LOCK AND DAM NOS. 25 AND 24

MISSISSIPPI RIVER
LINCOLN COUNTY, MISSOURI
PIKE COUNTY, MISSOURI

SPECIFICATIONS FOR

AUXILIARY LOCK CLOSURE AND DEBRIS OPENINGS **READVERTISEMENT**

SOLICITATION NO. DACW43-00-B-0205

THIS SOLICITATION IS UNRESTRICTED

US Army Corps
of Engineers
St. Louis District

Gateway to Excellence **NOVEMBER 1999**

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DESIGN AUTHENTICATION

This project was designed by the St. Louis District, U.S. Army Corps of Engineers. The initials or signatures and registration designations of individuals appear on these project documents within the scope of their employment as required by ER 1110-1-8152.

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BIDDING REQUIREMENTS, CONTRACT FORMS AND CONTRACT CONDITIONS

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00600	SOLICITATION PROVISIONS	00600-1
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01300	SUBMITTAL PROCEDURES	01300-1
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DIVISION 14 AND 15

(NOT USED)

DIVISION 16 - ELECTRICAL

16050 ELECTRICAL WORK 16050-1

SOLICITATION, OFFER, AND AWARD (Construction, Alteration, or Repair)	1. SOLICITATION NUMBER	2. TYPE OF SOLICITATION	3. DATE ISSUED	PAGE OF PAGES
	DACW43-00-B-0205	[X] SEALED BID (IFB) [ ] NEGOTIATED (RFP)	11/30/99	1 2

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

4. CONTRACT NUMBER	5. REQUISITION/PURCHASE REQUEST NUMBER	6. PROJECT NUMBER
	W81C8X-9271-2703	

7. ISSUED BY CODE B3P0000

CONTRACTING DIVISION
USARMY ENGR DIST ST LOUIS
1222 SPRUCE STREET ROOM 4.207
ST. LOUIS, MISSOURI 63103-2833

8. ADDRESS OFFER TO

SEE ITEM 7

9. FOR INFORMATION CALL

A. NAME KATHLEEN A. EBMEIER

B. TELEPHONE NUMBER (Include area code) (NO COLLECT CALLS) PHONE 314-331-8511 - FAX 314-331-8746

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 number, date):

AUXILIARY LOCK CLOSURE AND DEBRIS OPENINGS, LOCK AND DAM NOS 25 AND 24, MISSISSIPPI RIVER, lINCOLN AND PIKE COUNTIES, MISSOURI (READVERTISEMENT)

The work consists of auxiliary miter gate removal and installation of new gate, concrete demolition, cofferdam, rock dam and silt removal, bulkhead recess and extension work at Lock 25. Work to be accomplished at both Lock 24 and Lock 25 consists of guard wall demolition, bridge installation, and electrical work.

The cost of the work is between $1,000,000.00 and $5,000,000.00.

11. The Contractor shall begin performance within 15 calendar days and complete it 300 calendar days after [ ] award, [X] notice to proceed. This performance period is [X] mandatory, [ ] negotiable. (See Section 00700 .)

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

[X] YES [ ] NO

12B. CALENDAR DAYS 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 11:00 A.M. (hour) local time 01/04/00 (date). If this is a sealed bid solicitation, offers will be publicly opened at that time. Sealed 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 [X] is, [ ] is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by

D. Offers providing less than 60 calendar days for Government acceptance after the date offers are due will not be considered and be rejected.

OFFER *(Must be fully completed by offeror)*

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*	15. TELEPHONE NUMBER *(Include area code)*
DUNS:_____ CAGE:_____	16. REMITTANCE ADDRESS *(Include only if different than Item 14)*
CODE FACILITY CODE	

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

AMOUNTS ▶

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

19. ACKNOWLEDGEMENT OF AMENDMENTS
(The offeror acknowledges receipt of amendments to the solicitation - give number and date of each)

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*	20B. SIGNATURE	20C. OFFER DATE

AWARD *(To be completed by Government)*

21. ITEMS ACCEPTED

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA

24.SUBMIT INVOICES TO ADDRESS SHOWN IN ▶ *(4 copies unless otherwise specified)*	ITEM	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		27. PAYMENT WILL BE MADE BY

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT *(Contractor is required to sign document and return_____ copies to the issuing office.)* Contractor agrees to furnish and deliver all items or perform all work requirements identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications incorporated by reference in or attached to this

☐ 29. AWARD. *(Contractor is not required to sign this document.)* 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

NOTICES

1. SOLICITATION DEFINITIONS ARE PRESCRIBED IN FAR 52.214.1.

2. BIDDERS MUST PROVIDE FULL, ACCURATE, AND COMPLETE INFORMATION AS REQUIRED BY THIS SOLICITATION AND ITS ATTACHMENTS. THE PENALTY FOR MAKING FALSE STATEMENTS IN BIDS IS PRESCRIBED IN 18 USC 1001. (FAR 52.214-4)

3. NOTE THE AFFIRMATIVE ACTION REQUIREMENT OF EQUAL OPPORTUNITY CLAUSE WHICH MAY APPLY TO THE CONTRACT RESULTING FROM THIS SOLICITATION.

4. NOTE THE CERTIFICATION OF NONSEGREGATED FACILITIES IN THIS SOLICITATION. FAILURE OF A BIDDER OR OFFEROR TO AGREE TO THE CERTIFICATION WILL RENDER ITS BID OR OFFER NONRESPONSIVE TO THE TERMS OF SOLICITATIONS INVOLVING AWARDS OF CONTRACTS EXCEEDING $10,000 WHICH ARE NOT EXEMPT FROM THE PROVISIONS OF THE EQUAL OPPORTUNITY CLAUSE.

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SECTION 00010 Solicitation Contract Form

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001	MOBILIZATION/ DEMOBILIZATION AT LOCK 25	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002	GUARD WALL AT LOCK 25 - DEMOLITION	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003	GUARD WALL AT LOCK 25 - CONCRETE RESTORATION	1.00	Lump Sum		

NET AMT _____

NAME OF OFFEROR OR CONTRACTOR

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0004	GUARD WALL AT LOCK 25 - TEMP. DEBRIS OPEN. SCREEN	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0005	GUARD WALL AT LOCK 25 – BRIDGE	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0006	ROCK DAM TEMP. REINFORCEMENT - INTAKE PORT COVERS (MAIN LOCK)	1.00	Lump Sum		

NET AMT _____

NAME OF OFFEROR OR CONTRACTOR

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0007	ROCK DAM TEMP. REINFORCEMENT - TEMP. STABILIZATION	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0008	SILT REMOVAL - STAGE 1	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0009	SILT REMOVAL - STAGE 2	1.00	Lump Sum		

NET AMT _____

NAME OF OFFEROR OR CONTRACTOR

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0010	AUXILIARY GATE - REMOVE EXISTING AUXILIARY GATE	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0011	AUXILIARY GATE - INSTALL NEW AUXILIARY GATE	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0012	ROCK DAM REMOVAL/DISPOSAL	1.00	Lump Sum		

NET AMT _____

NAME OF OFFEROR OR CONTRACTOR

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0013	TAINTER VALVE PIT & CULVERT BULKHEAD -DEMOLITION	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0014	TAINTER VALVE PIT & CULVERT BULKHEAD - CONCRETE RESTORATION	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0015	TAINTER VALVE PIT & CULVERT BULKHEAD- PRECAST COVERS	1.00	Lump Sum		

NET AMT _____

NAME OF OFFEROR OR CONTRACTOR

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0016	TAINTER VALVE PIT AND CULVERT BULKHEAD PRECAST TAINTER VALVE BULKHEAD	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0017	TAINTER VALVE PIT AND CULVERT BULKHEAD TIMBER STOP LOG REPLACEMENT	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0018	MITER GATE MACHINERY PIT - DEMOLITION	1.00	Lump Sum		

NET AMT _____

NAME OF OFFEROR OR CONTRACTOR

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0019	MITER GATE MACHINERY PIT - CONCRETE RESTORATION	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0020	MITER GATE MACHINERY PIT - PRECAST COVERS	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0021	MITER GATE MACHINERY PIT - CONTROL STATION (DEMOLITION AND CAPPING)	1.00	Lump Sum		

NET AMT _____

NAME OF OFFEROR OR CONTRACTOR

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0022	BULKHEAD RECESSES - COFFERDAM	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0023	BULKHEAD RECESSES - DEMOLITION AND RECESS INSTALLATION	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0024	BULKHEAD RECESSES - ACCEPTANCE TEST	1.00	Lump Sum		

NET AMT _____

NAME OF OFFEROR OR CONTRACTOR

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0025	BULKHEAD EXTENSION - FABRICATION	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0026	ELECTRICAL WORK AT LOCK 25	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0027	ABATEMENT WORK	1.00	Lump Sum		

NET AMT _____

NAME OF OFFEROR OR CONTRACTOR

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0028	LOCK 24 DEBRIS OPENING – MOBILIZATION/ DEMOBILIZATION AT LOCK 24	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0029	GUARD WALL AT LOCK 24 - DEMOLITION	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0030	GUARD WALL AT LOCK 24 - CONCRETE RESTORATION	1.00	Lump Sum		

NET AMT _____

NAME OF OFFEROR OR CONTRACTOR

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0031	GUARD WALL AT LOCK 24 – BRIDGE	1.00	Lump Sum		

NET AMT _____

ITEM NO	SUPPLIES/SERVICE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0032	ELECTRICAL WORK AT LOCK 24	1.00	Lump Sum		

NET AMT _____

GRAND TOTAL $_____

BIDDING SCHEDULE NOTES

1. All quantities shown on the BIDDING SCHEDULE are estimated quantities except when the unit is shown as "Job".

2. When bids are solicited on a unit price basis, bidders shall insert in the spaces provided therefor in the SCHEDULE both the "unit price" and the "estimated amount" resulting from applying the said unit price to the estimated quantity shown. In event the bidder quotes only a total price ("estimated amount") in its bid and fails to quote the unit price, the Government will determine such unit price by dividing the total price quoted by the quantity of the item set out in the SCHEDULE. The bidder agrees that the unit price so determined shall be used for the purpose of bid evaluation, award and all payments to the Contractor including final payment.

3. All extensions of the unit prices shown will be subject to verification by the Government. In case of variation between the unit price and the extension, the unit price will be considered to be the bid and the extension will be corrected accordingly.

4. If a modification to a bid based on unit prices is submitted, which provides for a lump sum adjustment to the total estimated cost, the application of the lump sum adjustment to each unit price in the bid schedule must be stated. If it is not stated, the bidder agrees that the lump sum adjustment shall be applied on a pro rata basis to every unit price in the bid schedule.

5. Bidders are required to bid on all items listed on the Bidding Schedule in addition to inserting a total quoted bid in the appropriate space provided. Failure to do so will be considered good cause to disqualify the bid.

SECTION 00100 Bidding Schedule/Instructions to Bidders

CLAUSES INCORPORATED BY REFERENCE:

52.204-6	Data Universal Numbering System (DUNS) Number	APR 1998
52.211-2	Availability of Specifications Listed in the DOD Index of Specifications and Standards (DODISS) and Descriptions Listed in the Acquisition Management Systems and Data Requirements Control List, DOD 5010.12-L	AUG 1998
52.214-1	Solicitation Definitions--Sealed Bidding	JUL 1987
52.214-3	Amendments To Invitations For Bids	DEC 1989
52.214-4	False Statements In Bids	APR 1984
52.214-5	Submission Of Bids	MAR 1997
52.214-6	Explanation To Prospective Bidders	APR 1984
52.214-7	Late Submissions, Modifications, and Withdrawals of Bids	MAY 1997
52.214-18	Preparation of Bids-Construction	APR 1984
52.214-19	Contract Award-Sealed Bidding-Construction	AUG 1996
52.216-1	Type Of Contract	APR 1984
52.225-12	Notice of Buy American Act Requirement - Construction Materials	MAY 1997
252.204-7001	Commercial And Government Entity (CAGE) Code Reporting	DEC 1991
52.214-5000	Apparent Clerical Mistakes	MAY 1999

CLAUSES INCORPORATED BY FULL TEXT

52.233-2 SERVICE OF PROTEST (AUG 1996)

(a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from
U. S. Army Engineer District, St. Louis
(b) Corps of Engineers
(c) 1222 Spruce Street
(d) St. Louis, Missouri 63103-2833

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(c) In this procurement, you may not protest to the GSBCA because of the nature of the supplies or services being procured. (Contracting Officer shall strike the word "not" where the GSBCA is a correct forum.)

52.236-27 I SITE VISIT (CONSTRUCTION) (FEB 1995)--ALTERNATE I (FEB 1995)

(a) The clauses at 52.236-2, Differing Site Conditions, and 52.236-3,

Site Investigations and Conditions Affecting the Work, will be included in any contract awarded as a result of this solicitation. Accordingly, offerors or quoters are urged and expected to inspect the site where the work will be performed.

(b) An organized site visit has been scheduled for– 9:00 A.M., Local Time, December 15,1999

(c) Participants will meet at-- Upper Mississippi Resident Office, Lock and Dam No. 25, Elsberry, Missouri

(End of provision)

52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

//www.arnet.gov/far
//www.acq.oad.mil/dp/dars

52.0-4021 AUTHORIZATION

This contract is effected pursuant to 10 USC 2304.

(end of clause)

52.0-4026 TELEGRAPHIC MODIFICATIONS

Telegraphic bids/offers are not authorized, however, modification or withdrawal of bids/offers by telegram is authorized provided telegraphic notice is submitted so as to be received in the office designated in this Solicitation not later than the exact time set for opening of bids/receipt of proposals. The telegraphic modification or withdrawal received in such office by telephone from the receiving telegraph office not later than the time set for opening of bids/receipt of proposals shall be considered if such message is confirmed by the telegraph company by sending a copy of the telegram which formed the basis for the telephone call. NOTE: The term "telegram" includes mailgrams.

(end of clause)

52.0-4156 AMENDMENTS PRIOR TO DATE SET FOR OPENING BIDS

The right is reserved, as the interest of the Government may require, to revise or amend the specifications or drawings or both prior to the date set for opening bids. Such revisions and

amendments, if any, will be announced by an amendment or amendments to this Solicitation. If the revisions and amendments are of a nature which requires material changes in quantities or prices bid or both, the date set for opening bids may be postponed by such number of days as in the opinion of the issuing officer will enable bidders to revise their bids. In such cases, the amendment will include an announcement of the new date for opening bids.

(end of clause)

52.0-4158 PRE-AWARD INFORMATION

The low bidder shall, upon request of the Contracting Officer, furnish a statement of whether he or she is now or ever has been engaged in any work similar to that covered by the specifications herein, the dollar value thereof, the year in which such work was performed, a brief description of the work, and the manner of its execution, and giving such other information as will tend to show the bidder's ability to prosecute the required work. The bidder shall furnish the above information for at least 4 commercial firms and/or Government agencies for whom he or she has performed work. The "such other information" referred to above shall include but is not limited to the following:

(1) The name and address of the office or firm under which such work was performed.

(2) A brief history of business experience, including length of time in present business.

(3) A list of key personnel available for instant project and their qualifications.

(4) A copy of bidder's latest financial statement, including the names of banks or other financial institutions with which the bidder conducts business. If the financial statement is more than 60 days old, a certificate should be attached stating that the financial condition is substantially the same, or if not the same, the changes that have taken place. Such statement will be treated as confidential.

(5) A list of present commitments, including the dollar value thereof, and name of office under which the work is being performed.

(6) A list of the plant available to the bidder and proposed for use on the work.

(end of clause)

52.0-4162 QUESTIONS

Prospective bidders are encouraged to submit written questions on any aspect of the Solicitation. In this connection, see the paragraph entitled "Explanation to Prospective Bidders" of SECTION 00100, INSTRUCTIONS TO BIDDERS. Responses to written or verbal questions that result in a change to the plans and specifications will be answered by amendment only in order to provide all prospective bidders the changes at the same time. All TECHNICAL questions, written or verbal, regarding this Solicitation, before bids have been opened, should be referred to Mrs. LindaBolton,

CEMVS-ED-DC, (314) 331-8273, U.S. Army Corps of Engineers, RAY Building, 1222 Spruce Street, St. Louis, Missouri 63103-2833. Questions concerning CONTRACTUAL matters or information on obtaining plans, specifications, and bidding documents should be referred to Mrs. Kathleen Ebmeier, Contract Specialist, Contracting Division, 4th Floor, Room 4.207, address as above, (314/331-8511). COLLECT TELEPHONE CALLS WILL NOT BE ACCEPTED.

(end of clause)

52.0-4163 INSPECTION OF INFORMATION

All requests to review items listed in SPECIAL CLAUSE 00800-6a should be referred to Civil Engineering/Specifications Section (Telephone, 314/331-8282 or 314/331-8273; FAX, 314-331-8244), Room 3.302, U.S. Army Corps of Engineers, RAY Building, 1222 Spruce Street, St. Louis, Missouri 63103-2833.

(end of clause)

52.0-4164 QUANTITIES IN LUMP SUM ITEMS

Estimates of quantities involved in certain items of work for which bids are being solicited on a lump sum or job basis have been made for the use of the Government. Copies of these quantity estimates may be obtained by contacting the Contracting Division, Telephone No. 314/331- 8511 Dept. of the Army, St. Louis District, Corps of Engineers, RAY Building, 1222 Spruce Street, St. Louis, Missouri 63103-2833. It is to be expressly understood that the accuracy of these estimates is in no wise warranted and that the furnishing of this information to a bidder will not relieve the bidder of its responsibility to estimate the quantities involved. It is further to be expressly understood that in no case will such estimates be used as a basis of a claim against the Government.

