition that would compromise the structural integrity of the member. Welds shall be cleaned and carefully examined for, insufficient throat or leg sizes, cracks, undercutting, overlap, excessive convexity or reinforcement and other surface defects to ensure compliance with the requirements of AWS D1.1, Section 3 and Section 9, Part D.

2.1.3 Nondestructive Examination

2.1.3.1 Amount of Welds to Inspect by Nondestructive Methods

a. Minimum Amount of Welds to Inspect by Nondestructive Methods. All welds connecting the lifting eyes to the gate frame.

b. Additional Welds to Inspect by Nondestructive Methods. The COR will monitor the initial, stagers of the inspection. The COR will monitor the initial stagers of the inspection. If, in the opinion of the COR, an appreciable amount of defects are found in the welds selected by the weld inspector, the Government reserves the right to increase the amount of welds to inspect. This additional inspection work shall be performed under this contract and payment for this will be made by contract modification.

2.1.3.2 Nondestructive Inspection Plan

Prior to the beginning of the inspect work, the contractor shall submit a nondestructive inspection plan to the COR for approval. The nondestructive

inspection plan shall describe the examination procedures to be used by the weld inspector.

2.1.3.3 Examination Procedures

a. Ultrasonic Testing. Making, evaluating and reporting ultrasonic testing of welds shall conform to the requirements of AWS D1.1, Section 6, Part C. The ultrasonic equipment shall be capable of making a permanent record of the test indications. A record shall be made of each weld tested and furnished as part of the inspection report.

b. Dye Penetrant Inspection. Dye penetrant inspection of welds shall conform to the applicable provisions of ASTM E 165. Photographs shall be taken of each defect documented in the inspection report and furnished as part of the "inspection report.

c. Magnetic Particle Inspection. Magnetic particle inspection of welds shall conform to the applicable provisions of ASTM E 709. Photographs shall be taken of each defect documented in the inspection report and furnished as part 'of the inspection report.

2.2 Inspection Report

The weld inspector shall prepare a weld inspection report which documents the results of the visual and nondestructive inspection. Results from the visual inspections shall include any damage to component members including, but not limited to, bent, torn, missing, or corroded members and unacceptable profile in welds as specified in AWS D1.1, Section 9.25. Results from the nondestructive inspections of existing welds shall include defects that would compromise the structural integrity of the weld including any surface or subsurface cracks, slag inclusions, lack of fusion or other discontinuities. This report shall indicate for each defect or damaged area found, the type of inspection used, area inspected, the size and extent of any defect, and weld deficiencies specified by AWS D1.1, section 9.25. Sketches and photographs shall be used to document any defective or sub-standard welds and to accurately locate, all welds that are determined to have defects or area unacceptable in regards to AWS D1.1, section 9.25. The report shall be signed; dated, and stamped by the inspector, certifying the current level of American* Society of Nondestructive Testing (ASNT) certification. Two copies of the report shall be submitted by the contractor within 5 days of the completion of the inspection work.

2.3 Test Coupons for Welded Vertical Lift Gates Repairs

The Government reserves the right to require the Contractor to remove coupons from completed work involving weld repairs when doubt as to soundness cannot be resolved by nondestructive examination. Should tests of any two coupons cut from the work of any welder show strengths less than that specified for the base metal it will be considered evidence of negligence or incompetence and such welder shall be removed from the work. When coupons are removed from any part of a structure the members cut shall be repaired in a neat manner with joints of the proper type to

develop the full strength of the members. Repaired joints shall be peened as approved or directed to relieve residual stress. The expense for removing and testing coupons, repairing cut members and the nondestructive examination of coupon repairs shall be done by Government or the Contractor in accordance with the paragraph "Inspection and Acceptance" of the Contract Clauses of this contract.

2.4 Supplemental Examination of Weld Vertical Lift Gate Repairs

When the soundness of any welded repair is suspected of being deficient due to faulty welding or stresses that might occur during shipment or erection, the Government reserves the right perform supplemental nondestructive examinations before final acceptance. The cost of such inspection will be borne by the Government

2.5 MATERIALS

Materials orders, material lists and material shipping bills shall conform with the requirements of Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.5.1 Metals

2.5.1.1 Structural Steel Plates

Structural steel shall conform to ASTM A36/A 36M.

2.5.1.2 Steel Pipe

2.5.1.3 Stainless Steel Bars and Shapes

Stainless steel bars and shapes shall conform to ASTM A 276, UNS S 30400, Condition A, hot-finished or cold-finished, Class C.

2.5.2 Rubber Seals

Rubber seals shall be fluorocarbon (Teflon) clad rubber seals of the mold type only and shall be a compound of natural rubber, synthetic polyisoprene, or a blend of both, and shall contain reinforcing carbon black, zinc oxide, accelerators, antioxidants, vulcanizing agents, and plasticizers.

2.5.2.1 Physical Characteristics

Physical characteristics of the seals shall meet the following requirements:

PHYSICAL TEST	TEST VALUE	TEST METHOD SPECIFICATION
Tensile Strength	2500 psi (min.)	ASTM D 412
Elongation at Break	450 percent (min.)	ASTM D 412
300 percent	900 psi (min.)	ASTM D 412

PHYSICAL TEST	TEST VALUE	TEST METHOD SPECIFICATION
Durometer Hardness (Shore Type A)	60 to 70	ASTM D 2240
*Water Absorption	5 percent by weight (max.)	ASTM D 471
Compression Set	30 percent (max.)	ASTM D 395
Tensile Strength (after aging 48 hrs)	80 percent of tensile strength (min.)	ASTM D 572

* The "Water Absorption" test shall be performed with distilled water. The washed specimen shall be blotted dry with filter paper or other absorbent material and suspended by means of small glass rods in the oven at a temperature of 70 degrees C plus or minus 2 degrees for 22 hours plus or minus 1/4 hour. The specimen shall be removed, allowed to cool to room temperature in air, and weighed. The weight shall be recorded to the nearest 1 mg as M subscript 1 (M subscript 1 is defined in ASTM D 471). The immersion temperature shall be 70 degrees C plus or minus 1 degree and the duration of immersion shall be 166 hours.

2.5.2.2 Fabrication of Rubber Seals

Rubber seals shall have a fluorocarbon film vulcanized and bonded to the sealing surface of the bulb. The film shall be 0.030 inches thick Huntington Abrasion Resistant Fluorocarbon Film No. 4508, or equal, and shall have the following physical properties:

Tensile strength 2,000 psi (min.)

Elongation 250 percent (min.)

The outside surface of the bonded film shall be flush with the surface of the rubber seal and shall be free of adhering or bonded rubber. Strips and corner seals shall be molded in lengths suitable for obtaining the finish lengths shown and with sufficient excess length to provide test specimens for testing the adequacy of the adhesion bond between the film and bulb of the seal. At one end of each strip or corner seal to be tested, the fluorocarbon film shall be masked during bonding to prevent a bond for a length sufficient to hold the film securely during testing.

2.6 MANUFACTURED UNITS

Bolts, nuts, washers, screws and other manufactured units shall conform with the requirements as shown and as specified and in Section 05502a METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS.

2.6.1 [Enter Appropriate Subpart Title Here] ~~2.2.1 Bolts, Nuts and Washers~~

2.6.2 [Enter Appropriate Subpart Title Here]

~~Screws shall be of the type indicated.~~

2.7 FABRICATION

2.7.1 Detail Drawings

Detail drawings, including fabrication drawings, shop assembly drawings, delivery drawings, and field installation drawings, shall conform to the requirements specified and in Section 05055a METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.7.1.1 Fabrication Drawings

Fabrication drawings shall show complete details of materials, tolerances, connections, and proposed welding sequences which clearly differentiate shop welds and field welds.

2.7.1.2 Shop Assembly Drawings

Shop assembly drawings shall provide details for connecting the adjoining fabricated components in the shop to assure satisfactory field installation.

2.7.1.3 Delivery Drawings

Delivery drawings shall provide descriptions of methods of delivering components to the site, including details for supporting fabricated components during shipping to prevent distortion or other damages.

2.7.1.4 Field Installation Drawings

Field installation drawings shall provide a detailed description of the field installation procedures. The description shall include the location and method of support of installation and handling equipment; provisions to be taken to protect concrete and other work during installation; method of maintaining components in correct alignment; which shall include descriptions of connections, riggings, anchorages, and measuring equipment; methods for installing quoin and miter blocks, including checking and methods for installing other appurtenant items.

2.7.2 Structural Fabrication

Structural fabrication shall conform to the requirements as shown and specified herein and in Section 05055a METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS. Dimensional tolerances shall be as specified and as shown. Splices shall occur only where shown. Pin holes shall be bored in components after welding, straightening, stress-relieving, and threading operations are completed. Brackets, eye bar sections, and other components requiring straightening shall be straightened by methods which will not damage the material. Bushings shall be press-fitted with supporting components. Bolt connections, lugs, clips, or other pick-up assembly devices shall be provided for components as shown and required for proper assembly and installation. Provisions shall be made for the installation of other appurtenances as required.

2.7.2.1 Welding

Welding shall conform with the requirements specified and in Section 05055a METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS. Welds shall be of the type shown and approved detail drawings.

2.7.2.2 Bolted Connections

Bolted connections shall conform with the requirements specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.7.2.3 Machine Work

Machine work shall conform with the requirements specified in Section 05055a METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.7.2.4 Miscellaneous Provisions

Miscellaneous provisions for fabrication shall conform with the requirements specified herein and in Section 05055a METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.7.3 Wheel Gate Leaf Seal Assembly

Seal assemblies shall consist of rubber seals, stainless steel retainer and spacer bars, and fasteners. Rubber seals shall be continuous over the full length. Seals shall be accurately fitted and drilled for proper installation. Bolt holes shall be drilled in the rubber seals by using prepared templates or the retainer bars as templates. Splices in seals shall be fully molded, develop a minimum tensile strength of 50 percent of the unspliced seal, and occur only at locations shown. All vulcanizing of splices shall be done in the shop. The vulcanized splices between molded corners and straight lengths shall be located as close to the corners as practicable. Splices shall be on a 45 degree bevel related to the "thickness" of the seal. The surfaces of finished splices shall be smooth and free of irregularities. Stainless steel retainer bars shall be field-spliced only where shown and machine finished after splicing.

2.7.4 Shop Assembly

Shop assembly requirements for gate, gate frame and appurtenant items shall be as shown and as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS. Gate, frame, guides, and appurtenant items shall be assembled completely in the shop to assure satisfactory field installation. The matchmarking of unassembled components shall be carefully preserved until the components are assembled.

Adequate support shall be provided during assembly to maintain components within 1/16 inch of actual installation planes. Mating surfaces and machined surfaces shall be coated with a rust preventive coating until assembled. Other connecting surfaces which are not required to be disassembled for shipment shall be thinly coated with an approved rust preventive coating before being joined. Adjoining components shall be fitted and bolted together to facilitate field connections. Shop assembled

components shall be delivered assembled, if practically permitted by shipping and field installation conditions. Assembled components shall be shop welded in their final positions as much as delivery and field installation conditions allow. Shop assembly and disassembly work shall be performed in the presence of the Contracting Officer unless otherwise approved. The presence of the Contracting Officer will not relieve the Contractor of any responsibility under this contract.

2.7.4.1 Seal Assemblies

Seal assemblies shall be attached to the gate leaf during shop assembly and removed for shipment. The rubber seals of the assemblies shall be accurately fitted, drilled to match the seal retainers, match marked, and removed for shipment.