(end of clause)

52.0-4165 SITE OF THE WORK

Bidders are advised that for the purpose of applicability of the Davis-Bacon Act and other contract labor standards provisions, "the site of the work" under the contract to be awarded pursuant to this Solicitation may not be limited to the physical place(s) where the construction called for in the contract will remain when work on it has been completed. The "site of the work" may include other adjacent or nearby property used by the contractor or subcontractors during such construction. For example, fabrication plants, mobile factories, batch plants, borrow pits, job headquarters, tool yards, etc., will be considered part of the site of the work, provided they are dedicated exclusively or nearly so to performance on the contract and are so located in proximity to the actual construction location that it would be reasonable to include them.

(end of clause)

52.0-4168 VALUE ENGINEERING (VE) PAYMENT TO CONTRACTORS

Value Engineering. Special attention is invited to the Contract Clause entitled, "Value Engineering--Construction". The St. Louis District policy to authorize immediate payment to contractors for their portion of VECP savings is an important step in providing adequate incentives to contractors for their support of this program. Carefully review the contract documents for potential savings and submit ideas promptly upon award to maximize savings.

(end of clause)

52.0-4169 WORK TO BE PERFORMED BY CONTRACTOR'S OWN ORGANIZATION

Within five days after award the successful bidder/contractor must furnish the Contracting Officer a description of the items of work which will be performed with its own forces and the estimated cost of those items. (See Section 00700, Contract Clause entitled PERFORMANCE OF WORK BY THE CONTRACTOR.)

(end of clause)

52.0-4170 TEMPORARY PROJECT SAFETY FENCING

Bidders are advised that Paragraph 04.A.04 of Safety and Health Requirements Manual EM 385-1-1 dated 3 September 1996, requires temporary project safety fencing on projects located in areas actively utilized by the general public. The requirements for temporary project safety fencing on this project are specified in SECTION 01500 entitled TEMPORARY CONSTRUCTION FACILITIES.
.

(end of clause)

52.0-4203 I EQUIPMENT OWNERSHIP AND OPERATION EXPENSE SCHEDULE

Whenever a modification or equitable adjustment of contract price is required, the Contractor's cost proposals for equipment ownership and operating expenses shall be determined in accordance with the requirements of SECTION 00700, Contract Clause entitled EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE. A copy of EP 1110-1-8 "Construction Equipment Ownership and Operating Expense Schedule" is available for review by bonafide bidders in the St. Louis District, Corps of Engineers, Technical Library, Room 4.202, RAY Building, 1222 Spruce Street, St. Louis, Missouri 63103-2833, Telephone 314-331-8883, Fax 314-331-8873;
for additional information call or write to:

Superintendent of Documents
P.O. Box 371954
Pittsburgh, PA 15250-7954

Telephone 202-783-3238;
or may be purchased from:
U.S. Government Regional Bookstore
No. 120 Bannister Mall
5600 East Bannister Road
Kansas City, MO 64137
Telephone 816-767-8225
(end of clause)

52.228-4115 BONDS

a. BID BOND/BID GUARANTEE - Each bidder shall submit WITH HIS/HER BID a Bid Bond/Bid Guarantee in the amount and form prescribed in Section 00700, Contract Clause FAR 52.228-1 "BID GUARANTEE".

b. PERFORMANCE AND PAYMENT BONDS - Within ten days after the prescribed forms are presented to the successful bidder, Performance and Payment bonds in good and sufficient surety or sureties acceptable to the Government shall be furnished. This requirement is further discussed in Contract Clause FAR 52.228-15 "PERFORMANCE AND PAYMENT BONDS-- CONSTRUCTION".

Performance and Payment bonds shall be furnished by the Contractor to the Government prior to commencement of contract performance. FAILURE TO INCLUDE BID BOND OR OTHER BID SECURITY ON TIME MAY BE CAUSE FOR REJECTION OF THE BID AS NONRESPONSIVE. LATE BOND OR OTHER SECURITY WILL BE TREATED IN THE SAME MANNER AS LATE BIDS.

(ALSO SEE SECTION 00100 -- FAR 52.214-7)

(end of clause)

52.229-4003 STATE OF MISSOURI SALES TAX

After contract award, the successful Contractor, his/her subcontractors and material suppliers, may claim an exemption from Missouri sales tax on federal construction projects. UPON REQUEST, the Contracting Officer will provide the appropriate tax exempt certificate.

(End of Clause)

SECTION 00600 Representations & Certifications

CLAUSES INCORPORATED BY FULL TEXT

52.203-2 CERTIFICATE OF INDEPENDENT PRICE DETERMINATION (APR 1985)

(a) The offeror certifies that --

(1) The prices in this offer have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other offeror or competitor relating to (i) those prices, (ii) the intention to submit an offer, or (iii) the methods of factors used to calculate the prices offered:

(2) The prices in this offer have not been and will not be knowingly disclosed by the offeror, directly or indirectly, to any other offeror or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the offeror to induce any other concern to submit or not to submit an offer for the purpose of restricting competition.

(b) Each signature on the offer is considered to be a certification by the signatory that the signatory --

(1) Is the person in the offeror's organization responsible for determining the prices offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contradictory to subparagraphs (a)(1) through (a)(3) above; or

(2) (i) Has been authorized, in writing, to act as an agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above _____ (insert full name of person(s) in the offeror's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the offeror's organization);

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above.

(c) If the offeror deletes or modifies subparagraph (a)(2) above, the offeror must furnish with its offer a signed statement setting forth in detail the

circumstances of the disclosure.

(End of clause)

52.203-11 CERTIFICATION AND DISCLOSURE REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (APR 1991)

(a) The definitions and prohibitions contained in the clause, at FAR 52.203-12, Limitation on Payments to Influence Certain Federal Transactions, included in this solicitation, are hereby incorporated by reference in paragraph (b) of this Certification.

(b) The offeror, by signing its offer, hereby certifies to the best of his or her knowledge and belief that on or after December 23, 1989--

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a member of Congress on his or her behalf in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan, or cooperative agreement;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the offeror shall complete and submit, with its offer, OMB standard form LLL, Disclosure of Lobbying Activities, to the Contracting Officer; and

(3) He or she will include the language of this certification in all subcontract awards at any tier and require that all recipients of subcontract awards in excess of $100,000 shall certify and disclose accordingly.

(c) Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision, shall be subject to a civil penalty of not less than $10,000, and not more than $100,000, for each such failure.

(End of provision)

52.204-3 TAXPAYER IDENTIFICATION (OCT 1998)

(a) Definitions.

Common parent, as used in this provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal

income tax returns on a consolidated basis, and of which the offeror is a member.

Taxpayer Identification Number (TIN), as used in this provision, means the number required by the Internal Revenue Service (IRS) to be used by the offeror in reporting income tax and other returns. The TIN may be either a Social Security Number or an Employer Identification Number.

(b) All offerors must submit the information required in paragraphs (d) through (f) of this provision to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325(d), reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M, and implementing regulations issued by the IRS. If the resulting contract is subject to the payment reporting requirements described in Federal Acquisition Regulation (FAR) 4.904, the failure or refusal by the offeror to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(c) The TIN may be used by the Government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (31 U.S.C. 7701(c)(3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.

(d) Taxpayer Identification Number (TIN).

___ TIN:.----------

___ TIN has been applied for.

___ TIN is not required because:

___ Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the United States and does not have an office or place of business or a fiscal paying agent in the United States;

___ Offeror is an agency or instrumentality of a foreign government;

___ Offeror is an agency or instrumentality of the Federal Government.

(e) Type of organization.

___ Sole proprietorship;

___ Partnership;

___ Corporate entity (not tax-exempt);

___ Corporate entity (tax-exempt);

___ Government entity (Federal, State, or local);

___ Foreign government;

___ International organization per 26 CFR 1.6049-4;

___ Other----------

(f) Common parent.

___ Offeror is not owned or controlled by a common parent as defined in paragraph (a) of this provision.

___ Name and TIN of common parent:

Name----------

TIN----------

(End of provision)

52.204-5 WOMEN-OWNED BUSINESS (OTHER THAN SMALL BUSINESS) (MAY 1999)

(a) Definition. Women-owned business concern, as used in this provision, means a concern that is at least 51 percent owned by one or more women; or in the case of any publicly owned business, at least 51 percent of its stock is owned by one or more women; and whose management and daily business operations are controlled by one or more women.

(b) Representation. [Complete only if the offeror is a women-owned business concern and has not represented itself as a small business concern in paragraph (b)(1) of FAR 52.219-1, Small Business Program Representations, of this solicitation.] The offeror represents that it( ) is, ( ) is not a women-owned business concern.

(End of provision)

52.209-5 CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS (MAR 1996)

(a)(1) The Offeror certifies, to the best of its knowledge and belief, that--

(i) The Offeror and/or any of its Principals--

(A) Are [ ] are not [ ] presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have [ ] have not [ ], within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining,

attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are [ ] are not [ ] presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in subdivision (a)(1)(i)(B) of this provision.

(ii) The Offeror has [ ] has not [ ], within a three-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

THIS CERTIFICATION CONCERNS A MATTER WITHIN THE JURISDICTION OF AN AGENCY OF THE UNITED STATES AND THE MAKING OF A FALSE, FICTITIOUS, OR FRAUDULENT CERTIFICATION MAY RENDER THE MAKER SUBJECT TO PROSECUTION UNDER SECTION 1001, TITLE 18, UNITED STATES CODE.

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

(End of provision)

52.219-1 SMALL BUSINESS PROGRAM REPRESENTATIONS (MAY 1999)

(a)(1) The standard industrial classification (SIC) code for this acquisition is 1629.

(2) The small business size standard is 17,000,000.00.

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b) Representations. (1) The offeror represents as part of its offer that it ( ) is, ( ) is not a small business concern.

(2) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents, for general statistical purposes, that it ( ) is, ( ) is not a small disadvantaged business concern as defined in 13 CFR 124-1002.

(3) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a women-owned small business concern.

(c) Definitions. "Joint venture," for purposes of a small disadvantaged business (SDB) set-aside or price evaluation preference (as prescribed at 13 CFR 124.321), is a concern that is owned and controlled by one or more socially and economically disadvantaged individuals entering into a joint venture agreement with one or more business concerns and is considered to be affiliated for size purposes with such other concern(s). The combined annual receipts or employees of the concerns entering into the joint venture must meet the applicable size standard corresponding to the SIC code designated for the contract. The majority of the venture's earnings must accrue directly to the socially and economically disadvantaged individuals in the SDB concern(s) in the joint venture. The percentage of the ownership involvement in a joint venture by disadvantaged individuals must be at least 51 percent.

"Small business concern," as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR Part 121 and the size standard in paragraph (a) of this provision.

"Small disadvantaged business concern," as used in this provision, means a small business concern that (1) is at least 51 percent unconditionally owned by one or more individuals who are both socially and economically disadvantaged, or a publicly owned business having at least 51 percent of its stock unconditionally owned by one or more socially and economically disadvantaged individuals, and (2) has its management and daily business

controlled by one or more such individuals. This term also means a small business concern that is at least 51 percent unconditionally owned by an economically disadvantaged Indian tribe or Native Hawaiian Organization, or a publicly owned business having at least 51 percent of its stock unconditionally owned by one or more of these entities, which has its management and daily business controlled by members of an economically disadvantaged Indian tribe or Native Hawaiian Organization, and which meets the requirements of 13 CFR Part 124.

"Women-owned small business concern," as used in this provision, means a small business concern--

(1) Which is at least 51 percent owned by one or more women or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

(d) Notice. (1) If this solicitation is for supplies and has been set aside, in whole or in part, for small business concerns, then the clause in this solicitation providing notice of the set-aside contains restrictions on the source of the end items to be furnished.

(2) Under 15 U.S.C. 645(d), any person who misrepresents a firm's status as a small, small disadvantaged, or women-owned small business concern in order to obtain a contract to be awarded under the preference programs established pursuant to section 8(a), 8(d), 9, or 15 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, shall--

(i) Be punished by imposition of fine, imprisonment, or both;

(ii) Be subject to administrative remedies, including suspension and debarment; and

(iii) Be ineligible for participation in programs conducted under the authority of the Act.

(End of provision)

52.219-2 EQUAL LOW BIDS. (OCT 1995)

(a) This provision applies to small business concerns only.

(b) The bidder's status as a labor surplus area (LSA) concern may affect entitlement to award in case of tie bids. If the bidder wishes to be considered for this priority, the bidder must identify, in the following space, the LSA in which the costs to be incurred on account of manufacturing or production (by the bidder or the first-tier subcontractors) amount to more than 50 percent of the contract price.

_____
_____
_____
_____

(c) Failure to identify the labor surplus area as specified in paragraph (b) of this provision will preclude the bidder from receiving priority consideration. If the bidder is awarded a contract as a result of receiving priority consideration under this provision and would not have otherwise received award, the bidder shall perform the contract or cause the contract to be performed in accordance with the obligations of an LSA concern.

52.219-19 SMALL BUSINESS CONCERN REPRESENTATION FOR THE SMALL BUSINESS COMPETITIVENESS DEMONSTRATION PROGRAM (JAN 1997)

(a) Definition.

"Emerging small business" as used in this solicitation, means a small business concern whose size is no greater than 50 percent of the numerical size standard applicable to the standard industrial classification code assigned to a contracting opportunity.

(b) [Complete only if the Offeror has represented itself under the provision at 52.219-1 as a small business concern under the size standards of this solicitation.] The Offeror [ ] is, [ ] is not an emerging small business.

(c) (Complete only if the Offeror is a small business or an emerging small business, indicating its size range.)

Offeror's number of employees for the past 12 months (check this column if size standard stated in solicitation is expressed in terms of number of employees) or Offeror's average annual gross revenue for the last 3 fiscal years (check this column if size standard stated in solicitation is expressed in terms of annual receipts). (Check one of the following.)

No. of Employees	Avg. Annual Gross Revenues
____ 50 or fewer	____ $1 million or less
____ 51 - 100	____ $1,000,001 - $2 million
____ 101 - 250	____ $2,000,001 - $3.5 million
____ 251 - 500	____ $3,500,001 - $5 million
____ 501 - 750	____ $5,000,001 - $10 million

____ 751 - 1,000 ____ $10,000,001 - $17 million

____ Over 1,000 ____ Over $17 million

(End of provision)

52.222-22 PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (FEB 1999)

The offeror represents that --

(a) [ ] It has, [ ] has not participated in a previous contract or subcontract subject to the Equal Opportunity clause of this solicitation;

(b) [ ] It has, [ ] has not, filed all required compliance reports; and

(c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards.

(End of provision)

52.223-1 CLEAN AIR AND WATER CERTIFICATION (APR 1984)

The Offeror certifies that --

(a) Any facility to be used in the performance of this proposed contract[ ] is, [ ] is not listed on the Environmental Protection Agency List of Violating Facilities;

(b) The Offeror will immediately notify the Contracting Officer, before award, of the receipt of any communication from the Administrator, or a designee, of the Environmental Protection Agency, indicating that any facility that the Offeror proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and

(c) The Offeror will include a certification substantially the same as this certification, including this paragraph (c), in every nonexempt subcontract.

(End of clause)

52.223-13 CERTIFICATION OF TOXIC CHEMICAL RELEASE REPORTING (OCT 1996)

(a) Submission of this certification is a prerequisite for making or entering into this contract imposed by Executive Order 12969, August 8, 1995.

(b) By signing this offer, the offeror certifies that--

(1) As the owner or operator of facilities that will be used in the performance of this contract that are subject to the filing and reporting requirements described in section 313 of the Emergency Planning and Community

Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11023) and section 6607 of the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13106), the offeror will file and continue to file for such facilities for the life of the contract the Toxic Chemical Release Inventory Form (Form R) as described in sections 313(a) and (g) of EPCRA and section 6607 of PPA; or

(2) None of its owned or operated facilities to be used in the performance of this contract is subject to the Form R filing and reporting requirements because each such facility is exempt for at least one of the following reasons: (Check each block that is applicable.)

[ ] (i) The facility does not manufacture, process or otherwise use any toxic chemicals listed under section 313(c) of EPCRA, 42 U.S.C. 11023(c);

[ ] (ii) The facility does not have 10 or more full-time employees as specified in section 313.(b)(1)(A) of EPCRA 42 U.S.C. 11023(b)(1)(A);

[ ] (iii) The facility does not meet the reporting thresholds of toxic chemicals established under section 313(f) of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);

[ ] (iv) The facility does not fall within Standard Industrial Classification Code (SIC) designations 20 through 39 as set forth in FAR section 19.102 of the Federal Acquisition Regulation; or

[ ] (v) The facility is not located within any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Northern Mariana Islands, or any other territory or possession over which the United States has jurisdiction.

252.209-7001 DISCLOSURE OF OWNERSHIP OR CONTROL BY THE GOVERNMENT OF A TERRORIST COUNTRY (MAR 1998)

(a) "Definitions."

As used in this provision --

(a) "Government of a terrorist country" includes the state and the government of a terrorist country, as well as any political subdivision, agency, or instrumentality thereof.

(2) "Terrorist country" means a country determined by the Secretary of State, under section 6(j)(1)(A) of the Export Administration Act of 1979 (50 U.S.C. App. 2405(j)(i)(A)), to be a country the government of which has repeatedly provided support for such acts of international terrorism. As of the date of this provision, terrorist countries include: Cuba, Iran, Iraq, Libya, North Korea, Sudan, and Syria.

(3) "Significant interest" means --

(i) Ownership of or beneficial interest in 5 percent or more of the firm's or subsidiary's securities. Beneficial interest includes holding 5 percent or more of any class of the firm's securities in "nominee shares," "street names," or some other method of holding securities that does not disclose the beneficial owner;

(ii) Holding a management position in the firm, such as a director or officer;

(iii) Ability to control or influence the election, appointment, or tenure of directors or officers in the firm;

(iv) Ownership of 10 percent or more of the assets of a firm such as equipment, buildings, real estate, or other tangible assets of the firm; or

(v) Holding 50 percent or more of the indebtness of a firm.