2.8 TESTS, INSPECTIONS, AND VERIFICATIONS

Tests, inspections, and verifications for materials and fabricated items shall conform to the requirements specified and in Section 05055a METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS.

2.8.1 Testing of Rubber Seals

The fluorocarbon film of rubber seals shall be tested for adhesion bond in accordance with ASTM D 413 using either the machine method or the deadweight method. A 1 inch long piece of seal shall be cut from the end of the seal which has been masked and subjected to tension at an angle approximately 90 degrees to the rubber surface. There shall be no separation between the fluorocarbon film and the rubber when subjected to the following loads:

THICKNESS OF FLUOROCARBON FILM	MACHINE METHOD AT 2 INCHES PER MINUTE	DEADWEIGHT METHOD
0.030 inch	30 lbs per inch width	30 lbs per inch width

2.8.2 Inspection

Shop assembled components shall be inspected for accurate fit and compliance with dimensional tolerances. Sealing, guiding, and connecting surfaces shall be inspected to determine if their planes are true, parallel, and in uniform contact with opposing surfaces. With the gate leaf closed and uniformly blocked in the sealing position, gate leaf wheels, rollers, bar seals, and rubber seals shall be inspected to determine if they are in continuous contact with track and seal plates. Compression of rubber seals shall not vary by more than 1/32 inch. It shall not be possible to insert a feeler gauge of greater than 0.003 inch thickness at any point between bar seals and seal plates.

PART 3 EXECUTION

3.1 Vertical Lift Gate Inspection and Repairs

3.1.1 Pre-Inspection Preparation

For the purposes of inspection, weld areas must be free of deposits as required by the weld inspector and industry standards for the type of examination procedure used.

3.1.2 Visual and Non-Destructive Inspection

Visual and nondestructive inspection shall conform to requirements specified in Section 05055.

3.1.3 Post-Repairs Protection to Surfaces

Upon completion of inspection, the Contractor shall protect each gate from environmental effects to minimize the amount of rust scale that will accumulate between the time when the gates are inspected and when final abrasive blasts cleaning is performed in preparation for painting. The Contractor shall use plastic sheeting or other adequate means to provide this protection.

3.1.4 Repairs of Vertical Lift Gates

Upon receipt of the copy of the inspection report, the Government will evaluate the results of the inspection and provide repair instructions, if any, to the Contractor within 2 weeks of receipt of the inspection report.

3.1.4.1 Component Member Repairs

The Contractor shall perform all structural repairs as directed by the COR. These repairs may include member splicing or bolt replacement, using welded or bolted connections. Material used for structural repairs shall be ASTM A36 steel. Bolted connections shall include ASTM A 325 bolts.

3.1.4.2 Weld Repairs

Defective welds shall be repaired in accordance with AWS 01.1, Subsection 3.7. For steel welds, defective weld metal shall be removed to sound metal by use of air carbon-arc or oxygen gouging. The surfaces shall be thoroughly cleaned before welding.

3.1.5 Post-Repair Inspections

Upon completion of all required structural component and weld repairs, the Contractor shall perform visual inspection of all repairs and nondestructive inspection of any welds used in conjunction with repair work. The examination procedure used for nondestructive inspection shall be as was used in the original inspection. Should the results of this inspection reveal defects or non-conformance with AWS specifications, the weld and/or adjoining member will be removed and replaced by the contractor at no cost to the Government.

3.1.6 Painting

Upon completion of all repairs and acceptance by the Government, the Contractor shall abrasive blast clean and paint as S-352 Vertical Lift Gates and touch-up S-351 Vertical Lift Gates using the system 3-AZ.

3.2 Inspection

Inspection of S-352 vertical lift gates and componets shall be documented in an inspection report for each gate. The report shall include photographs and sketches to portray the existing condition of the gate after a commerical sandblast made by Certified National Association of Corrosion Engineers (NACE). The structural evaluation shall also include recommendations for repair work. The report shall be made proir to performing weld repairs or painting on the gate. The inspection report shall be submitted in two formats , hard copy and electronic. Two hard copies of the report shall be submitted to the COR and one of the copies shall be submitted to the Structures Section. -The electronic version shall be submitted to the COR and the transmitted to EN-DS to expedite the inspection report review. The electronic report version shall have digital photos, which are accessible in jpg format.

3.3 Repairs

Basis for repairs will be made after the inspection report has been reviewed. Based on the review and report recommendations, the eContractor and Contracting Officer's Representative shall agree to the applisication and the method to accompleishing the work.

3.4 INSTALLATION

Installation shall conform with the requirements specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS. Gate and appurtenant items shall be assembled for installation in strict accordance with the contract drawings, approved installation drawings, and shop match-markings. Bearing surfaces requiring lubrication shall be thoroughly cleaned and lubricated with an approved lubricant before assembly and installation. Components to be field welded shall be in correct alignment before welding is commenced.

3.4.1 Painting

Exposed parts of the gate and appurtenance components, except machined surfaces, corrosion-resistant surfaces, surfaces of anchorages embedded in concrete, and other specified surfaces, shall be painted as specified in Section 09965A PAINTING: HYDRAULIC STRUCTURES.

3.5 OPERATING MACHINERY

Operating machinery shall conform to Section 15000.

3.6 ACCEPTANCE TRIAL OPERATION AND TEST

After the gate assembly has been installed, including operating machinery, the Contracting Officer will examine the complete system for final acceptance. Operation and test results shall be furnished to the

Contracting Officer. The assembly will be examined first to determine whether or not the workmanship conforms to the specification requirements. The Contractor shall operate the gate throughout its full operating range a sufficient number of times to demonstrate proper operation. The gate shall be operated from the remote control vault and the control panel in the control tower. Operation of hydraulic cylinders by use of compressed air will not be permitted. The initial operation of the gate assembly shall be conducted in the dry. The track plates, the rubber seals shall be checked to ensure that they are uniformly compressed against the seal plates. The second trial operation and testing of the gate assembly shall be conducted with the reservoir normal operating pool hydrostatic pressure. The workmanship in the fabrication and installation of the gate assembly shall be such that the gate leaf shall form a watertight barrier when lowered to the seated position. Adjustments shall be made to the operation and control apparatus until all components function as required. The wire rope, dogging devices, and other appurtenances will be inspected to assure proper operation. Required repairs or replacements to correct defects, as determined by the Contracting Officer, shall be made at no additional cost to the Government. The trial operation and testing shall be repeated after defects are corrected.

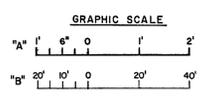
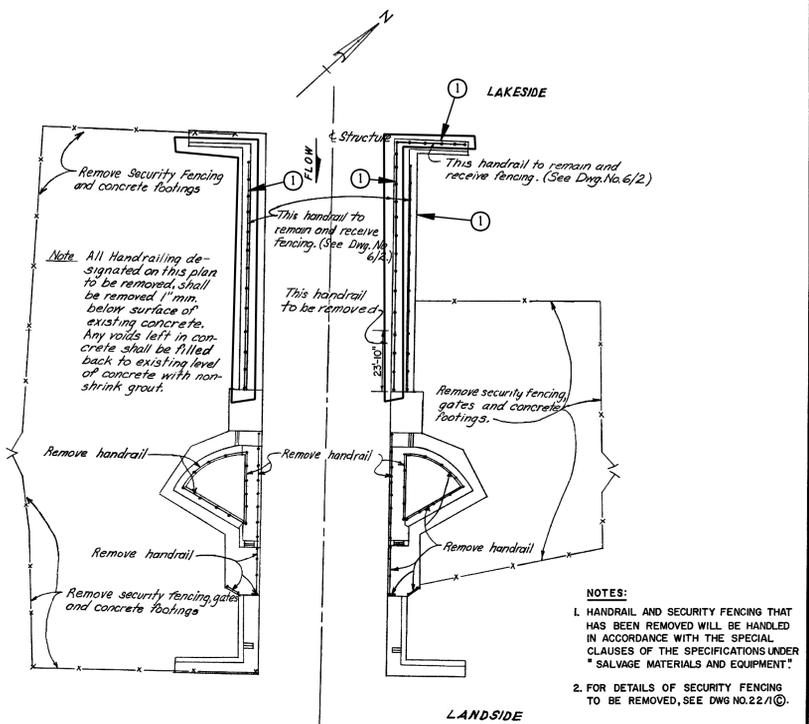
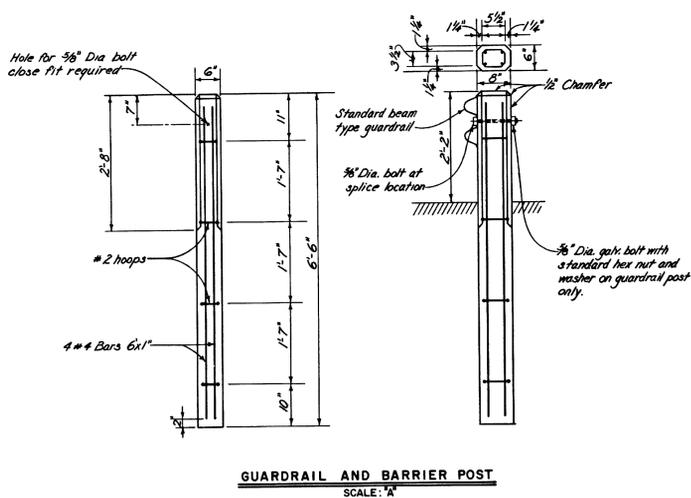
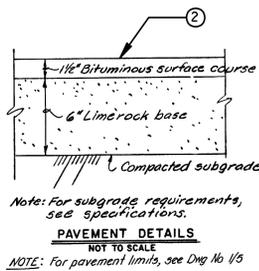
3.7 PROTECTION OF FINISHED WORK

Protection of finished work shall conform to the requirements of Section 05055a METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

-- End of Section --

A B C D E F G H

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NO	SYM	ZONE	DESCRIPTION		



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
CENTRAL AND SOUTHERN FLORIDA PROJECT
FOR FLOOD CONTROL AND OTHER PURPOSES
STRUCTURE 352
GENERAL
MISCELLANEOUS DETAILS

DESIGNED BY: J.D.L.	CHECKED BY: J.D.H.	DATE: 1/11
DRAWN BY: E.E.B.	SCALE AS SHOWN	DATED MAY 1986
FILE NO: S3520206.DGN	REFERENCE FILES: S3520480.DGN, S352051104B.TIF	SHEET

- GENERAL NOTES:**
- THE REDUCED DWG IMAGE IS AN AS-BUILT TO STRUCTURE 352 CONTRACT. THE DWG REFERENCE IS NO 1/11 OF D.O. FILE 400-34,780, DATED MAY 1986.
- KEY NOTES:**
- REMOVE HANDRAIL SYSTEM AND REPLACE WITH ALUMINUM PICKET RAIL SYSTEM. FOR COMPLETE LAYOUT OF EXISTING RAIL SEE DWG NO. 2/3 PICKET RAIL DETAIL SHOWN ON DWG. NO. 1/1.
 - SEE KEY NOTE 1 ON DWG NO 2/3.

US Army Corps of Engineers
Jacksonville District

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REVISOR: TO ACCOMPANY AMENDMENT NO. 0001.