(b) "Prohibition on award."

In accordance with 10 U.S.C. 2327, no contract may be awarded to a firm or a subsidiary of a firm if the government of a terrorist country has a significant interest in the firm or subsidiary or, in the case of a subsidiary, the firm that owns the subsidiary, unless a waiver is granted by the Secretary of Defense.

(c) "Disclosure."

If the government of a terrorist country has a significant interest in the Offeror or a subsidiary of the Offeror, the Offeror shall disclosure such interest in an attachment to its offer. If the Offeror is a subsidiary, it shall also disclose any significant interest the government of a terrorist country has in any firm that owns or controls the subsidiary. The disclosure shall include --

(1) Identification of each government holding a significant interest; and

(2) A description of the significant interest held by each government.

(End of provision)

252.247-7022 REPRESENTATION OF EXTENT OF TRANSPORTATION BY SEA (AUG 1992)

(a) The Offeror shall indicate by checking the appropriate blank in paragraph (b) of this provision whether transportation of supplies by sea is anticipated under the resultant contract. The term supplies is defined in the Transportation of Supplies by Sea clause of this solicitation.

(b) Representation. The Offeror represents that it:

(1) Does anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

(2) Does not anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

(c) Any contract resulting from this solicitation will include the Transportation of Supplies by Sea clause. If the Offeror represents that it will not use ocean transportation, the resulting contract will also include the Defense FAR Supplement clause at 252.247-7024, Notification of Transportation of Supplies by Sea.

(End of provision)

SECTION 00700 Contract Clauses

CLAUSES INCORPORATED BY REFERENCE:

52.202-1 Alt I	Definitions (Oct 1995) --Alternate I	APR 1984
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-6	Restrictions On Subcontractor Sales To The Government	JUL 1995
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	JUN 1997
52.204-4	Printing/Copying Double-Sided on Recycled Paper	JUN 1996
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	JUL 1995
52.214-26	Audit and Records--Sealed Bidding	OCT 1997
52.214-27	Price Reduction for Defective Cost or Pricing Data - Modifications - Sealed Bidding	OCT 1997
52.214-28	Subcontracting Cost Or Pricing Data--Modifications--Sealed Bidding	OCT 1997
52.219-8	Utilization of Small Business Concerns	JAN 1999
52.219-9 Alt I	Small Business Subcontracting Plan (Jan 1999) Alternate I	JAN 1999
52.219-16	Liquidated Damages-Subcontracting Plan	JAN 1999
52.222-1	Notice To The Government Of Labor Disputes	FEB 1997
52.222-3	Convict Labor	AUG 1996
52.222-4	Contract Work Hours and Safety Standards Act - Overtime Compensation	JUL 1995
52.222-6	Davis Bacon Act	FEB 1995
52.222-7	Withholding of Funds	FEB 1988
52.222-8	Payrolls and Basic Records	FEB 1988
52.222-9	Apprentices and Trainees	FEB 1988
52.222-10	Compliance with Copeland Act Requirements	FEB 1988
52.222-11	Subcontracts (Labor Standards)	FEB 1988
52.222-12	Contract Termination-Debarment	FEB 1988
52.222-13	Compliance with Davis-Bacon and Related Act Regulations.	FEB 1988
52.222-14	Disputes Concerning Labor Standards	FEB 1988
52.222-15	Certification of Eligibility	FEB 1988
52.222-26	Equal Opportunity	FEB 1999
52.222-27	Affirmative Action Compliance Requirements for Construction	FEB 1999

52.222-35	Affirmative Action For Disabled Veterans And Veterans of the Vietnam Era	APR 1998
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Disabled Veterans And Veterans Of The Vietnam Era	JAN 1999
52.223-2	Clean Air And Water	APR 1984
52.223-6	Drug Free Workplace	JAN 1997
52.223-5	Pollution Prevention and Right-to-Know Information	APR 1998
52.223-14	Toxic Chemical Release Reporting	OCT 1996
52.225-5	Buy American Act - Construction Materials	JUN 1997
52.225-11	Restrictions On Certain Foreign Purchases	AUG 1998
52.226-1	Utilization Of Indian Organizations And Indian-Owned Economic Enterprises	MAY 1999
52.227-1	Authorization and Consent	JUL 1995
52.227-2	Notice And Assistance Regarding Patent And Copyright Infringement	AUG 1996
52.227-4	Patent Indemnity-Construction Contracts	APR 1984
52.228-1	Bid Guarantee	SEP 1996
52.228-2	Additional Bond Security	OCT 1997
52.228-5	Insurance - Work On A Government Installation	JAN 1997
52.228-11	Pledges Of Assets	FEB 1992
52.228-12	Prospective Subcontractor Requests for Bonds	OCT 1995
52.228-14	Irrevocable Letter of Credit	OCT 1997
52.228-15	Performance and Payment Bonds--Construction	SEP 1996
52.229-3	Federal, State And Local Taxes	JAN 1991
52.232-5	Payments under Fixed-Price Construction Contracts	MAY 1997
52.232-17	Interest	JUN 1996
52.232-23	Assignment Of Claims	JAN 1986
52.232-27	Prompt Payment for Construction Contracts	MAY 1997
52.233-1	Disputes	DEC 1998
52.233-3	Protest After Award	AUG 1996
52.236-2	Differing Site Conditions	APR 1984
52.236-3	Site Investigation and Conditions Affecting the Work	APR 1984
52.236-5	Material and Workmanship	APR 1984
52.236-6	Superintendence by the Contractor	APR 1984
52.236-7	Permits and Responsibilities	NOV 1991
52.236-8	Other Contracts	APR 1984
52.236-9	Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements	APR 1984
52.236-10	Operations and Storage Areas	APR 1984
52.236-11	Use and Possession Prior to Completion	APR 1984
52.236-12	Cleaning Up	APR 1984
52.236-13 Alt I	Accident Prevention (Nov 1991) - Alternate I	NOV 1991
52.236-15	Schedules for Construction Contracts	APR 1984
52.236-21	Specifications and Drawings for Construction	APR 1984

Alt I	(Feb 97) - Alternate I	
52.236-26	Preconstruction Conference	FEB 1995
52.242-13	Bankruptcy	JUL 1995
52.242-14	Suspension of Work	APR 1984
52.244-6	Subcontracts for Commercial Items and Commercial Components	OCT 1998
52.245-2	Government Property (Fixed Price Contracts)	DEC 1989
52.245-4	Government-Furnished Property (Short Form)	APR 1984
52.246-12	Inspection of Construction	AUG 1996
52.248-3	Value Engineering-Construction	MAR 1989
52.249-2	Termination for Convenience of the Government	SEP 1996
Alt I	(Fixed-Price) (Sep 1996) - Alternate I	
52.249-10	Default (Fixed-Price Construction)	APR 1984
52.253-1	Computer Generated Forms	JAN 1991
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	MAR 1999
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.219-7003	Small, Small Disadvantaged and Women-Owned Small Business Subcontractors Plan (DOD Contracts)	APR 1996
252.223-7004	Drug Free Work Force	SEP 1988
252.225-7031	Secondary Arab Boycott Of Israel	JUN 1992
252.243-7001	Pricing Of Contract Modifications	DEC 1991
252.247-7023	Transportation of Supplies by Sea	NOV 1995
252.247-7024	Notification Of Transportation Of Supplies By Sea	NOV 1995
52.243-4	Changes	AUG 1987
52.232-33	Payment by Electronic Funds Transfer--Central Contractor Registration	MAY 1999
52.214-29	Order Of Precedence--Sealed Bidding	JAN 1986
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.246-21	Warranty of Construction	APR 1984
52.247-55	F.O.B. Point For Delivery Of Government-Furnished Property	APR 1984
52.249-2	Termination For Convenience Of The Government (Fixed-Price)	SEP 1996
252.201-7000	Contracting Officer's Representative	DEC 1991
252.209-7003	Compliance With Veterans' Employment Reporting Requirements	MAR 1998
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	MAR 1998
252.232-7009	Payment by Electronic Funds Transfer (CCR)	JUN 1998

252.236-7002	Obstruction of Navigable Waterways	DEC 1991
252.236-7004	Payment for Mobilization and Demobilization	DEC 1991
252.243-7002	Requests for Equitable Adjustment	MAR 1998
252.248-7000	Preparation Of Value Engineering Change Proposal	MAY 1994
252.204-7004	Required Central Contractor Registration	MAR 1998
252.223-7006	Prohibition On Storage And Disposal Of Toxic And Hazardous Materials	APR 1993
252.227-7033	Rights in Shop Drawings	APR 1966
252.236-7000	Modification Proposals-Price Breakdown	DEC 1991
252.245-7001	Reports Of Government Property	MAY 1994

CLAUSES INCORPORATED BY FULL TEXT

252.231-7000 SUPPLEMENTAL COST PRINCIPLES (DEC 1991)

When the allowability of costs under this contract is determined in accordance with part 31 of the Federal Acquisition Regulation (FAR), allowability shall also be determined in accordance with part 231 of the Defense FAR Supplement, in effect on the date of this contract.

52.232-5001 CONTINUING CONTRACTS (MAR 1995)--EFARS

(a) This is a continuing contract, as authorized by Section 10 of the River and Harbor Act of September 22, 1922 (33 U.S. Code 621). The payment of some portion of the contract price is dependent upon reservations of funds from future appropriations, and from future contribution to the project having one or more non-federal project sponsors. The responsibilities of the Government are limited by this clause notwithstanding any contrary provision of the "Payments to Contractor" clause or any other clause of this contract.

(b) The sum of $2,000.00 has been reserved for this contract and is available for payments to the contractor during the current fiscal year. It is expected that Congress will make appropriations for future fiscal years from which additional funds together with funds provided by one or more non-federal project sponsors will be reserved for this contract.

(c) Failure to make payments in excess of the amount currently reserved, or that may be reserved from time to time, shall not entitle the contractor to a price adjustment under the terms of this contract except as specifically provided in paragraphs (f) and (i) below. No such failure shall constitute a breach of this contract, except that this provision shall not bar a breach-of-contract action if an amount finally determined to be due as a termination

allowance remains unpaid for one year due solely to a failure to reserve sufficient additional funds therefore.

(d) The Government may at any time reserve additional funds for payments under the contract if there are funds available for such purpose. The contracting officer will promptly notify the contractor of any additional funds reserved for the contract by issuing an administrative modification to the contract.

(e) If earnings will be such that funds reserved for the contract will be exhausted before the end of any fiscal year, the contractor shall give written notice to the contracting officer of the estimated date of exhaustion and the amount of additional funds which will be needed to meet payments due or to become due under the contract during that fiscal year. This notice shall be given not less than 45 nor more than 60 days prior to the estimated date of exhaustion.

(f) No payments will be made after exhaustion of funds except to the extent that additional funds are reserved for the contract. The contractor shall be entitled to simple interest on any payment that the contracting officer determines was actually earned under the terms of the contract and would have been made except for exhaustion of funds. Interest shall be computed from the time such payment would otherwise have been made until actually or constructively made, and shall be at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41, 85 STAT 97, as in effect on the first day of the delay in such payment.

(g) Any suspension, delay, or interruption of work arising from exhaustion or anticipated exhaustion of funds shall not constitute a breach of this contract and shall not entitle the contractor to any price adjustment under the "Suspension of Work" clause or in any other manner under this contract.

(h) An equitable adjustment in performance time shall be made for any increase in the time required for performance of any part of the work arising from exhaustion of funds or the reasonable anticipation of exhaustion of funds.

(i) If, upon the expiration of sixty (60) days after the beginning of the fiscal year following an exhaustion of funds, the Government has failed to reserve sufficient additional funds to cover payments otherwise due, the contractor, by written notice delivered to the contracting officer at any time before such additional funds are reserved, may elect to treat his right to proceed with the work as having been terminated. Such a termination shall be considered a termination for the convenience of the Government.

(j) If at any time it becomes apparent that the funds reserved for any fiscal year are in excess of the funds required to meet all payments due or to become due the contractor because of work performed and to be performed under the contract during the fiscal year, the Government reserves the right, after notice to the contractor, to reduce said reservation by the amount of such excess.

(End of clause)

52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

The Contractor shall be required to (a) commence work under this contract

within 15 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 300 calendar days. The time stated for completion shall include final cleanup of the premises.

(End of clause)

52.211-12 LIQUIDATED DAMAGES--CONSTRUCTION (APR 1984)

(a) If the Contractor fails to complete the work within the time specified in the contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of $830. for each day of delay.

(b) If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

(c) If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

(End of clause)

52.222-23 NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (FEB 1999)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
11.4	6.9

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction,'' and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

(d) The Contractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance, U.S. Department of Labor, within 10 working days following award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the --

(1) Name, address, and telephone number of the subcontractor;

(2) Employer's identification number of the subcontractor;

(3) Estimated dollar amount of the subcontract;

(4) Estimated starting and completion dates of the subcontract; and

(5) Geographical area in which the subcontract is to be performed.

(e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is Pike and Lincoln Counties, Missouri.

52.236-1 PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984)

The Contractor shall perform on the site, and with its own organization, work equivalent to at least forty percent (40%) of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

52.231-5000 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE MAR 1995)--EFARS

(a) This clause does not apply to terminations. See 52.249-5000, Basis for Settlement of Proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule, Region V. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet.

(End of clause)

52.249-5000 BASIS FOR SETTLEMENT OF PROPOSALS

Actual costs will be used to determine equipment costs for a settlement proposal submitted on the total cost basis under FAR 49.206-2(b). In evaluating a terminations settlement proposal using the total cost basis, the following principles will be applied to determine allowable equipment costs:

(1) Actual costs for each piece of equipment, or groups of similar serial or series equipment, need not be available in the contractor's accounting records to determine total actual equipment costs.

(2) If equipment costs have been allocated to a contract using predetermined rates , those charges will be adjusted to actual costs.

(3) Recorded job costs adjusted for unallowable expenses will be used to determine equipment operating expenses.

(4) Ownership costs (depreciation) will be determined using the contractor's depreciation schedule (subject to the provisions of FAR 31.205-11).

(5) License, taxes, storage and insurance costs are normally recovered as an indirect expense and unless the contractor charges these costs directly to contracts, they will be recovered through the indirect expense rate.

(End of Clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

//www.arnet.gov/far
//www.acq.osd.mil/dp/dars

252.236-7001 CONTRACT DRAWINGS, MAPS, AND SPECIFICATIONS. (DEC 1991)

(a) The Government --

(1) Will provide the Contractor, without charge, one CD-ROM of large-scale contract drawings and specifications except publications incorporated into the technical provisions by reference;

(2) Will furnish additional sets on request, for the cost of reproduction; and

(3) May, at its option, furnish the Contractor one set of reproducibles, or half-size drawings, in lieu of the drawings in paragraph (a)(1) of this clause.

(b) The Contractor shall --

(1) Check all drawings furnished immediately upon receipt;

(2) Compare all drawings and verify the figures before laying out the work;

(3) Promptly notify the Contracting Officer of any discrepancies; and

(4) Be responsible for any errors which might have been avoided by complying with this paragraph (b).

(c) Large scale drawings shall, in general, govern small scale drawings. Figures marked on drawings shall, in general, be followed in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the contractor from performing such omitted or misdescribed details of the work, but shall be performed as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified on the following index of drawings:

NAME OF OFFEROR OR CONTRACTOR

Title File and Drawing No.

Index of Drawings M-L25-9/G-1
Project Location Map

General Decision Number MO990001

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            General Decision Number MO990001
  Superseded General Decision No. MO980001
  State: Missouri
  Construction Type:
  HEAVY
  HIGHWAY
  County(ies):
  STATEWIDE
  HEAVY AND HIGHWAY CONSTRUCTION PROJECTS
  Modification Number     Publication Date
              0             03/12/1999
              1             04/09/1999
              2             05/07/1999
              3             06/11/1999
              4             07/09/1999
              5             08/20/1999
              6             09/03/1999
              7             10/01/1999
 COUNTY(ies):
 STATEWIDE
  CARP0007M  04/01/1999
                                      Rates           Fringes
 CASS (Richards-Gebauer AFB ONLY), CLAY, JACKSON,
 PLATTE AND RAY COUNTIES
 CARPENTERS & PILEDRIVERS              22.95           5.95
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  CARP0008C  05/03/1995
                                      Rates           Fringes
 ST. LOUIS COUNTY AND CITY
 CARPENTERS                            23.19           4.77
 ----------------------------------------------------------------
  CARP0011A  05/01/1997
                                      Rates           Fringes
 CARPENTERS & PILEDRIVERS:
 JEFFERSON AND ST. CHARLES COUNTIES    23.19           4.60
 FRANKLIN COUNTY                       21.08           4.60
 WARREN COUNTY                         21.08           4.60
 LINCOLN COUNTY                        20.69           4.60
 PIKE, ST. FRANCOIS, AND WASHINGTON
  COUNTIES                             19.74           4.60
 BUCHANAN, CASS, CLINTON, JOHNSON
  AND LAFAYETTE COUNTIES               18.78           4.00
 ATCHISON, ANDREW, BATES, CALDWELL,
  CARROLL, DAVIESS, DEKALB, GENTRY,
  GRUNDY, HARRISON, HENRY, HOLT,
  LIVINGSTON, MERCER, NODAWAY, ST.
  CLAIR, SALINE AND WORTH COUNTIES     18.13           4.00
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CAMDEN, CEDAR,CHRISTIAN, DADE, DALLAS, DOUGLAS,GREENE, HICKORY, LACLEDE, OZARK, POLK, STONE, TANEY, VERNON, WEBSTER, AND WRIGHT COUNTIES	17.88	4.00
CRAWFORD, DENT, GASCONADE, IRON, MADISON, MARIES, MONTGOMERY, PHELPS, PULASKI, REYNOLDS, SHANNON, AND TEXAS COUNTIES	19.03	3.80
AUDRAIN, BOONE, COOPER, AND HOWARD COUNTIES	20.48	4.80
BENTON, MORGAN AND PETTIS COUNTIES	19.18	4.80
LEWIS, MARION, AND RALLS COUNTIES	20.48	4.80
CALLAWAY, COLE, MILLER, MONITEAU, AND OSAGE COUNTIES	20.48	4.80
ADAIR, CLARK, KNOX, PUTNAM, SCHUYLER, SCOTLAND AND SULLIVAN COUNTIES	20.48	4.80
CHARITON, LINN, MACON, MONROE, RANDOLPH, AND SHELBY COUNTIES	20.48	4.80
BOLLINGER, BUTLER, CAPE GIRARDEAU, DUNKLIN, MISSISSIPPI, NEW MADRID, PEMISCOT, PERRY, STE. GENEVIEVE, SCOTT, STODDARD AND WAYNE COUNTIES	20.65	3.70
CARTER, HOWELL, OREGON AND RIPLEY COUNTIES	19.78	3.70

CARP0311H 08/01/1999

	Rates	Fringes
BARRY, BARTON, JASPER, LAWRENCE, MCDONALD AND NEWTON COUNTIES		
CARPENTERS:		
Carpenters and Lathers	15.72	5.60
Millwrights and Piledrivers	15.97	5.60

ELEC0001B 06/01/1999

	Rates	Fringes
BOLLINGER, BUTLER, CAPE GIRARDEAU, CARTER, DUNKLIN, FRANKLIN, IRON, JEFFERSON, LINCOLN, MADISON, MISSISSIPPI, NEW MADRID, PEMISCOT, PERRY, REYNOLDS, RIPLEY, ST. CHARLES, ST. FRANCOIS, ST. LOUIS (City and County), STE. GENEVIEVE, SCOTT, STODDARD, WARREN, WASHINGTON AND WAYNE COUNTIES		
ELECTRICIANS	25.65	13.74

ELEC0002D 09/01/1998

	Rates	Fringes
ADAIR, AUDRAIN, BOONE, CALLAWAY, CAMDEN, CARTER, CHARITON, CLARK, COLE, COOPER, CRAWFORD, DENT, FRANKLIN, GASCONADE, HOWARD, HOWELL, IRON, JEFFERSON, KNOX, LEWIS, LINCON, LINN, MACON, MARIES, MARION, MILLER, MONITEAU, MONROE, MONTGOMERY, MORGAN, OREGON, OSAGE, PERRY, PHELPS, PIKE, PULASKI, PUTNAM, RALLS, RANDOLPH, REYNOLDS, RIPLEY, ST. CHARLES, ST. FRANCOIS, ST. LOUIS (City and County), STE. GENEVIEVE, SCHUYLER, SCOTLAND,		

SHANNON, SHELBY, SULLIVAN, TEXAS, WARREN AND WASHINGTON COUNTIES.

LINE CONSTRUCTION:

Lineman & Cable Splicer	24.42	41% + 2.00
Groundman Equipment Operator	21.87	41% + 2.00
Groundman Winch Driver	17.97	41% + 2.00
Groundman, Groundman Driver	17.31	41% + 2.00

ELEC0053F 09/01/1996

	Rates	Fringes

BATES, BENTON, CARROLL, CASS, CLAY, HENRY, JACKSON, JOHNSON, LAFAYETTE, PETTIS, PLATTE, RAY, AND SALINE COUNTIES.

LINE CONSTRUCTION:

Lineman	24.46	7.88
Lineman Operator	22.84	7.50
Groundman Powderman	17.12	6.11
Groundman	16.27	5.91

ANDREW, ATCHINSON, BARRY, BARTON, BUCHANAN, CALDWELL, CEDAR, CHRISTIAN, CLINTON, DADE, DALLAS, DAVIESS, DE KALB, DOUGLAS, GENTRY, GREENE, GRUNDY, HARRISON, HICKORY, HOLT, JASPER, LACLEDE, LAWRENCE, LIVINGSTON, McDONALD, MERCER, NEWTON, NODAWAY, OZARK, POLK, ST. CLAIR, STONE, TANEY, VERNON, WEBSTER, WORTH, AND WRIGHT COUNTIES.

LINE CONSTRUCTION:

Lineman	23.53	7.66
Lineman Operator	22.36	7.37
Groundman Powderman	16.45	5.95
Groundman	15.22	5.65

ELEC0095C 06/01/1999

	Rates	Fringes

BARRY, BARTON, CEDAR, CRAWFORD, DADE, JASPER, LAWRENCE, MCDONALD, NEWTON, ST CLAIR, AND VERNON COUNTIES

ELECTRICIANS:

Electricians	18.51	5.52
Cable Splicers	18.86	5.52

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* ELEC0124I 08/30/1999

	Rates	Fringes

BATES, BENTON, CARROLL, CASS, CLAY, COOPER, HENRY, JACKSON, JOHNSON, LAFAYETTE, MORGAN, PETTIS, PLATTE, RAY AND SALINE COUNTIES:

ELECTRICIANS	25.34	10.73

ELEC0257C 03/01/1999

	Rates	Fringes

AUDRAIN (Except, Cuivre Township), BOONE, CALLAWAY, CAMDEN, CHARITON, COLE, CRAWFORD, DENT, GASCONADE, HOWARD, MARIES, MILLER, MONITEAU, OSAGE, PHELPS AND RANDOLPH COUNTIES:

Electricians	20.95	8.88
Cable Splicers	21.95	8.88

ELEC0350B 12/01/1998

	Rates	Fringes
ADAIR, AUDRAIN (East of Highway 19), CLARK, KNOX, LEWIS, LINN, MACON, MARION, MONROE, MONTGOMERY, PIKE, PUTNAM, RALLS, SCHUYLER, SCOTLAND, SHELBY AND SULLIVAN COUNTIES		
ELECTRICIANS	22.39	7.09

ELEC0453D 09/01/1999

	Rates	Fringes
CHRISTIAN, DALLAS, DOUGLAS, GREENE, HICKORY, OREGON, OZARK, SHANNON, TEXAS, WEBSTER AND WRIGHT COUNTIES		
ELECTRICIANS	19.75	4.32+10%
PULASKI COUNTY		
ELECTRICIANS	20.79	4.32+10%
HOWELL, LACLEDE, POLK, STONE AND TANEY COUNTIES		
ELECTRICIANS	13.85	3.92+10%

ELEC0545D 06/01/1998

	Rates	Fringes
ANDREW, BUCHANAN, CLINTON, DEKALB, ATCHISON, HOLT, MERCER, GENTRY, HARRISON, DAVIESS, GRUNDY, WORTH, LIVINGSTON, NODAWAY, AND CALDWELL COUNTIES		
ELECTRICANS	21.72	2.35+19.5%

ELEC0702D 09/04/1995

	Rates	Fringes
BOLLINGER, BUTLER, CAPE GIRARDEAU, DUNKLIN, MADISON, MISSISSIPPI, NEW MADRID, PEMISCOT, SCOTT, STODDARD AND WAYNE COUNTIES		
LINE CONSTRUCTION:		
Lineman	25.50	17%+2.00
Groundman Equipment Operator (all crawler type equipment D-4 and larger)	21.87	17%+2.00
Groundman - Class A	15.45	17%+2.00

ENGI0016A 05/01/1999

	Rates	Fringes
BARRY, BARTON, CAMDEN, CEDAR, CHRISTIAN, DADE, DALLAS, DOUGLAS, GREENE, JASPER, LAWRENCE, HICKORY, LACLEDE, MCDONALD, NEWTON, OZARK, POLK, ST. CLAIR, STONE, TANEY, VERNON, WEBSTER AND WRIGHT COUNTIES		
POWER EQUIPMENT OPERATORS		
GROUP 1	19.32	4.95
GROUP 2	18.97	4.95
GROUP 3	18.77	4.95
GROUP 4	16.72	4.95

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Asphalt finishing machine & trench widening spreader; asphalt plant console operator; autograder; automatic slipform paver; backhoe; blade operator - all types; boat operator -

tow; boilers-2; central mix concrete plant operator; clamshell operator; concrete mixer paver; crane operator; derrick or derrick trucks; ditching machine; dozer operator; dragline operator; dredge booster pump; dredge engineman; dredge operator; drill cat with compressor mounted on cat; drilling or boring machine rotary self-propelled; highloader; hoisting engine - 2 active drums; launch hammer wheel; locomotive operator; - standard guage; mechanic and welders; mucking machine; off-road trucks; piledriver operator; pitman crane operator; push cat operator; quad trac; scoop operator - all types; shovel operator; sideboom cats; skimmer scoop operators; trenching machine operator; truck crane.

GROUP 2: A-frame; asphalt hot-mix silo; asphalt plant fireman (drum or boiler); asphalt plant man; asphalt plant man; asphalt plant mixer operator; asphalt roller operator; backfiller operator; barber-greene loader; boat operator (bridges and dams); chip spreader; concrete mixer operator - skip loader; concrete plant operator; concrete pump operator; crusher operator; dredge oiler; elevating grader operator; fork lift; greaser-fleet; hoisting engine - 1; locomotive operator - narrow gauge; multiple compactor; pavement breaker; powerbroom - self-propelled; power shield; rooter; side discharge concrete spreader; slip form finishing machine; stumpcutter machine; throttle man; tractor operator (over 50 h.p.); winch truck.

GROUP 3: Boilers - 1; chip spreader (front man); churn drill operator; clef plane operator; concrete saw operator (self-propelled); curb finishing machine; distributor operator; finishing machine operator; flex plane operator; float operator; form grader operator; pugmill operator; roller operator, other than high type asphalt; screening & washing plant operator; siphons & jets; sub-grading machine operator; spreader box operator, self-propelled (not asphalt); tank car heater operator (combination boiler & booster); tractor operator (50 h.p. or less); Ulmac, Ulric or similar spreader; vibrating machine operator, not hand;

GROUP 4: Grade checker; Oiler; Oiler-Driver

HOURLY PREMIUMS:

The following classifications shall receive $ .25 above GROUP 1 rate: Clamshells - 3 yds. or over; Cranes - Rigs or Piledrivers, 100 ft. of boom or over (including jib); Draglines - 3 yds. or over; Hoists - each additional active drum over 2 drums; Shovels - 3 yds. or over;

The following classifications shall receive $ .50 above GROUP 1 rate: Tandem scoop operator; Cranes - Rigs or Piledrivers, 150 ft. to 200 ft. of boom (including jib); Tandem scoop.

The following classifications shall receive $ .75 above GROUP 1 rate: Cranes - Rigs or Piledrivers, 200 ft. of boom or over (including jib.).

ENGI0101A 05/01/1999

	Rates	Fringes

BUCHANAN, CASS (Except that part of the geographic boundaries of the Richard-Gebaur Air Force Base), CLINTON AND LAFAYETTE COUNTIES

POWER EQUIPMENT OPERATORS		
GROUP 1	20.20	7.15
GROUP 2	19.80	7.15
GROUP 3	17.80	7.15

ANDREW, ATCHISON, BATES, BENTON, CALDWELL, CARROLL, CHARITON, COOPER, DAVIESS, DEKALB, GENTRY, GRUNDY, HARRISON, HENRY, HOLT, HOWARD, JOHNSON, LINN, LIVINGSTON, MERCER, NODAWAY, PETTIS, SALINE, SULLIVAN AND WORTH COUNTIES

POWER EQUIPMENT OPERATORS		
GROUP 1	20.20	7.15
GROUP 2	19.80	7.15
GROUP 3	17.80	7.15

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Asphalt roller operator, finish; asphalt paver and spreader; asphalt plant operator; auto grader or trimmer or sub-grader; backhoe; blade operator (all types); boilers - 2; booster pump on dredge; bulldozer operator; boring machine (truck or crane mounted); clamshell operator; concrete mixer paver; concrete plant operator; concrete pump operator; crane operator; derrick or derrick trucks; ditching machine; dragline operator; dredge engineman; dredge operator; drill cat with compressor mounted (self-contained) or similar type self-propelled rotary drill (not air tract); drilling or boring machine (rotary-self-propelled); finishing machine operator; greaser; high loader-fork lift-skid loader (all types); hoisting engineer (2 active drums); locomotive operator (standard guage); mechanics and welders (field and plants); mucking machine operator; pile drive operator; pitman crane or boom truck (all types); push cat; quad track; scraper operators (all types); shovel operator; sideboom cats; side discharge spreader; skimmer scoop operators; slip form paver operator (CMI, Rex, Gomeco or equal); la tourneau rooter (all tiller types); tow boat operator; truck crane; wood and log chippers (all types).

GROUP 2: A-frame truck operator; articulated dump truck; back filler operator; boilers (1); chip spreader; churn drill operator; compressor; concrete mixer operator, skip loader; concrete saws (self-propelled); conveyor operator; crusher operator; distributor operator; elevating grader operator; farm tractor (all attachments); fireman rig; float operator; form grade operator; hoisting engine (one drum); maintenance operator; multiple compactor; pavement breaker, self-propelled hydra-hammer (or similar type); paymill operator; power shield; pumps; roller operator (with or without blades); screening and washing plant; self-propelled street broom or sweeper; siphons and jets; straw blower; stump cutting machine; siphons and jets; tank car heater operator (combination boiler and booster); welding machine; vibrating machine operator (not hand held); welding machine.

GROUP 3: Oiler; oiler driver; mechanic.

HOURLY PREMIUMS:
THE FOLLOWING CLASSIFICATIONS SHALL RECEIVE ($ .25) ABOVE GROUP 1 RATE: Dragline operator - 3 yds. & over; shovel 3 yds. & over; clamshell 3 yds. & over; Crane, rigs or piledrivers, 100' of boom or over (incl. jib.), hoist - each additional active drum over 2 drums
THE FOLLOWING CLASSIFICATIONS SHALL RECEIVE ($ .50) ABOVE GROUP 1 RATE: Tandem scoop operator; crane, rigs or piledrivers 150' to 200' of boom (incl. jib.)
THE FOLLOWING CLASSIFICATIONS SHALL RECEIVE ($ .75) ABOVE GROUP 1 RATE: Crane rigs, or piledrivers 200 ft. of boom or over (including jib.)

ENGI0101E 04/01/1999

	Rates	Fringes
CASS (Richards-Gebaur Air Force Base ONLY), CLAY, JACKSON, PLATTE AND RAY COUNTIES		
POWER EQUIPMENT OPERATORS:		
GROUP 1	21.44	7.22
GROUP 2	20.40	7.22
GROUP 3	15.93	7.22
GROUP 4	19.28	7.22

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Asphalt roller operator, finish; asphalt paver and spreader; asphalt plant operator; auto grader or trimmer or sub-grader; backhoe; blade operator (all types); boilers-2; booster pump on dredge; boring machine (truck or crane mounted); bulldozer operator; clamshell operator; concrete cleaning decontamination machine operator; concrete mixer paver; concrete plant operator; concrete pump operator; crane operator; derrick or derrick trucks; ditching machine; dragline operator; dredge engineman; dredge operator; drillcat with compressor mounted (self-contained) or similar type self propelled rotary drill (not air tract); drilling or boring machine (rotary - self-propelled); finishing machine operator; greaser; heavy equipment robotics operator/mechanic; horizontal directional drill operator; horizontal directional drill locator; loader-forklift - skid loader (all types); hoisting engineer (2 active drums); locomotive operator (standard guage); master environmental maintenance mechanic; mechanics and welders (field and plants); mucking machine operator; piledrive operator; pitman crane or boom truck (all types); push cat; quad-track; scraper operators (all types); shovel operator; side discharge spreader; sideboom cats; skimmer scoop operator; slip-form paver (CMI, REX, Gomaco or equal); la tourneau rooter (all tiller types); tow boat operator; truck crane; ultra high perssure waterjet cutting tool system operator/mechanic; vacuum blasting machine operator/mechanic; wood and log chippers (all types)

GROUP 2: "A" Frame truck operator; articulated dump truck; back filler operator; boilers (1); chip spreader; churn drill

operator; concrete mixer operator, skip loader; concrete saws (self-propelled); conveyor operator; crusher operator; distributor operator; elevating grader operator; farm tractor (all attachments); fireman rig; float operator; form grader operator; hoisting engine (1 drum); maintenance operator; multiple compactor; pavement breaker, self-propelled hydra-hammer (or similar type); power shield; paymill operator; pumps; siphons and jets; stump cutting machine; tank car heater operator (combination boiler and booster); compressor; roller operator (with or without blades); screening and washing plant; self-propelled street broom or sweeper; straw blower; tank car heater operator (combination boiler and booster); vibrating machine operator (not hand held)

GROUP 3: Oilers

GROUP 4: Oiler Driver (All Types)

FOOTNOTE:

HOURLY PREMIUMS

FOLLOWING CLASSIFICATIONS SHALL RECEIVE ($.25) ABOVE GROUP 1 RATE: Clamshells - 3 yd. capacity or over; Cranes or rigs, 80 ft. of boom or over (including jib); Draglines, 3 yd. capacity or over; Piledrivers 80 ft. of boom or over (including jib); Shovels & backhoes, 3 yd. capacity or over.