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

DESIGNED BY: J.D.L. | CHECKED BY: J.D.H. | DATE: 1/11
DRAWN BY: E.E.B. | SCALE AS SHOWN | DATED: MAY 1986

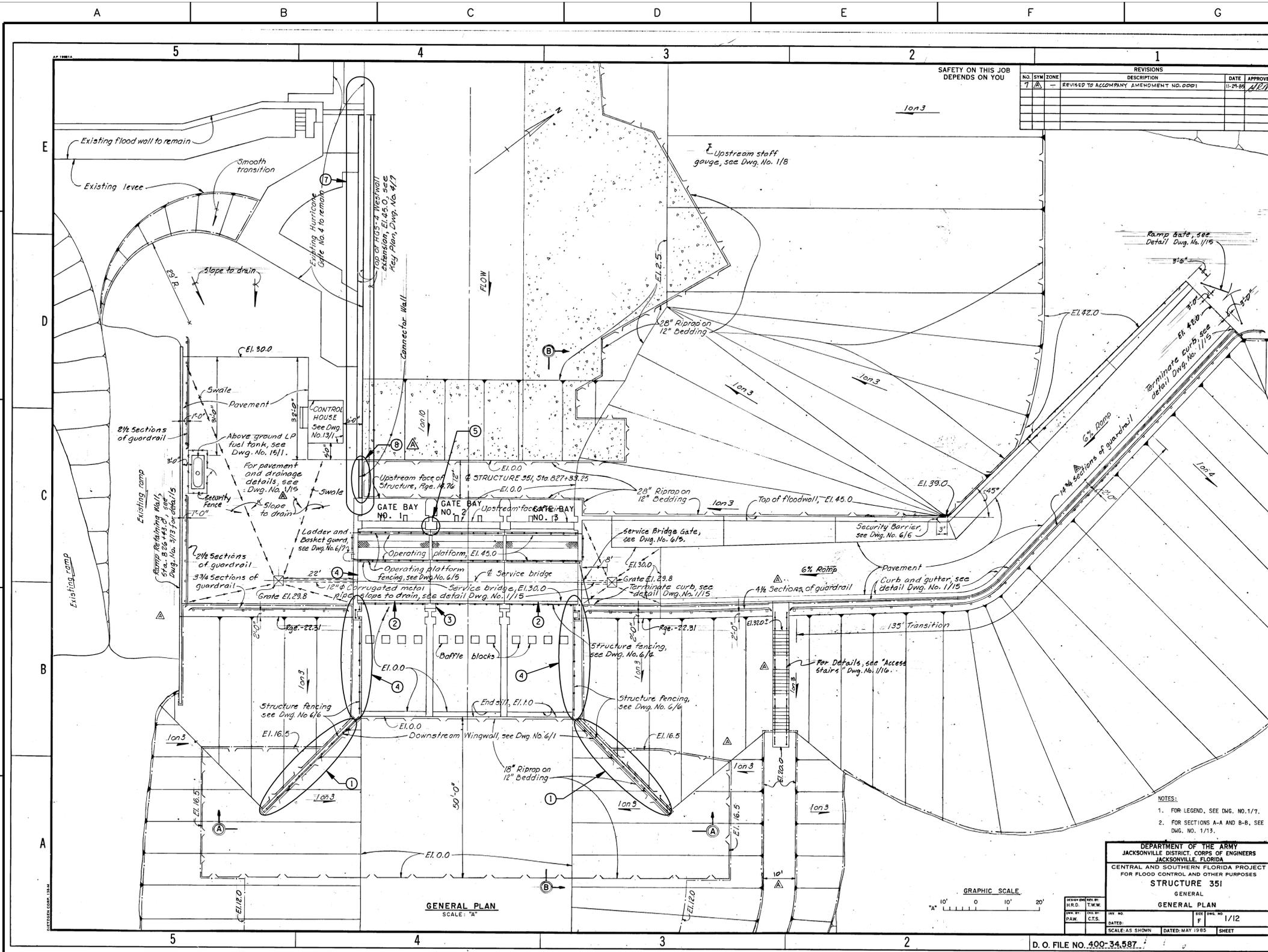
FILE NO: S3520206.DGN | REFERENCE FILES: S3520480.DGN, S352051104B.TIF

CENTRAL AND SOUTHERN FLORIDA PROJECT
FOR FLOOD CONTROL AND OTHER PURPOSES
REFURBISHMENT OF S-352 AND
MISCELLANEOUS REPAIRS TO S-351
GENERAL (S-352 ONLY)
MISCELLANEOUS DETAILS

D.O. FILE NO. 400-34,780

DATED: JUNE 2002
D.O. FILE NO. 400-38,315

DRAWING NO.
2/6



SAFETY ON THIS JOB DEPENDS ON YOU		REVISIONS		DATE	APPROVED
NO.	SYM	ZONE	DESCRIPTION		
7	A		REVISED TO ACCOMPANY AMENDMENT NO. 0001	11-29-95	JRM



JUNCTION BOX PHOTO 1



JUNCTION BOX PHOTO 2



OPERATING PLATFORM CRACK (SEE GENERAL NOTE 2)

- GENERAL NOTES:**
1. THE REDUCED IMAGE IS AN AS-BUILT TO STRUCTURE 351 CONTRACT. THE DWG. REFERENCE IS NO. 1/12 OF D.O. FILE 400-34,587, DATED MAY 1985.
 2. REMOVE CRACKED CONCRETE FROM OPERATING PLATFORM AND REPAIR. THE REPAIR SHOULD INCLUDE SAWCUTTING MATERIAL TO SOUND MATERIAL. REMOVE OF CONCRETE BEHIND THE REINFORCING WITH VIA A BRUSH HAMMER OR OTHER LIGHT EQUIPMENT. REMOVE RUST AND APPLY BONDING AGENT AND POLYMER-MODIFIED CONCRETE RESTORATION MATERIAL.