ENGI0513D 05/01/1999

	Rates	Fringes
FRANKLIN, JEFFERSON, LINCOLN, ST CHARLES, AND WARREN COUNTIES		
POWER EQUIPMENT OPERATORS:		
GROUP 1	23.37	9.94
GROUP 2	22.07	9.94
GROUP 3	19.07	9.94
GROUP 4	21.62	9.94

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Backhoe, Cable; Backhoe, Hydraulic (2 cu yds bucket and under regardless of attachment, one oiler for 2 or 3, two oiler for 4 through 6); Backhoe, Hydraulic over 2 cu yds; Cableway; Crane, Crawler or Truck; Crane, Hydraulic - Truck or Cruiser mounted, 16 tons and over; Crane, Locomotive; crane with boom including jib over 100 ft from pin to pin; Crane using rock socket tool; Derrick, Steam; Derrick Car and Derrick Boat; Dragline, 7 cu yds and over; Dredge; Gradall, Crawler or tire mounted; Locomotive, Gas, Steam & other powers; Pile Driver, Land or Floating; Scoop, Skimmer; Shovel, Power (Electric, Gas, Steam or other powers); Shovel, Power (7 cu yds and over); Switch Boat; Whirley; Air Tugger with air compressor; Anchor Placing Barge; Asphalt Spreaker; Athey Force Feeder Loader, self-propelled; Backfilling Machine; Boat Operator - Push Boat or Tow Boat (job site); Boiler, High Pressure Breaking in Period; Boom Truck, Placing or Erecting; Boring Machine, Footing Foundation; Bullfloat; Cherry Picker; Combination Concrete Hoist and Mixer (such as Mixermobile); Compressor, Two 125 CFM and under; Compressor, Two through Four over 125 CFM; Compressor when

operator runs throttle; Concrete Breaker (Truck or Tractor mounted); Concrete Pump (such as Pumpcrete machine); Concrete Saw (self-propelled); Concrete Spreader; Conveyor, Large (not selfpropelled) hoisting or moving brick and concrete into, or into and on floor level, one or both; Crane, Cimbing (such as Linden); Crane, Hydraulic - Rough Terrain, self-propelled; Crane, Hydraulic - Truck or Cruiser mounted - under 16 tons; Drilling machine - Self-powered, used for earth or rock drilling or boring (wagon drills and any hand drills obtaining power from other souces including concrete breakers, jackhammers and Barco equipmnet no engineer required); Elevating Grader; Engine Man, Dredge; Excavator or Powerbelt Machine; Finishing Machine, self-propelled oscillating screed; Forklift; Generators, Two through Six 30 KW or over; Grader, Road with power blade; Greaser; Highlift; Hoist, Concrete and Brick (Brick cages or concrete skips operating or on tower, Towermobile, or similar equipment); Hoist, Three or more drums in use; Hoist, Stack; Hydro-Hammer; Lad-A-Vator, hoisting brick or concrete; Loading Machine such as Barber-Greene; Mechanic on job site

GROUP 2: Air Tugger with plant air; Boiler (for power or heating shell of building or temporary enclosures in connection with construction work); Boiler, Temporary; Compressor, One over 125 CFM; Compressor, truck mounted; Conveyor, Large (not self-propelled); Conveyor, Large (not self- propelled) moving brick and concrete (distributing) on floor level; Curb Finishing Machine; Ditch Paving Machine; Elevator (outside); Endless Chain Hoist; Fireman (as required); Form Grader; Hoist, One Drum regardless of size (except brick or concrete); Lad-A-Vator, other hoisting; Manlift; Mixer, Asphalt, over 8 cu ft capacity; Mixer, one bag capacity or less; Mixer, without side loader, two bag capacity or more; Mixer, with side loader, regardless of size, not Paver; Mud Jack (where mud jack is used in conjenction with an air compressor, operator shall be paid $ .55 per hour in addition to his basic hourly rate for covering both operations); Pug Mill operator; Pump, Sump - self powered, automatic controlled over 2"; Scissor Lift (used for hoisting); Skid Steer Loader; Sweeper, Street; Tractor, small wheel type 50 HP and under with grader blade and similar equipment; Welding Machine, One over 400 amp; Winch, operating from truck

GROUP 3: Boat operator - outboard motor, job site; Conveyors (such as Con-Vay-It) regardless of how used; Elevator (inside); Heater operator, 2 through 6; Sweeper, Floor

GROUP 4: Crane type

HOURLY PREMIUMS:

Backhoe, Hydraulic 2 cu yds or less without oiler - $2.00; Certified Crane Operator - $1.50; Crane,climbing (such as Linden) - $ .50; Crane, Pile Driving and Extracting - $ .50; Crane with boom (including job) over 100 ft from pin to pin - add $.01 per foot to maximum of $4.00); Crane, using rock socket tool - $ .50; Derrick, diesel, gas or electric hoisting material and erecting steel (150 ft or more above ground) - $ .50;

Dragline, 7 cu yds and over - $ .50; Hoist, Three or more drums in use - $ .50; Scoop, Tandem - $.50; Shovel, Power - 7 cu yds and over - $ .50; Tractor, Tandem Crawler - $ .50; Tunnel, man assigned to work in tunnel or tunnel shaft - $ .50; Wrecking, when machines are working on second floor or higher - $ .50

ENGI0513G 05/01/1999

	Rates	Fringes
ADAIR, AUDRAIN, BOLLINGER, BOONE, BUTLER, CALLAWAY, CAPE GIRARDEAU, CARTER, CLARK, COLE, CRAWFORD, DENT, DUNKLIN, GASCONADE, HOWELL, IRON, KNOX, LEWIS, MACON, MADISON, MARIES, MARION, MILLER, MISSISSIPPI, MONITEAU, MONROE, MONTGOMERY, MORGAN, NEW MADRID, OREGON, OSAGE, PEMISCOT, PERRY, PHELPS, PIKE, PULASKI, PUTNAM, RALLS, RANDOLPH, REYNOLDS, RIPLEY, ST. FRANCOIS, STE. GENEVIEVE, SCHUYLER, SCOTLAND, SCOTT, SHANNON, SHELBY, STODDARD, TEXAS, WASHINGTON, AND WAYNE COUNTIES		
POWER EQUIPMENT OPERATORS		
GROUP 1	19.80	9.92
GROUP 2	19.45	9.92
GROUP 3	19.25	9.92
GROUP 4	15.60	9.92

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Asphalt finishing machine & trench widening spreader, asphalt plant console operator; autograder; automatic slipform paver; back hoe; blade operator - all types; boat operator tow; boiler two; central mix concrete plant operator; clam shell operator; concrete mixer paver; crane operator; derrick or derrick trucks; ditching machine; dozer operator; dragline operator; dredge booster pump; dredge engineman; dredge operator; drill cat with compressor mounted on cat; drilling or boring machine rotary self-propelled; highloader; hoisting engine 2 active drums; launchhammer wheel; locomotive operator standrad guage; mechanics and welders; mucking machine; piledriver operator; pitman crane operator; push cat operator; guad-trac; scoop operator; sideboom cats; skimmer scoop operator; trenching machine operator; truck crane, shovel operator.

GROUP 2: A-Frame; asphalt hot-mix silo; asphalt roller operator asphalt plant fireman (drum or boiler); asphalt plant man; asphalt plant mixer operator; backfiller operator; barber-greene loader; boat operator (bridge & dams); chip spreader; concrete mixer operator skip loader; concrete plant operator; concrete pump operator; dredge oiler; elevating graded operator; fork lift; grease fleet; hoisting engine one; locomotive operator narrow guage; multiple compactor; pavement breaker; powerbroom self-propelled; power shield; rooter; slip-form finishing machine; stumpcutter machine; side discharge concrete spreader; throttleman; tractor operator (over 50 hp); winch truck; asphalt roller operator; crusher operator.

GROUP 3: Spreader box operator, self-propelled not asphalt; tractor operator (50 h.p. or less); boilers one; chip spreader (front man); churn drill operator; compressor over 105 CFM 2-3

pumps 4" & over; 2-3 light plant 7.5 KWA or any combination thereof; clef plane operator; compressor maintenance operator 2 or 3; concrete saw operator (self-propelled); curb finishing mancine; distributor operator; finishing machine operator; flex plane operator; float operator; form grader operator; pugmill operator; riller operator other than high type asphalt; screening & washing plant operator; siphons & jets; subgrading machine operator; tank car heater (combination boiler & booster); ulmac, ulric or similar spreader; vibrating machine operator; hydrobroom.

GROUP 4: Oiler; grout machine; oiler driver; compressor over 105 CFM one; conveyor operator one; maintenance operator; pump 4" & over one.

FOOTNOTE:

HOURLY PREMIUMS

Backhoe hydraulic, 2 cu. yds. or under without oiler - $2.00 Certified Crane Operator - $1.50; Crane, climbing (such as Linden) - $0.50; Crane, pile driving and extracting - $0.50; Crane, with boom (including jib) over 100' from pin to pin add $0.01 per foot to maximum of $4.00; Crane, using rock socket tool - $0.50; Derrick, diesel, gas or electric, hoisting material and erecting steel (150' or more above the ground) - $0.50; Dragline, 7 cu. yds, and over - $0.50; Hoist, three or more drums in use - $0.50; Scoop, Tandem - $0.50; Shovel, power - 7 cu. yds. or more - $0.50; Tractor, tandem crawler - $0.50; Tunnel, man assigned to work in tunnel or tunnel shaft - $0.50; Wrecking, when machine is working on second floor or higher - $0.50;

ENGI0513H 05/01/1999

	Rates	Fringes
ST. LOUIS CITY AND COUNTY		
POWER EQUIPMENT OPERATORS:		
GROUP 1	23.37	9.94
GROUP 2	23.37	9.94
GROUP 3	21.47	9.94
GROUP 4	18.47	9.94
GROUP 5	18.01	9.94

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Backhoe, cable or hydraulic; cableway; crane, crawler or truck; crane, hydraulic-truck or cruiser mounted 16 tons & over; crane locomotive; derrick, steam; derrick car & derrick boat; dragline; dredge; gradall, crawler or tire mounted; locomotive, gas, steam & other powers; pile driver, land or floating; scoop, skimmer; shovel, power (steam, gas, electric, or other powers); switch boat; whirley.

GROUP 2: Air tugger w/air compressor; anchor-placing barge; asphalt spreader; athey force feeder loader (self-propelled); backfilling machine; backhoe-loader; boat operator-push boat or tow boat (job site); boiler,

high pressure breaking in period; boom truck, placing or erecting; boring machine, footing foundation; bull-float; cherry picker; combination concrete hoist & mixer (such as mixer mobile); compressor (when operator runs throttle); concrete breaker (truck or tractor mounted); concrete pump, such as pump-crete machine; concrete saw (self-propelled), concrete spreader; conveyor, large (not self-propelled), hoisting or moving brick and concrete into, or into and on floor level, one or both; crane, hydraulic-rough terrain, self-propelled; crane hydraulic-truck or cruiser mounted-under 16 tons; drilling machines, self-powered use for earth or rock drilling or boring (wagon drills and any hand drills obtaining power from other sources including concrete breakers, jackhammers and barco equipment-no engineer required); elevating grader; engineman, dredge; excavator or powerbelt machine; finishing machine, self-propelled oscillating screed; forklift; grader, road with power blade; highlift; greaser; hoist, stack, hydro-hammer; loading machine (such as barber-greene); machanic, on job site; mixer, pipe wrapping machines; plant asphalt; plant, concrete producing or ready-mix job site; plant heating-job site; plant mixing-job site; plant power, generating-job site; pumps, two through six self-powered over 2"; pumps, electric submersible, two through six, over 4"; quad-track; roller, asphalt, top or sub-grade; scoop, tractor drawn; spreader box; sub-grader; tie tamper; tractor-crawler, or wheel type with or without power unit, power take-offs and attachments regardless of size; trenching machine; tunnel boring machine; vibrating machine automatic, automatic propelled; welding machines (gasoline or diesel) two through six; well drilling machine

GROUP 3: Conveyor, large (not self-propelled); con-; veyor, large (not self-propelled) moving brick and concrete distributing) on floor level; mixer two or more mixers of one bag capacity or less; air tugger w/plant air; boiler, for power or heating on construction projects; boiler, temporary; compressor (mounted on truck; curb finishing machine; ditch paving machine; elevator; endless chain hoist; form grader; hoist, one drum regardless of size; lad-a-vator; manlift; mixer, asphalt, over 8 cu. ft. capacity, without side loader, 2 bag capacity or more; mixer, with side loader, regardless of size; pug mill operator; pump, sump-self-powered, automatic controlled over 2" during use in connection with construction work; sweeper, street; welding machine, one over 400 amp.; winch operating from truck; scissor lift (used for hoisting); tractor, small wheel type 50 h.p. & under with grader blade & similar equipment

GROUP 4: Boat operator-outboard motor (job site); conveyor (such as con-vay-it) regardless of how used; sweeper, floor

GROUP 5: Oiler on dredge and on truck crane.

HOURLY PREMIUMS:

Backhoe, hydraulic 2 cu. yds. or under without oiler	$2.00
Certified Crane Operator	1.50
Crane, climbing (such as Linden)	.50
Crane, pile driving and extracting	.50
Crane, with boom (including jib) over 100' (from pin to pin) add $.01 per foot to maximum of	4.00
Crane, using rock socket tool	.50
Derrick, diesel, gas or electric, hoisting material and erecting steel (150' or more above ground)	.50
Dragline, 7 cu. yds. and over	.50
Hoist, three (3) or more drums in use	.50
Scoop, Tandem	.50
Shovel, power - 7 cu. yds. or more	.50
Tractor, tandem crawler	.50
Tunnel, man assigned to work in tunnel or tunnel shaft	.50
Wrecking, when machine is working on second floor or higher	.50

IRON0010M 04/01/1999

	Rates	Fringes
BUCHANAN, CASS, CLAY, JACKSON, JOHNSON, LAFAYETTE, PLATTE AND RAY Counties		
IRONWORKERS	21.05	9.78
ANDREW, ATCHISON, BARTON, BATES, BENTON, CALDWELL, CAMDEN, CARROLL, CEDER CHARITON, CHRISTIAN, CLINTON, COOPER, DADE, DALLAS, DAVIESS, DE KALB, GENTRY, GREENE, GRUNDY, HARRISON, HENRY, HICKORY, HOLT, HOWARD, LACLEDE, LINN, LIVINGSTON, MERCER, MONITEAU, MORGAN, NODAWAY, PETTIS, POLK, PUTNAM, RANDOLPH, ST. CLAIR, SALINE, SULLIVAN, VERNON, WEBSTER, WRIGHT and WORTH Counties; and portions of ADAIR, BOONE, MACON, MILLER, and RANDOLPH Counties		
IRONWORKERS	18.05	9.78

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* IRON0321C 08/01/1999

	Rates	Fringes
DOUGLAS, HOWELL, OZARK AND TANEY COUNTIES		
IRONWORKERS	15.50	6.73

IRON0396D 08/04/1999

	Rates	Fringes
ST. LOUIS (City and County), ST. CHARLES, JEFFERSON, IRON, FRANKLIN, LINCOLN, WARREN, WASHINGTON, ST. FRANCOIS, STE.		

GENEVIEVE, and REYNOLDS Counties; and portions of MADISON, PERRY, BOLLINGER, WAYNE, and CARTER Counties

IRONWORKERS	23.39	10.44

IRON0396I 08/01/1999

	Rates	Fringes
AUDRAIN, CALLAWAY, COLE, CRAWFORD, DENT, GASCONADE, MARIES, MONTGOMERY, OSAGE, PHELPS, PIKE, PULASKI, TEXAS, and WRIGHT Counties; and portions of CAMDEN, DOUGLAS, HOWELL, MILLER, OREGON, BOONE, SHANNON, LACLEDE, MONROE, and RALLS Counties		
IRONWORKERS	18.55	10.39

IRON0577F 06/01/1999

	Rates	Fringes
ADAIR, CLARK, KNOX, LEWIS, MACON, MARION, MONROE, RALLS, SCHUYLER, SCOTLAND, AND SHELBY COUNTIES		
IRONWORKERS	18.20	8.46

IRON0584E 06/01/1999

	Rates	Fringes
BARRY, JASPER, LAWRENCE, MCDONALD, NEWTON AND STONE Counties		
IRONWORKERS	16.80	7.15

IRON0782D 05/01/1999

	Rates	Fringes
CAPE GIRARDEAU, MISSISSIPPI, NEW MADRID, SCOTT, & STODDARD Counties; and portions of BOLLINGER, BUTLER, CARTER, DUNKLIN, MADISON, PEMISCOT, PERRY, RIPLEY, and WAYNE Counties		
IRONWORKERS:		
All Major River Work (Dams, Bridges): Projects $20 million or more	20.15	9.40
All Other Work	18.30	8.32

LABO0042C 03/01/1999

	Rates	Fringes
ST. LOUIS (City and County)		
LABORERS:		
Plumber Laborers	21.65	6.00

LABO0042H 03/03/1999

	Rates	Fringes
ST. LOUIS (City and County)		
LABORERS:		
Laborers, Flagperson	21.51	6.00
Wrecking	21.39	6.00
Dynamiter, Powderman	22.01	6.00

LABO0424B 05/01/1999

	Rates	Fringes

FRANKLIN COUNTY

LABORERS		
GROUP 1	19.90	5.90
GROUP 2	20.50	5.90

JEFFERSON COUNTY

LABORERS		
GROUP 1	19.95	5.90
GROUP 2	20.55	5.90

ADAIR, AUDRAIN, BOLLINGER, BOONE, BUTLER, CALLAWAY, CAPE GIRARDEAU, CARTER, CHARITON, CLARK, COLE, COOPER, CRAWFORD, DENT, DUNKLIN, GASCONADE, HOWARD, HOWELL, IRON, KNOX, LEWIS, LINN, MACON, MADISON, MARIES, MARION, MILLER, MISSISSIPPI, MONITEAU, MONROE, NEW MADRID, OREGON, OSAGE, PEMISCOT, PERRY, PHELPS, PIKE, PULASKI, PUTNAM, RALLS, RANDOLPH, REYNOLDS, RIPLEY, ST. FRANCOIS, STE. GENEVIEVE, SCHUYLER, SCOTLAND, SCOTT, SHANNON, SHELBY, STODDARD, SULLIVAN, TEXAS, WASHINGTON, AND WAYNE COUNTIES

LABORERS		
GROUP 1	18.45	5.90
GROUP 2	19.05	5.90

LINCOLN, MONTGOMERY AND WARREN COUNTIES

LABORERS		
GROUP 1	18.70	5.90
GROUP 2	19.30	5.90

LABORERS CLASSIFICATIONS

GROUP 1 - General laborer-flagman, carpenter tenders; salamander Tenders; Dump Man; Ticket Takers; loading trucks under bins, hoppers, and conveyors; track man; cement handler; dump man on earth fill; georgie buggie man; material batch hopper man; spreader on asphalt machine; material mixer man (except on manholes); coffer dams; riprap pavers rock, block or brick; scaffolds over ten feet not self-supported from ground up; skip man on concrete paving; wire mesh setters on concrete paving; all work in connection with sewer, water, gas, gasoling, oil, drainage pipe, conduit pipe, tile and duct lines and all other pipe lines; power tool operator; all work in connection with hydraulic or general dredging operations; form setters, puddlers (paving only); straw blower nozzleman; asphalt plant platform man; chuck tender; crusher feeder; men handling creosote ties or creosote materials; men working with and handling epoxy material; topper of standing trees; feeder man on wood pulverizers, board and willow mat weavers and cabelee tiers on river work; deck hands; pile dike and revetment work; all laborers working on underground tunnels less than 25 ft. where compressed air is not used; abutement and pier hole men working six (6) ft. or more below ground; men working in coffer dams for bridge piers and footing in the river; barco tamper; jackson or any other similar tamp; cutting torch man; liners, curb, gutters, ditch lines; hot mastic kettlemen; hot tar applicator; hand blade operator; mortar men or brick or block manholes; rubbing concrete, air tool operator under 65 lbs.; caulker and lead man; chain or concrete saw under 15 h.p.; signal Gan; Guard rail and sign erectors.