- KEY NOTES:**
- ① SANDBLAST AND PAINT SHEET PILE WINGWALLS. REMOVE EXISTING FENCE ON WINGWALLS. GRIND SMOOTH OFF POST CONNECTOR AND REPLACE FENCE AND POST ON TOP OF WING WALL. SEE KEY NOTES 2, IN DRAWING NO 15/4.
 - ② BREAST WALL REPAIR SEE KEY NOTE 1, DWG. NO. 12/4.
 - ③ REPAIR SPALL AT END OF ABUTMENT.
 - ④ REMOVE HANDRAIL AS REQUIRED TO DEWATER BAY NOS 1 AND NOS 3. REINSTALL HANDRAIL AFTER CONTRACTING OFFICER'S REPRESENTATIVE APPROVES CONCRETE CRACK REPAIR ON BREAST WALL.
 - ⑤ REPAIR CONCRETE CRACK ON TOP OF OPERATING PLATFORM.
 - ⑥ REMOVE ELECTRICAL JUNCTION BOX DIMENSIONS 1'-9"x2'-4"x1'-9" AS INSTRUCTED BY CONTRACTING OFFICER'S REPRESENTATIVE AND COORDINATED WITH SFOO (SEE JUNCTION BOX PHOTOS).
 - ⑦ REMOVE EXISTING RAIL SYSTEM AND REPLACE WITH ALUMINUM PICKET RAIL SYSTEM. APPROXIMATE LINEAR FEET OF RAIL IS 172 FEET.
 - ⑧ SAND BLAST AND PAINT STEEL SHEET PILE CONNECTOR WALL. SEE DWG. NOS. 13/8 AND 13/9.

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
CENTRAL AND SOUTHERN FLORIDA PROJECT
FOR FLOOD CONTROL AND OTHER PURPOSES
STRUCTURE 351
GENERAL
GENERAL PLAN