GROUP 2 - Skilled laborers - Vibrator man; asphalt raker; head pipe layer on sewer work; batterboard man on pipe and ditch work; cliff scalers working from bosun's chairs; scaffolds or platforms on dams or power plants over 10 ft. high; air tool operator over 65 lbs.; stringline man on concrete paving; sandblast man; laser beam man; wagon drill; churn drill; air track drill and all other similar type drills, gunite nozzle man; pressure grout man; screed man on asphalt; concrete saw 15 h.p. and over; grade checker; strigline man on electronic grade control; manhole builder; dynamite man; powder man; welder; tunnel man; waterblaster - 1000 psi or over; asbestos and/or hazardous waste removal and/or disposal

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LABO0579F 05/01/1999

	Rates	Fringes
BUCHANAN, CASS AND LAFAYETTE COUNTIES		
LABORERS		
GROUP 1	16.88	5.75
GROUP 2	17.23	5.75

ANDREW, ATCHISON, BARRY, BARTON, BATES, BENTON, CALDWELL, CAMDEN, CARROLL, CEDAR, CHRISTIAN, CLINTON, DADE, DALLAS, DAVIESS, DEKALB, DOUGLAS, GREENE, GENTRY, GRUNDY, HARRISON, HENRY, HICKORY, HOLT, JASPER, JOHNSON, LACLEDE, LAWRENCE, LIVINGSTON, MCDONALD, MERCER, MORGAN, NEWTON, NODAWAY, OZARK, PETTIS, POLK, ST. CLAIR, SALINE, STONE, TANEY, VERNON, WEBSTER, WORTH AND WRIGHT COUNTIES.

LABORERS		
GROUP 1	15.63	5.50
GROUP 2	16.18	5.50

LABORERS CLASSIFICATIONS

GROUP 1: General Laborers - Carpenter tenders; salamander tenders; loading trucks under bins; hoppers & conveyors; track men & all other general laborers; air tool operator; cement handler-bulk or sack; dump man on earth fill; georgie buggie man; material batch hopper man; material mixer man (except on manholes); coffer dams; riprap pavers - rock, block or brick; signal man; scaffolds over ten feet not self-supported from ground up; skipman on concrete paving; wire mesh setters on concrete paving; all work in connection with sewer, water, gas, gasoline, oil drainage pipe, conduit pipe, tile and duct lines and all other pipe lines; power tool operator, all work in connection with hydraulic or general dredging operations; puddlers (paving only); straw blower nozzleman; asphalt plant platform man; chuck tender; crusher feeder; men handling creosote ties or creosote materials; men working with and handling epoxy material or materials (where special protection is required); rubbing concrete; topper of standing trees; batter board man on pipe and ditch work; feeder man on wood pulverizers; board and willow mat weavers and cable tiers on river work; deck hands; pile dike and revetment work; all laborers working on underground tunnels less than 25 feet where compressed air is not

used; abutment and pier hole men working six (6) feet or more below ground; men working in coffer dams for bridge piers and footings in the river; ditchliners; pressure groutmen; caulker; chain or concrete saw; cliffscalers working from scaffolds, bosuns' chairs or platforms on dams or power plants over (10) feet above ground; mortarmen on brick or block manholes; toxic and hazardous waste work.

GROUP 2: Skilled Laborers - Head pipe layer on sewer work; laser beam man; Jackson or any other similar tamp; cutting torch man; form setters; liners and stringline men on concrete paving, curb gutters; hot mastic kettleman; hot tar applicator; sandblasting and gunite nozzlemen; air tool operator in tunnels; screed man on asphalt machine; asphalt raker; barco tamper; churn drills; air track drills and all similar drills; vibrator man; stringline man for electronic grade control; manhole builders-brick or block; dynamite and powder men; grade checker.

LABO0660H 03/01/1999

	Rates	Fringes
ST. CHARLES COUNTY		
LABORERS:		
GROUP 1	20.72	5.59
GROUP 2	20.72	5.59

LABORERS CLASSIFICATIONS

GROUP 1: General laborer; carpenter tender; salamander tender; dump man; ticket takers; flagman; loading trucks under bins, hoppers, and conveyors; track men; cement handler; dump man on earth fill; Georgie buggie man; material batch hopper man; spreader on asphalt machine; material mixer man (except on manholes); coffer dams; riprap paver - rock, block, or brick; signal man; scaffolds over 10 ft not self-supported from ground up; skipman on concrete paving; wire mech setters on concrete paving; all work in connection with sewer, water, gas, gasoline, oil, drainage pipe, conduit pipe, tile and duct lines and all other pipe lines; power tool operator; all work in connection with hydraulic or general dredging operations; form setters; puddlers (paving only); straw blower nozzleman; asphalt plant platform man; chuck tender; crusher feeder; men handling creosote ties or creosote materials; men working with and handling epoxy material; topper of standing trees; feeder man on wood pulverizer; board and w llow mat weavers and cable tiers on river work; deck hands; pile dike and revetment work; all laborers working on underground tunnels less than 25 ft where compressed air is not used; abutment and pier hole men working 6 ft or more below ground; men working in coffer dams for bridge piers and footings in the river; Barco tamper, Jackson or any other similar tamp; cutting torch man; liners, curb, gutters, ditchliners; hot mastic kettleman; hot tar applicator; hand blade operators; mortar men on brick or block manholes; rubbing concrete; air tool operator under 65 pounds; caulker and lead man; chain saw under 15 hp; guard rail and

sign erectors
GROUP 2: Vibrator man; asphalt raker; hand pipe layer on sewer work; batterboard man on pipe and ditch work; cliff scalers working from Bosun's chairs, scaffolds or platforms on dams or power plants over 10 ft high; air tool operator over 65 pounds; stringline man on concrete paving etc.; sand blast man; laser beam man; wagon drill; churn drill; air track drill and all other similar type drills; gunnite nozzle man; pressure grout man; screed man on asphalt; concrete saw 15 hp and over; grade checker; stringline man on electronic grade control; manhole builder; dynamite man; powder man; welder; tunnel man; waterblaster - 1000 psi and over; asbestos and/or hazardous waste removal and or disposal;

LABO0663D 04/01/1999

	Rates	Fringes
CASS (Richards-Gebaur Air Force Base ONLY) CLAY, JACKSON, PLATTE, AND RAY COUNTIES		
LABORERS:		
GROUP 1	19.13	6.04
GROUP 2	20.10	6.04

LABORERS CLASSIFICATIONS

GROUP 1: General laborers, Carpenter tenders, salamander tenders, loading trucks under bins, hoppers and conveyors, track men and all other general laborers, air tool operator, cement handler (bulk or sack), chain or concrete saw, deck hands, dump man on earth fill, Georgie Buggies man, material batch hopper man, scale man, material mixer man (except on manholes), coffer dams, abutments and pier hole men working below ground, riprap pavers rock, black or brick, signal man, scaffolds over ten feet not self-supported from ground up, skipman on concrete paving, wire mesh setters on concrete paving, all work in connection with sewer,water, gas, gasoling, oil, drainage pipe, conduit pipe, tile and duct lines and all other pipelines, power tool operator, all work in connection with hydraulic or general dredging operations, straw blower nozzleman,asphalt plant platform man, chuck tender, crusher feeder, men handling creosote ties on creosote materials, men working with and handling epoxy material or materials (where special protection is required), topper of standing trees, batter board man on pipe and ditch work, feeder man on wood pulverizers, board and willow mat weavers and cable tiers on river work, deck hands, pile dike and revetment work, all laborers working on underground tunnels less than 25 feet where compressed air is not used, abutment and pier hole men working six (6) feet or more below ground, men working in coffer dams for bridge piers and footings in the river, ditchliners, pressure groutmen, caulker and chain or concrete saw, cliffscalers working from scaffolds, bosuns' chairs or platforms on dams or power plants over (10) feet above ground, mortarmen on brick or block manholes, signal man.
GROUP 2: Skilled Laborer - spreader or screed man on asphalt

machine, asphalt raker, grade checker, vibrator man, concrete saw over 5 hp., laser beam man, barco tamper, jackson or any other similar tamp, wagon driller, churn drills, air track drills and other similar drills, cutting torch man, form setters, liners and stringline men on concrete paving, curb, gutters and etc., hot mastic kettleman, hot tar applicator, hand blade operators, mortar men on brick or block manholes, sand blasting and gunnite nozzle men, rubbing concrete, air tool operator in tunnels, head pipe layer on sewer work, manhole builder (brick or block), dynamite and powder men.

PAIN0002B 09/01/1996

	Rates	Fringes
CLARK, FRANKLIN, JEFFERSON, LEWIS, LINCOLN, MARION, PIKE, RALLS, ST. CHARLES, ST. LOUIS (CITY & COUNTY), AND WARREN COUNTIES		
PAINTERS:		
Brush	19.60	6.66
Spray	21.60	6.66

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* PAIN0003D 04/01/1999

	Rates	Fringes
BATES, BENTON, CALDWELL, CARROLL, CASS, CLAY, CLINTON, COOPER, DAVIESS, GRUNDY, HARRISON, HENRY, JACKSON, JOHNSON, LAFAYETTE, LIVINGSTON, MERCER, MONITEAU, MORGAN, PETTIS, PLATTE, RAY AND SALINE COUNTIES		
PAINTERS:		
Brush & Roller; Taper	21.35	5.28
Bazooka; Paperhanger	21.85	5.28
Storage Bin & Tanks (Roller or Brush); Elevated Tanks (Roller or Brush); Stageman; Beltman; Bridgeman; Steelman; Sand Blast (Base); Elevator Shaft	22.10	5.28
Lead Abatement; Sprayman	22.35	5.28
Sandblast (Bridge, Stage, Erected Steel and Storage Bin and Tanks)	22.85	5.28
Sprayman (Storage Bin & Tanks, Elevated Tanks); Stageman (Spray); Bridgeman (Spray); Steelman (Spray)	23.10	5.28
Steeplejack (other than Elevated Tanks)	26.04	5.28
Steeplejack -Spray or Sandblast (other than Elevated Tanks)	27.04	5.28

PAIN0098B 05/01/1999

	Rates	Fringes
ANDREW, ATCHISON, BUCHANAN, DE KALB, GENTRY, HOLT, NODAWAY & WORTH COUNTIES		
PAINTERS:		
Brush & Roller	19.50	4.40

	Rates	Fringes
Sandblasters	20.50	4.40
Steeple Jack	22.50	4.40

PAIN0203B 04/01/1999

BARRY, BARTON, CEDAR, CHRISTIAN, DADE, DALLAS, DOUGLAS, GREENE, HICKORY, HOWELL, JASPER, LAWRENCE, MCDONALD, NEWTON, OZARK, POLK, ST. CLAIR, STONE, TANEY, VERNON, WEBSTER and WRIGHT COUNTIES

	Rates	Fringes
PAINTERS:		
Sandblasters & Highman (over 40')	17.68	3.23
Painters	17.38	3.23
Tapers	16.47	3.21

PAIN1185C 04/16/1999

ADAIR, AUDRAIN, BOONE, CALLAWAY, CHARITON, COLE, GASCONADE, HOWARD, KNOX, LINN, MACON, MONROE, MONTGOMERY, OSAGE, PUTNAM, RANDOLPH, SCHUYLER, SCOTLAND, SHELBY AND SULLIVAN COUNTIES and the City of Booneville.

	Rates	Fringes
PAINTERS:		
Brush, Roller, Paperhanger, Tapers	17.34	1.98
Tapers using Ames or comparable tools (bazooks, etc.)	17.59	1.98
Spray; Water Base Epoxy; Stage Under 50 ft.; Structural Steel (except for stairs and railings)	17.84	1.98
Sandblasting; Epoxy or Any Two Part Coating; Stage or Other Aerial Work Platforms Over 50 ft. high; Lead Abatement	18.34	1.98
Bridges, Dams, Locks or Powerhouses	19.34	1.98

PAIN1265C 07/01/1999

CAMDEN, CRAWFORD, DENT, LACLEDE, MARIES, MILLER, PHELPS, PULASKI AND TEXAS COUNTIES

	Rates	Fringes
PAINTERS:		
Brush and Roller	16.51	6.61
Spray, Structural Steel, Sandblasting and all Tank Work	17.76	6.61
Lead Abatement	18.76	6.61

PAIN1292B 07/01/1998

BOLLINGER, BUTLER, CAPE GIRARDEAU, CARTER, DUNKLIN, MISSISSIPPI,

NEW MADRID, OREGON, PEMISCOT, PERRY, REYNOLDS, RIPLEY, SCOTT, SHANNON, STODDARD and WAYNE COUNTIES

PAINTERS:		
Commercial & Light Industrial	14.55	4.54
Heavy Industrial (Brush & Roller)	17.05	4.54
Bridges (Brush, Roller & Spray)	22.00	4.54
Spray (Except Commercial)	15.70	4.54
Sandblasting & Waterblasting	19.00	4.54
Pressure Washing	15.75	4.54

Height Rates (All Areas): 50' to 75' per hour ($0.75)
75' to 150' per hour ($1.50)
150' and over (each additional 50' add $.50 per hour)

PAIN1292F 07/01/1998

	Rates	Fringes

IRON, MADISON, ST. FRANCOIS, STE. GENEVIEVE and WASHINGTON COUNTIES

PAINTERS:		
Commercial and Light Industrial	16.65	4.54
Heavy Industrial (Brush & Roller)	17.65	4.54
Bridges (Brush, Roller & Spray)	22.00	4.54
Spray Painting (Except Commercial)	17.80	4.54
Sandblasting and Waterblasting	19.00	4.54
Pressure Washing	17.85	4.54
Lead Abatement	18.65	4.54

Height Rates (All Areas): 50' to 75' per hour $0.75
75' to 150' per hour 1.50
150' and over (each additonal 50' add $0.50 per hour)

PLAS0368C 04/01/1995

	Rates	Fringes

BENTON, CALLAWAY, CAMDEN, COLE, GASCONADE, HENRY, HICKORY, JOHNSON, MARIES, MILLER, MONTGOMERY, MORGAN, OSAGE, PETTIS, SALINE, & ST. CLAIR COUNTIES

CEMENT MASONS	17.56	1.00

PLAS0518G 04/01/1999

	Rates	Fringes

CASS (Richards-Gebaur AFB only), CLAY, JACKSON, PLATTE AND RAY COUNTIES

CEMENT MASONS	20.16	6.90

PLAS0518K 05/01/1998

	Rates	Fringes

ANDREW, ATCHISON, BUCHANAN, BATES, CALDWELL, CARROLL, CASS (Except Richards-Gebaur AFB) CLINTON, DAVIESS, DEKALB, GENTRY, GRUNDY, HARRISON, HOLT, JACKSON, LAFAYETTE, LIVINGSTON, MERCER, NODAWAY AND WORTH COUNTIES

CEMENT MASONS	19.95	5.23

PLAS0527A 05/01/1999

	Rates	Fringes
JEFFERSON, ST. CHARLES COUNTIES AND ST. LOUIS (City and County)		
CEMENT MASONS	22.48	8.62
FRANKLIN, LINCOLN, AND WARREN COUNTIES		
CEMENT MASONS	21.31	8.62

PLAS0527D 06/01/1999

	Rates	Fringes
CRAWFORD, DENT, IRON, MADISON, MARION, PHELPS, PIKE, PULASKI, RALLS, REYNOLDS, ST. FRANCOIS, STE. GENEVIEVE, SHANNON, TEXAS, WASHINGTON COUNTIES		
CEMENT MASONS	19.80	8.51

PLAS0908A 05/01/1996

	Rates	Fringes
BOLLINGER, BUTLER, CAPE GIRARDEAU, CARTER, DUNKLIN, MISSISSIPPI, NEW MADRID, OREGON, PEMISCOT, PERRY, RIPLEY, SCOTT, STODDARD, AND WAYNE COUNTIES		
CEMENT MASONS	16.15	3.95

PLAS0908D 04/17/1995

	Rates	Fringes
BARRY, BARTON, CEDAR, CHRISTIAN, DADE, DALLAS, DOUGLAS, GREENE, HOWELL, JASPER, LACLEDE, LAWRENCE, MCDONALD, NEWTON, OZARK, POLK, STONE, TANEY, VERNON, WEBSTER, AND WRIGHT COUNTIES		
CEMENT MASONS	14.60	.80

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* PLUM0008C 06/01/1999

	Rates	Fringes
CASS, CLAY, JACKSON, JOHNSON, PLATTE COUNTIES		
PLUMBERS	26.50	7.66
BATES, BENTON, CARROLL, HENRY, LAFAYETTE, MORGAN, PETTIS, RAY, ST. CLAIR, SALINE, AND VERNON COUNTIES		
PLUMBERS	24.06	7.66

PLUM0035C 07/01/1999

	Rates	Fringes
CAMDEN, COLE, CRAWFORD, FRANKLIN, JEFFERSON, MARIES, MILLER, MONITEAU, OSAGE, PHELPS, PULASKI, ST. CHARLES, ST. LOUIS (City and County), WARREN and WASHINGTON COUNTIES		
PLUMBERS	25.855	9.52

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* PLUM0045D 09/01/1999

	Rates	Fringes
ANDREW, ATCHISON, BUCHANAN, CALDWELL, CLINTON, DAVIESS, DEKALB, GENTRY, HARRISON, HOLT, NODAWAY AND WORTH COUNTIES		
PLUMBERS & PIPEFITTERS	24.25	7.65

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 PLUM0178D  11/01/1998
                                      Rates           Fringes
BARRY, CEDAR, CHRISTIAN, DADE, DALLAS, DOUGLAS, GREENE, HICKORY,
LACLEDE, LAWRENCE, POLK, STONE, TANEY, WEBSTER, AND WRIGHT
COUNTIES
 PLUMBERS & PIPEFITTERS               20.27           6.20
----------------------------------------------------------------
 PLUM0317B  07/01/1995
                                      Rates           Fringes
BOONE, CALLAWAY, COOPER, HOWARD, AND RANDOLPH COUNTY (Southern
half)
 PLUMBERS & PIPEFITTERS               19.18           3.17
----------------------------------------------------------------
 PLUM0533E  06/01/1999
                                      Rates           Fringes
BATES, BENTON, CARROLL, CASS, CLAY, HENRY, HICKORY, JACKSON,
JOHNSON, LAFAYETTE, MORGAN, PETTIS, PLATTE, RAY, SALINE,
ST. CLAIR AND VERNON COUNTIES
 PIPEFITTERS                          26.18           9.33
----------------------------------------------------------------
 PLUM0562D  06/01/1999
                                      Rates           Fringes
ADAIR, AUDRAIN, BOLLINGER, BUTLER, CAMDEN, CAPE GIRARDEAU,
CARTER, CHARITON, CLARK, COLE, CRAWFORD, DENT, DUNKLIN, FRANKLIN,
GASCONADE, GRUNDY, HOWELL, IRON, JEFFERSON, KNOX, LEWIS, LINCOLN,
LINN, LIVINGSTON, MACON, MADISON, MARIES, MARION, MERCER, MILLER,
MISSISSIPPI, MONITEAU, MONROE, MONTGOMERY, NEW MADRID, NORTHERN
HALF OF RANDOLPH, OREGON, OSAGE, PEMISCOTT, PERRY, PHELPS, PIKE,
 PULASKI, PUTNAM, RALLS, REYNOLDS, RIPLEY, ST. CHARLES, ST.
FRANCOIS, STE. GENEVIEVE, ST. LOUIS, SCHUYLER, SCOTLAND, SCOTT,
SHANNON, SHELBY, STODDARD, SULLIVAN, TEXAS, WARREN, WASHINGTON,
AND WAYNE COUNTIES.
 PIPEFITTERS                          25.00          11.03
----------------------------------------------------------------
 PLUM0658B  07/01/1998
                                      Rates           Fringes
BARTON, JASPER, MCDONALD, AND NEWTON COUNTIES
 PLUMBERS & PIPEFITTERS               16.73           5.33
----------------------------------------------------------------
 TEAM0013H  05/01/1997
                                      Rates           Fringes
FRANKLIN, JEFFERSON, AND ST. CHARLES COUNTIES
 TRUCK DRIVERS:
  GROUP 1                             26.04
  GROUP 2                             26.15
  GROUP 3                             26.19
  GROUP 4                             26.26
LINCOLN AND WARREN COUNTIES
 TRUCK DRIVERS:
  GROUP 1                             24.69
  GROUP 2                             24.80
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  GROUP 3                              24.84
  GROUP 4                              24.91
AUDRAIN, BOLLINGER, BOONE, CALLAWAY, CAPE GIRARDEAU, CARTER,
COLE, CRAWFORD, DENT, GASCONADE, IRON, MACON, MADISON, MARIES,
MARION, MILLER, MISSISSIPPI, MONROE, MONTGOMERY, NEW MADRID,
OSAGE, PEMISCOT, PERRY, PHELPS, PIKE, PULASKI, RALLS, REYNOLDS,
ST. FRANCOIS, STE. GENEVIEVE, SCOTT, SHANNON, SHELBY, STODDARD,
TEXAS, WASHINGTON, AND WAYNE COUNTIES
 TRUCK DRIVERS:
  GROUP 1                              18.57           4.40
  GROUP 2                              18.73           4.40
  GROUP 3                              18.72           4.40
  GROUP 4                              18.84           4.40
ADAIR, BUTLER, CLARK, DUNKIN, HOWELL, KNOX, LEWIS, OREGON,
PUTNAM, RIPLEY, SCHUYLER, AND SCOTLAND COUNTIES
 TRUCK DRIVERS:
  GROUP 1                              17.84           4.40
  GROUP 2                              18.00           4.40
  GROUP 3                              17.99           4.40
   GROUP 4                              18.11           4.40
                TRUCK DRIVERS CLASSIFICATIONS:
 GROUP 1:  Flat Bed Trucks, Single Axle; Station Wagons; Pickup
           Trucks; Material Trucks, Single Axle; Tank Wagon,
           Single Axle
 GROUP 2:  Agitator and Transit Mix Trucks
 GROUP 3:  Flat Bed Trucks, Tandem Axle; Articulated Dump
           Trucks; Material Trucks, Tandem Axle; Tank Wagon,
           Tandem Axle
 GROUP 4:  Semi and/or Pole Trailers; Winch, Fork & Steel
           Trucks; Distributor Drivers and Operators; Tank Wagon,
           Semi-Trailer; Insley Wagons, Dumpsters, Half-Tracks,
           Speedace, Euclids and other similar equipment; A-Frame
           and Derrick Trucks; Float or Low Boy
-----------------------------------------------------------------
                            MO990001 - 1
 TEAM0056A  05/01/1999
                                       Rates           Fringes
BUCHANAN, CASS (Except Richards-Gebaur AFB), JOHNSON, AND
LAFAYETTE COUNTIES
 TRUCK DRIVERS:
  GROUP 1                              20.88           5.00
  GROUP 2                              20.99           5.00
  GROUP 3                              21.03           5.00
  GROUP 4                              21.10           5.00
ANDREW, BARTON, BATES, BENTON, CALDWELL, CAMDEN, CARROLL, CEDAR,
CHARITON, CHRISTIAN, CLINTON, COOPER, DADE, DALLAS, DAVIESS,
DEKALB, DOUGLAS, GREENE, HENRY, HICKORY, HOWARD, JASPER, LACLEDE,
LAWRENCE, LINN, LIVINGSTON, MONITEAU, MORGAN, NEWTON, PETTIS,
POLK, RANDOLPH, ST CLAIR, SALINE, VERNON, WEBSTER, AND WRIGHT
COUNTIES
 TRUCK DRIVERS:
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  GROUP 1                              19.67           5.00
  GROUP 2                              19.82           5.00
  GROUP 3                              19.83           5.00
  GROUP 4                              19.94           5.00
ATCHISON, BARRY, GENTRY, GRUNDY, HARRISON, HOLT, MCDONALD,
MERCER, NODADWAY, OZARK, STONE, SULLIVAN, TANEY AND WORTH
COUNTIES
 TRUCK DRIVERS:
  GROUP 1                              18.94           5.00
  GROUP 2                              19.09           5.00
  GROUP 3                              19.10           5.00
  GROUP 4                              19.21           5.00
              TRUCK DRIVER CLASSIFICATIONS
GROUP 1:  Flat bed trucks single axle; station wagons; pickup
          trucks; material trucks single axle; tank wagons
          single axle.
GROUP 2:  Agitator and transit mix-trucks.
GROUP 3:  Flat bed trucks tandem axle; articulated dump trucks;
          material trucks tandem axle; tank wagons tandem
          axle.
GROUP 4:  Semi and/or pole trailers; winch, fork & steel trucks;
          distributor drivers & operators; tank wagons semi-
          trailer; insley wagons, dumpsters, half-tracks,
          speedace, euclids & other similar equipment;
          A-frames and derrick trucks; float or low boy.
-----------------------------------------------------------------
 TEAM0245C  03/25/1998
                                       Rates           Fringes
BARRY, BARTON, CAMDEN, CEDAR, CHRISTIAN, DALLAS, DENT, DOUGLAS,
GREENE, HICKORY, HOWELL, JASPER, LACLEDE, LAWRENCE, MCDONALD,
MILLER, NEWTON, OZARK, PHELPS, POLK, PULASKI, SHANNON, STONE,
TANEY, TEXAS, VERNON, WEBSTER AND WRIGHT COUNTIES
TRUCK DRIVERS:
 Traffic Control Service Driver        12.90           3.56+a
PAID HOLIDAYS: New Year's Day, Decoration Day, July 4th,
               Labor Day, Thanksgiving Day, Christmas Day,
               Employee's  birthday and 2 personal days.
-----------------------------------------------------------------
 TEAM0541A  04/01/1999
                                       Rates           Fringes
CASS (Richards-Gebaur AFB), CLAY, JACKSON, PLATTE, AND RAY
COUNTIES
 TRUCK DRIVERS:
  GROUP 1                              20.76           6.25
  GROUP 2                              20.27           6.25
  GROUP 3                              19.79           6.25
                TRUCK DRIVERS CLASSIFICATIONS
 GROUP 1:  Mechanics and Welders, Field; A-Frame Low Boy-Boom
           Truck Driver.
 GROUP 2:  Articulated Dump Truck; Insley Wagons: Dump Trucks,
           Excavating, 5 cu yds and over; Dumpsters; Half-Tracks:
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Speedace: Euclids & similar excavating equipment. Material trucks, Tandem Two teams; Semi-Trailers; Winch trucks-Fork trucks; Distributor Drivers and Operators; Agitator and Transit Mix; Tank Wagon Drivers, Tandem or Semi; One Team; Station Wagons; Pickup Trucks; Material Trucks, Single Axle; Tank Wagon Drivers, Single Axle

GROUP 3: Oilers and Greasers - Field

TEAM0541C 03/25/1999

	Rates	Fringes
BATES, CASS, CLAY, HENRY, JACKSON, JOHNSON, LAFAYETTE, PLATTE, AND RAY COUNTIES		
TRUCK DRIVERS:		
Traffic Control Service Driver	13.65	2.44+a

a. PAID HOLIDAYS: New Year's Day, Decoration Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day, Employee's birthday and 2 personal days.

TEAM0682D 05/01/1996

	Rates	Fringes
ST LOUIS CITY AND COUNTY		
TRUCK DRIVERS:		
GROUP 1	19.57	5.375+a
GROUP 2	19.77	5.375+a
GROUP 3	19.87	5.375+a

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1 - Pick-up trucks; forklift, single axle; flatbed trucks; job site ambulance, and trucks or trailers of a water level capacity of 11.99 cu. yds. or less

GROUP 2 - Trucks or trailers of a water level capacity of 12.0 cu yds. up to 22.0 cu yds. including euclids, speedace and similar equipment of same capacity and compressors

GROUP 3 - Trucks or trailers of a water level capacity of 22.0 cu. yds & over including euclids, speedace & all floats, flatbed trailers, boom trucks, winch trucks, including small trailers, farm wagons tilt-top trailers, field offices, tool trailers, concrete pumps, concrete conveyors & gasoline tank trailers and truck mounted mobile concrete mixers

FOOTNOTE FOR TRUCK DRIVERS:

a. PAID HOLIDAYS: Christmas Day, Independence Day, Labor Day, Memorial Day, Veterans Day, New Years Day, Thanksgiving Day

PAID VACATION: 3 days paid vacation for 600 hours of service in any one contract year; 4 days paid vacation for 800 hours of service in any one contract year; 5 days paid vacation for 1,000 hours of services in any one contract years.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(v)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board

U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

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SECTION 00800 - SPECIAL CLAUSES

1 THRU 3. NOT USED

4. REFERENCE DRAWINGS.

a. One set of the reference drawings listed on Drawing No. M-L25-9/G-1 which cover details of the existing structure, will be included in each set of the contract drawings furnished the Contractor without charge in accordance with the Contract Clause entitled Contract Drawings, Maps and Specifications . Drawings showing additional details are available for examination at the Dept. of the Army, St. Louis District, Corps of Engineers, St. Louis, Missouri. Additional prints of reference drawings will be furnished the Contractor on request at the cost of reproduction.

b. The stationing and dimensions shown on the contract and reference drawings for the existing structure have been taken from the original contract drawings and the shop drawings for the original construction. The Contractor shall verify all the above stationing and dimensions and shall be responsible for making the new material and work fit the existing conditions.

5. PAY REQUESTS. Pay requests authorized in the Contract Clause entitled "Payments Under Fixed-Price Construction Contracts", will be paid pursuant to the clause entitled "Prompt Payment for Construction Contracts". Pay requests shall be submitted on ENG Form 93 and 93a, "Payment Estimate-Contract Performance" and "Continuation", respectively. All information and substantiation required by the identified contract clauses shall be submitted with the ENG Form 93, and the required certification shall be included on the last page of the ENG Form 93a, signed by an authorized official of the Contractor and dated when signed. The designated billing office is the Office of the Area Engineer.

6. PHYSICAL DATA (APR 1984). FAR 52.236-4. Data and information furnished or referred to below is furnished for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

a. Physical Conditions. The indications of physical conditions on the drawings and in the specifications are the result of site investigations by surveys. Additional information regarding sounding survey data and RCRA metal test results are available for inspection upon 48 hours notice at the Dept. of the Army, St. Louis District, Corps of Engineers, 1222 Spruce Street, St. Louis, Missouri.

b. Weather Conditions. Information with respect to temperatures and precipitation may be obtained from the National Weather Service.

c. Transportation Facilities. Railroads and highways serve the general area of the work. Water transportation is available to the site of the work.

d. Delivery of Government-Furnished Property. The Government-furnished property specified in Clause 00800-42 will be made

available to the Contractor upon request at the site. The Contractor shall give the Contracting Officer 5 days notice prior to taking delivery of the Government-furnished property.

e. Condition of River Channel. Data relating to river stages, soundings, and flow may be examined at the office of the Dept. of the Army, St. Louis District, Corps of Engineers St. Louis, Missouri. The mean river stages on gages in the vicinity of the work are shown on the chart at the end of the Special Clauses.

f. Channel Traffic. There is moderate commercial and pleasure traffic operating in the Mississippi River adjacent to the site. The passage of large craft may delay operations in the channel.

g. Obstruction of Channel. The Government will not undertake to keep the channel free from vessels or other obstructions, except to the extent of such regulations, if any, as may be prescribed by the Secretary of the Army, in accordance with the provisions of Section 7 of the River and Harbor Act approved 8 August 1917. The Contractor will be required to conduct the work in such manner as to obstruct navigation as little as possible, and in case the Contractor's plant so obstructs the channel as to make difficult or endanger the passage of vessels, said plant shall be promptly moved on the approach of any vessel to such an extent as may be necessary to afford a practicable passage. Placement of barges in the danger area shall not interfere with southbound lockages. Equipment shall be kept limited within the area between the intermediate wall bull nose and the riverwall during the process of southbound tows entering the chamber area. Upon completion of the work under this contract, all plant including ranges, buoys, piles, and other marks placed in navigable waters or on shore by the Contractor, shall be promptly removed.

h. Datum and Gages. The plane of reference as used in these specifications is the zero stage of the St. Louis, Missouri, gage, Elevation 379.94 feet NGVD (National Geodetic Vertical Datum). Equivalent stages, based on steady river flow, for various stages on the St. Louis, Missouri, gage, as determined by the Contracting Officer for gages in the localities where the work is to be done, are as shown on the chart at the end of the Special Clauses.

7. WORK AREAS. In accordance with the Contract Clause entitled, "Operations and Storage Areas", and subject to the approval of the Contracting Officer and the restrictions imposed by SECTION 01130 - ENVIRONMENTAL PROTECTION, of the Technical Provisions, the Contractor will be allowed use of Government-controlled land within the construction limits shown on the drawings or as specified herein. Any additional land, including ingress and egress, required by the Contractor, shall be obtained by the Contractor at its own expense.