SCALE: AS SHOWN DATED: MAY 1985 SHEET

D.O. FILE NO. 400-34,587

US Army Corps of Engineers
Jacksonville District

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APPROVED

REVISIONS

NO. SYM ZONE DESCRIPTION DATE APPROVED

2 A (C-4-E-1) REVISED TO ACCOMPANY AMENDMENT NO. 0001 Description

NO. Symbol Zone

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FILE NO. DACW17-02-R-0033

DESIGNED BY: J.D.L. DRAWN BY: J.D.H. CHECKED BY: J.D.H. SCALE: NONE

REFERENCE FILES: S35204.DGN S35208.DGN S35502.DGN S35503.DGN S35504.DGN

DATE: JUNE 2002

D.O. FILE NO. 400-38,315

CENTRAL AND SOUTHERN FLORIDA PROJECT FOR FLOOD CONTROL AND OTHER PURPOSES

REFURBISHMENT OF S-352 AND MISCELLANEOUS REPAIRS TO S-351

S-351 GENERAL (S351) ONLY

GENERAL PLAN

DRAWING NO. 12/4

A B C D E F G H

6

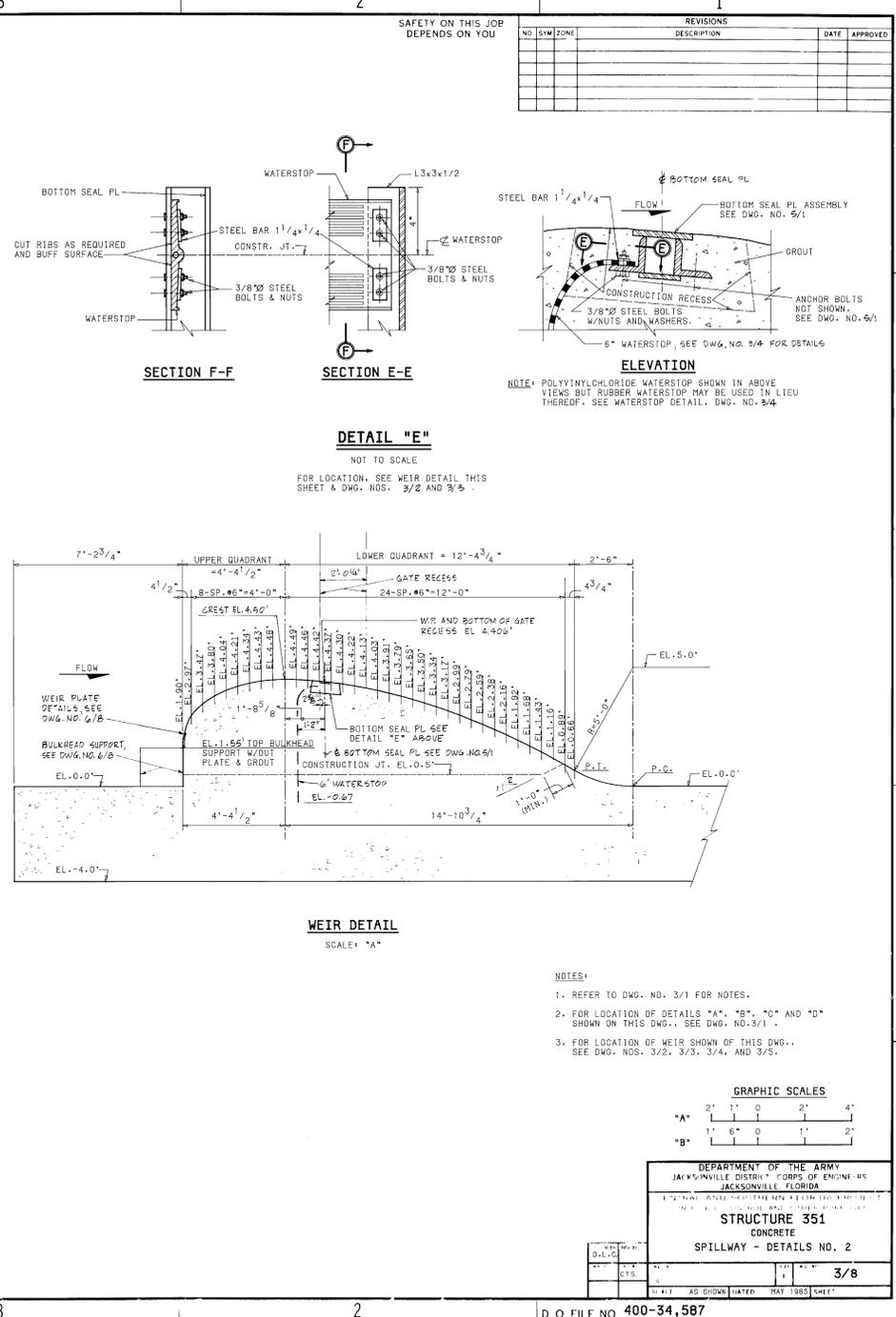
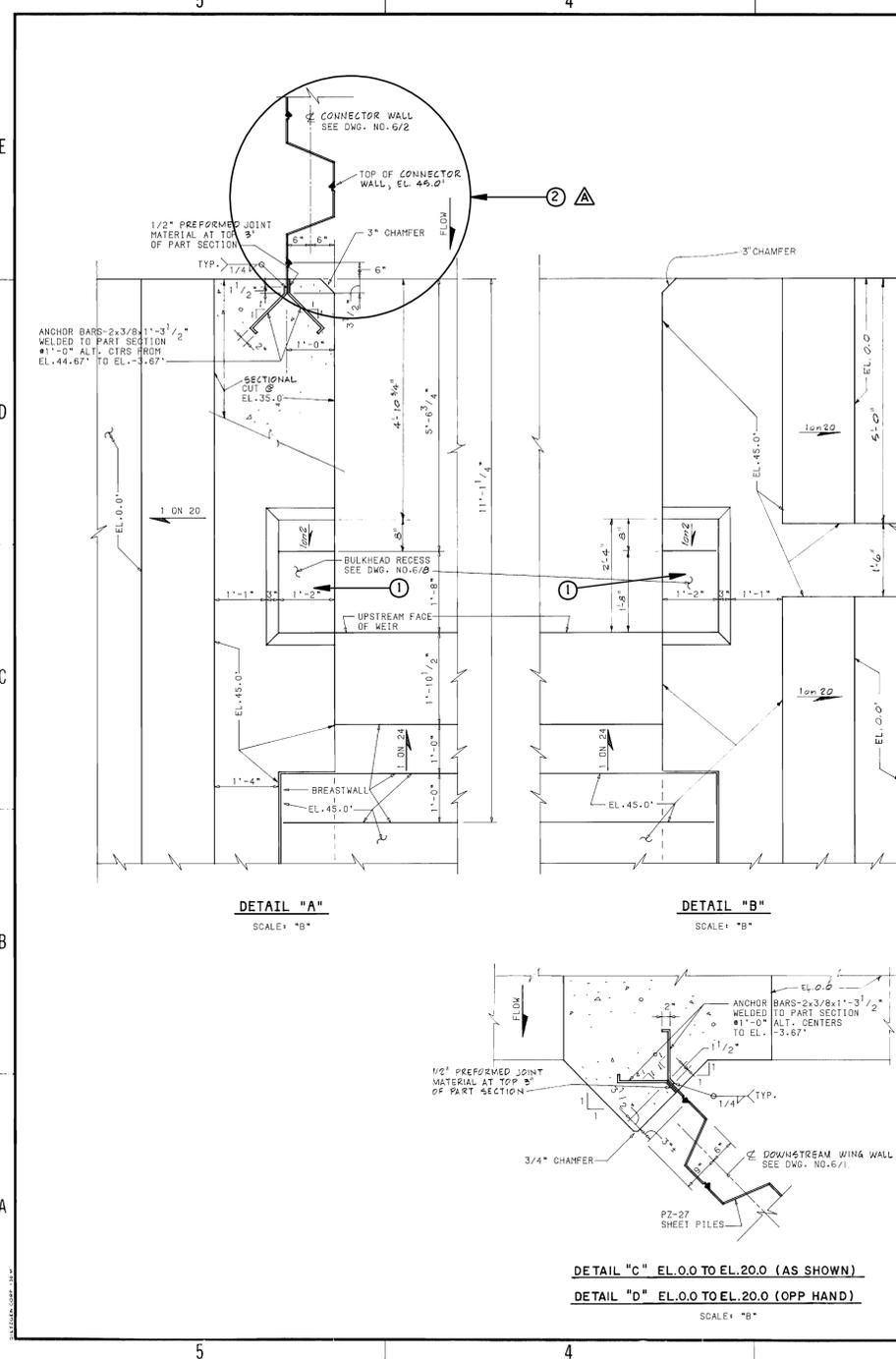
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4

3

2

1



REVISIONS		DATE	APPROVED
NO.	SYMBOL	DESCRIPTION	

GENERAL NOTES:

1. THIS REDUCED DWG IMAGE IS AN AS-BUILT TO STRUCTURE 351 CONTRACT. THE DWG REFERENCE IS NO 3/8 OF D.O. FILE 400-34,587, DATED MAY 1986.
2. THIS DRAWING SHOWS BULKHEAD RECESS DETAILS.

KEY NOTES:

- ① LOCATION OF DEWATERING BULKHEAD RECESS.
- Ⓐ ② SHEET PILE CONNECTOR WALL SHALL BE PAINTED AS DWG. NO. 13/9.

GRAPHIC SCALES

"A" 2' 1" 0 2' 4"

"B" 1' 6" 0 1' 2"

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

STRUCTURE 351
CONCRETE
SPILLWAY - DETAILS NO. 2

3/8

D O FILE NO 400-34,587



US Army Corps of Engineers
Jacksonville District

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JACKSONVILLE DISTRICT CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

Designed by: J.D.L.
Drawn by: E.E.B.
Checked by: J.D.H.
Scale: NONE

Date: JUNE 2002
D.O. FILE NO. 400-38,315

CENTRAL AND SOUTHERN FLORIDA PROJECT
FOR FLOOD CONTROL AND OTHER PURPOSES
REFURBISHMENT OF S-352 AND
MISCELLANEOUS REPAIRS TO S-351
CONCRETE
SPILLWAY - DETAILS NO. 2

DRAWING NO.
13/8



US Army Corps of Engineers
Jacksonville District

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NO.	SYMBOL	ZONE	REVISIONS	DATE	APPROVED
1	⊠	B-5	REVISED TO ACCOMPANY AMENDMENT NO. 0001		

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT
CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

Inv. No. DACW17-02-R-0033

Designed By: J.D.L.

Drawn By: E.E.B.

Checked By: J.D.H.

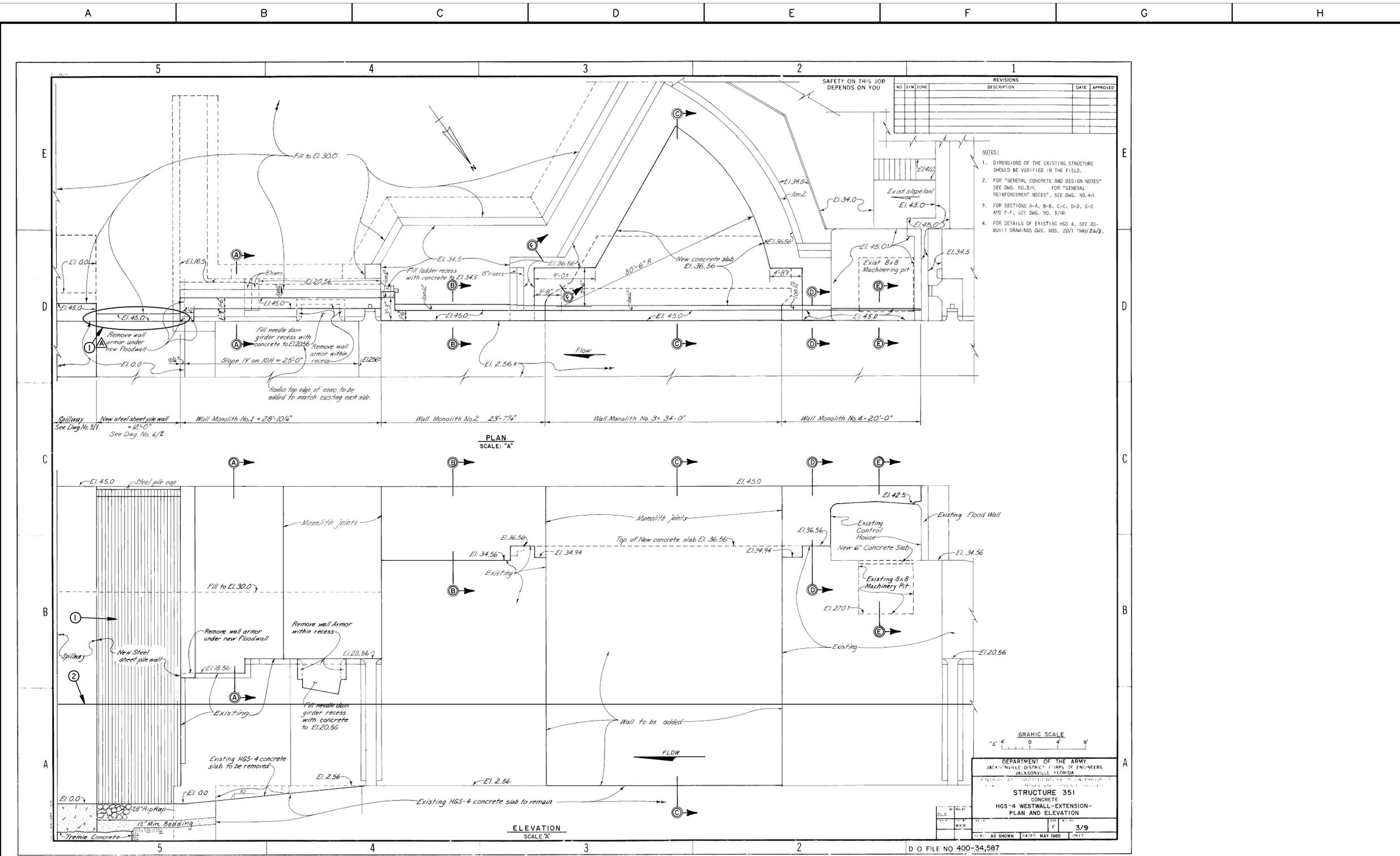
Scale: NONE

Date: JUNE 2002

D.O. FILE NO. 400-38.315

FILE NAME: S3520302.DGN

Reference files: S3520302.DGN



GENERAL NOTES:
1. THIS REDUCED DWG IMAGE IS AN AS-BUILT TO STRUCTURE 351 CONTRACT. THE DWG REFERENCE IS NO 3/9 OF D.O. FILE 400-34.587, DATED MAY 1985.

KEY NOTES:
① SANDBLAST AND PAINT CONNECTOR SHEET PILE WALL. PROVIDE PROTECTION BARRIER TO ALLOW FOUR FEET BELOW WATER LINE TO HAVE SURFACE PREPARED AND PAINTED. (SEE DRAWING NO 15/2).
② LAKESIDE WATER LINE ELEVATION 15.6 FEET NGVD. SEE NOTE 5 ON DRAWING NO. 12/1.

CENTRAL AND SOUTHERN FLORIDA PROJECT FOR FLOOD CONTROL AND OTHER PURPOSES
REFURBISHMENT OF S-352 AND MISCELLANEOUS REPAIRS TO S-351
CONCRETE
HGS - WEST WALL
EXTENSION DETAILS NO. 1

DRAWING NO.
13/9