8. PUBLIC UTILITIES AND PRIVATE IMPROVEMENTS.

a. Unless otherwise specified, shown on the drawings, or stated in writing by the Contracting Officer, the Contractor shall not move or disturb any public utilities or private improvements. Such removals, alterations, and/or relocations, where necessary, will be made by others. The locations shown on the drawings for underground utilities are approximate only. The exact locations of such utilities shall be determined by the Contractor in the field prior to commencing construction operations in their

vicinity.

b. The attention of the Contractor is directed to the possibility that public utilities or private improvements may be encountered within the construction limits, some of which may be buried, and the existence of which is presently not known. Should any such utilities or improvements be encountered, the Contractor shall immediately notify the Contracting Officer so that a determination may be made as to whether they shall be removed, relocated, or altered. After such determination is made, the Contractor shall, if so directed by the Contracting Officer, remove, relocate, or alter them as required and an equitable adjustment will be made. In the event the Contracting Officer arranges for such removals, alterations, or relocations to be performed by others, the Contractor shall cooperate with such others during the latters' removal, alteration, or relocation operations.

9. DAMAGE TO WORK.

a. The responsibility for damage to any part of the work to be performed under this contract shall be as set forth in the clause of the contract entitled "Permits and Responsibilities". However, if the cofferdam(s) is constructed in accordance with plans and progress schedules approved by the Contracting Officer, but is overtopped by flood and such flood causes damage to the cofferdam or if any part of the permanent work is damaged by flood or earthquake, which damage is not due to the failure of the Contractor to take reasonable precaution or to exercise sound engineering and construction practices in the conduct of the work, the Contractor shall make the repairs ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable contract unit or lump sum prices as fixed and established in the contract. If, in the opinion of the Contracting Officer, there are no contract unit or lump sum prices applicable to any part of such damaged work, an equitable adjustment pursuant to the Contract Clause entitled, "Changes", will be made as full compensation therefor.

b. The Contractor may, subject to approval of the Contracting Officer, or the Contracting Officer may order the Contractor to, flood or breach the cofferdam during a rise prior to, and in anticipation of, natural flooding due to overtopping. Such flooding or breach will be considered the same as though the cofferdam, if constructed in accordance with plans and progress schedules approved by the Contracting Officer, had been overtopped, in which event an equitable adjustment will be made for damages to the cofferdam and/or any part of the permanent work, as provided in (a) above.

c. If any delay that is not the fault of the Contractor, such as flood or earthquake, occurs, the Contractor shall be granted a time extension for such delay in accordance with the Contract Clause entitled “Default”, subparagraph (b)(1).

10 AND 11. NOT USED

12. PARTIAL PAYMENT. At the discretion of the Contracting Officer, partial payment will be made for equipment delivered and stored on site or off site providing such storage is in accordance with the provisions of these specifications and the Contractor furnishes satisfactory evidence that title to such equipment has been acquired and that it will be utilized on the work covered by these specifications. Partial payment is defined as the invoice amount plus shipping costs. If the equipment is stored off site, the Government shall have the right to inspect the equipment.

13. NOT USED.

14. CERTIFICATES OF COMPLIANCE. Any certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in 3 copies. Each certificate shall include the signature and title of an official authorized to certify in behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from responsibility for furnishing satisfactory material if, after tests are performed on selected samples, the material is found not to meet the specific requirements.

15. PURCHASE ORDERS. Two copies of all purchase orders for other than stock materials showing the firm names and addresses and list of material shall be furnished to the Contracting Officer or an authorized representative as soon as issued.

16. SAFETY AND HEALTH REQUIREMENTS MANUAL EM 385-1-1. Safety and Health Requirements Manual EM 385-1-1, dated September 3, 1996, forms a part of these specifications.

17. ACCIDENT INVESTIGATIONS AND REPORTING. Refer to EM 385-1-1, Paragraph 01.D. Accidents shall be investigated and reports completed by the immediate supervisor of the employee(s) involved and reported to the Contracting Officer or an authorized representative within one working day after the accident occurs. The accident Investigation report shall be made on ENG Form 3394.

18. ACCIDENT PREVENTION PROGRAM. Refer to Contract Clause FAR 52.236-13 entitled, "Accident Prevention". Within 15 days after receipt of Notice of Award of the contract, and at least 7 days prior to theprework conference, the original and one copy of the Accident Prevention Program shall be submitted to the Contracting Officer for review. The program shall be prepared in the following format:

a. An executed LMV Form 358R, Administrative Plan.

b. An executed LMV Form 359R, Activity Hazard Analysis.

c. A copy of company policy statement of accident prevention and any other guidance statements normally provided new employees. Each company employee shall be required to sign the company policy statement of accident prevention to verify that all employees have been informed of the safety program, and such signed statements shall be maintained at the project site.

d. When marine plant and equipment are in use under a contract, the method of fuel oil transfer shall be included on LMV Form 414R, Fuel Oil Transfer (refer to 33 CFR 156).

The Contractor shall not commence physical work at the site until the program has been reviewed and found acceptable by the Contracting Officer, or an authorized representative. At the Contracting Officer's discretion, the Contractor may submit its Activity Hazard Analysis only for the first phase of

construction provided that it is accompanied by an outline of the remaining phases of construction. All remaining phases shall be submitted and accepted prior to the beginning of work in each phase. Also refer to Section 1 of EM 385-1-1.

19. DAILY INSPECTIONS. The Contractor shall perform daily safety inspections and record them on the forms approved by the Contracting Officer. Reports of daily inspections shall be maintained at the job site. The reports shall be records of the daily inspections and resulting actions. Each report shall include, as a minimum, the following:

a. Phase(s) of construction underway during the inspection.

b. Locations of areas inspections were made.

c. Results of inspection, including nature of deficiencies observed and corrective actions taken, or to be taken, date, and signature of the person responsible for its contents.

20. NOT USED.

21. ENVIRONMENTAL LITIGATION.

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

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

22. TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER.

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

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

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

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

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

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
(12)	(9)	(7)	(7)	(7)	(8)	(8)	(9)	(6)	(6)	(7)	(9)

c. Upon acknowledgement of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor shall 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 scheduledwork 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 Contract Clause entitled "Default (Fixed Price Construction)".

23. SUBCONTRACTS. In accordance with the Contract Clause entitled "Subcontracts", the Contractor shall, within seven days after the award of any subcontract by the Contractor or a Subcontractor, deliver to the Contracting Officer two copies of a completed Standard Form 1413. Both copies must contain the original signatures of both parties.

24. REQUIRED INSURANCE.

a. As required by the Contract Clause entitled "Insurance-Work on a Government Installation", the Contractor shall within 15 days after receipt of Notice of Award and prior to the commencement of work, furnish to the Contracting Officer, a written statement as evidence of the following minimum insurance:

(1) Workmen's Compensation. Amounts required by applicable jurisdictional statutes.

(2) Employer's Liability Insurance. $100,000

(3) Comprehensive General Liability Insurance.

Bodily Injury - $500,000 per occurrence

(4) Comprehensive Automobile Insurance.

Bodily Injury	-	$200,000 each person
		$500,000 each accident
Property Damage	-	$ 20,000 each accident

b. Statements of insurance should be submitted to the following address:

Department of the Army
St. Louis District, Corps of Engineers
Northern Area Office, CEMVS-CO-CN
P.O. Box 78
Elsberry, Missouri 63343

25. PROTECTION OF MATERIAL AND WORK. The Contractor shall at all times protect and preserve all materials, supplies, and equipment of every description (including property which may be Government-furnished or owned) and all work performed. All reasonable requests of the Contracting Officer to enclose or specially protect such property shall be complied with. If, as determined by the Contracting Officer, material, equipment, supplies, and work performed are not adequately protected by the Contractor, such property may be protected by the Government and the cost thereof may be charged to the Contractor or deducted from any payments due to the Contractor.

26. CONTAMINATION OF WATER. In addition to the requirements set forth in 01130-3.3, Protection of Water Resources, the Contractor shall take positive protective measures to prevent spillage of potential pollutant materials such as fuel, emulsion materials, chemicals etc., from storage containers or equipment, into lakes or tributary waters. Such positive protective measures may include, but not limited to, the following:

(1) A berm enclosure of sufficient capacity to contain such materials.

(2) Security measures to prevent acts of vandalism which could result in spillage of such materials (fences, guards, etc.).

(3) Storage of such materials in an area where the terrain would preclude leakage into lake or tributary waters.

(4) Utilization of secure Government storage areas if the Contracting Officer indicates such space is available. No storage past immediate needs (2 days) without the consent of the Contracting Officer.

The Contractor shall submit its proposals for implementing the above provisions in accordance with 01130-1.5, Environmental Protection Plan.

27. NOT USED.

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

29. ORDER AND COORDINATION OF WORK. The Contractor may start and

complete the work in such order and sequence as desired subject to compliance with the following paragraphs:

A. SPECIAL CONSIDERATIONS.

1. The Contractor is advised there is a potential for unexpected movement of pool ice during the months of December thru February. The Contractor should further be aware that the ice upstream of the auxiliary miter gate can become so thick that work may not be able to be preformed. Any vessel that is captured by the ice will be subjected to severe damage or destruction. The lockmaster will attempt to provide advance notice of ice movement. The failure of the Government to issue such a notice will not entitle the Contractor to seek damages against the Government. In the event the Contractor is required to demobilize equipment from the construction limits upstream of the auxiliary lock gate bay during critical path work, the contract time will be extended in accordance with contract clause 00800-22 – TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER.

2. Main Lock Miter Gates will be operated routinely by the Government for passage of river traffic. Miter Gate walkways may be used during routine operation when closed, but only by foot traffic, no wheeled traffic.

3. The service bridge gantry cranes will not be available for use by the Contractor at any time.

4. The Contractor shall coordinate its operations so as not to interfere with the functions of the Government personnel and the use of the locks by river traffic. The Contractor shall receive priority lockage one (1) time per 24 hour period per lock.

5. The Contractor shall not be allowed access to the Lock and Dam Control Stations for other than coordination purposes.

6. At least 7 days prior to mobilization, the Contractor shall submit to the Contracting Officer for approval the plan for storage of materials and equipment at the lock and dam sites.

7. Potable water will not be made available to the Contractor. All potable water shall be furnished by the Contractor.

8. Contractor personnel shall not use on site public toilet facilities nor the toilet facilities at the locks (either in the Control House or Maintenance Building). The Contractor shall provide its own portable facilities. Temporary toilet facilities shall conform to paragraph 02.B of the Corps of Engineers Safety Manual EM 385-1-1.

9. Temporary mooring areas for floating plant will be available and their locations shall be coordinated with the Lockmasters. At all times when Contractor plant is moored at a lock, the Contractor shall be required to have a 24-hour telephone number where the Government may reach a representative of the Contractor to notify of any problems with the floating plant. The representative must be available to be at any work barge(s) within 60 minutes of a phone call, 24 hours a day, 7 days a week. The Contractor shall be required to post and keep current telephone numbers for emergency action.

10. The existing steel to be demolished at Lock and Dam 25 contains lead based paint.

11. Parking areas for Contractor personnel and storage areas for Contractor materials and equipment are available for use and shall be in locations as shown on the drawings and as designated by the appropriate Lockmaster.

12. The Contractor shall be advised that the miter gates will be delivered to Lock 25 the first week in April. The Contractor shall relocate the new gates to Contractor owned barges within 14 calendar days.

B. SEQUENCE OF WORK AT LOCK AND DAM 25. Work on the auxiliary lock closure and debris opening project consists of the following items to be completed in the order listed. Water movement due to river current and propwash from tugboats, especially in the area of the debris openings in the guardwall, presents hazards to divers. All work requiring divers shall be coordinated with the lockmaster. No diver shall be in the water during exit and entry of a tow into the lock chamber. The Contractor shall be aware of the requirements for Pre-diving meetings and the Diving Plan as in accordance with the Corps of Engineers Safety Manual EM 385-1-1.

1. Enlargement of existing debris opening and cutting of new debris opening in the guardwall. This item includes removal of existing concrete, reinforcement, wall armor, handrail, and approximately 7 timber piles and attached sheet pile located beneath the guardwall. Debris that has washed in and become trapped under the guardwall and against the timber piles and sheet pile will also have to be removed. Following demolition, new concrete, reinforcing and wall armor is to be installed around the edges of the new openings.

   During construction, the Contractor shall clear all debris entering the construction limits between the intermediate wall and guardwall.

   Electrical wiring for the navigation and lock lights at the upstream end of the guardwall is located in conduits in the concrete to be removed at the debris openings. The new wiring is located in conduits on the new guardwall bridge. The Contractor shall provide temporary, constant power to the lights at the upstream end of the guardwall during construction.

2. Installation of pedestrian bridge on guardwall across debris openings; installation of covers over main lock chamber intake ports on auxiliary lock side of intermediate wall immediately upstream of the existing rock dam. The purpose of the covers is to prevent material from entering the main lock filling culvert during subsequent operations. The intake port covers will be removed at the conclusion of the project. During cover installation, inspect the existing screens in the ports and report their condition in writing to the Contracting Officer.

3. Stage 1 silt removal. Silt and debris overlying the upstream face of the existing rock dam in the auxiliary lock is to be removed prior to commencement of rock dam stabilization. Material removed is to be placed on a barge and transported off-site for disposal.

4. Installation of screen across debris opening between the end of the river wall and the first guardwall sheet pile cell. The screen is underwater and will require divers for underwater construction. The purpose of this task is to prevent material from the rock dam

stabilization effort passing through the debris opening and being carried to the main dam during subsequent operations. The debris opening screen will be removed at the conclusion of the project.

5. Temporary stabilization of the existing rock dam in the following sequence:

   a. Flattening the existing upstream slope from 1V on 1.5H to 1V on 2H with Graded Stone C.
   b. Placing a 3 foot thick layer of clay across the flattened upstream face of the rock dam.
   c. Placing a 40-mil PVC geomembrane liner over the clay layer for full width of the dam.
   d. Place a 6-inch thick layer of 3/4-inch minus chokestone as a protective bedding layer over the PVC liner full width of the flattened upstream face of the dam.
   e. Cover the 3/4-inch minus stone layer with a 12-inch thick layer of 6-inch minus stone.

6. Stage 2 silt removal. Silt and debris between the crest of the temporary rock dam and the existing auxiliary miter gate, and on the downstream side of the existing miter gate, is to be removed. The Stage 2 work shall commence at the downstream boundary of the silt removal area and progress upstream towards the area between the existing auxiliary miter gate and the rock dam. The dredged silt and debris shall be placed on a barge and transported off-site for disposal.

7. Removal of existing miter gate in auxiliary lock gate bay, sill inspection, installation of new gate and acceptance test. Airlift any remaining silt from the top of the miter gate sill immediately prior to gate installation. The Contractor shall perform the work so that once removal of the existing auxiliary miter gate as defined in Section 02495 is initiated, it shall be completely removed within four working days. Further, the replacement auxiliary miter gate shall be installed and operational within five working days of the existing auxiliary miter gate removal.

8. Installation of a precast concrete bulkhead in the unused stop log slot downstream of the tainter valve pit in river wall. The bottom of the stop log slot is filled with silt, thus jetting or an alternate method of installation may be required. An acceptance test to verify that the bulkhead is sitting on the bottom of the stop log slot is to be performed.

9. Removal of rock dam. The installation of the new miter gate shall be completed and approved by the Contracting Officer prior to removal of the rock dam. The stabilized rock dam is to be removed and the material transported off-site for disposal. Material to be removed consists of all stabilization items including the outer layers of 6-inch minus stone and 3/4-inch minus material; the PVC geomembrane and anchors from the sidewalls of the auxiliary lock; the clay layer; all existing rock dam material; the existing sheet pile cutoff wall; the concrete walkway with handrail, and the covers over the intake ports for the main lock.

10. Patch all holes in the auxiliary lock sidewalls resulting from the removal of the PVC liner anchors and the side filling port cover plates.

11. Cutting recesses (slots) in walls of auxiliary lock for emergency bulkheads. This task consists of the following:

    a. Design, fabrication and installation of a cofferdam
    b. Removal of concrete, reinforcing, wall armor and protection angle, check posts, mooring bits and handrail from lock walls
    c. Placement of concrete reinforcement, including grouting rebar into existing lock wall to tie new concrete to existing
    d. Fabrication and installation of steel recess insert
    e. Relocation of check posts
    f. Installation of new wall armor and protection angles
    g. Placing of new concrete

12. Placement of bulkhead extension to be bolted to bottom of emergency bulkhead to extend bulkhead to floor of lock.

13. Bulkhead recess and bulkhead extension acceptance test. Immediately prior to test, any remaining silt is to be removed from the concrete slab on which the bulkhead and extension sit.

C. ADDITIONAL ITEMS. The following items are independent of the sequence above and may be performed in any order unless stated otherwise.

1. At Lock and Dam 24: The enlargement of the existing debris opening in the guardwall, the installation of the new debris opening in the guardwall and the installation of the pedestrian bridge above and across the debris openings as shown on the drawings. The only constraint is the debris openings shall be completed prior to installation of the pedestrian bridge.

   Comments made regarding water movement in 00800-29, B. SEQUENCE OF WORK, and all comments made in 00800-29, Paragraph B. SEQUENCE OF WORK, subparagraph 1, shall also apply at Lock and Dam 24.

NOTE: All the following items are located at Lock and Dam 25.

2. Fabrication and installation of precast concrete covers over unused tainter valve pit and stop log slots in river wall. This item includes removal of existing parapet wall concrete, reinforcing, steel beams, and grating at the top of the pit. Following demolition, new concrete, reinforcing and steel edge angles are installed to form seats and new precast concrete pit covers are to be fabricated. An acceptance test to demonstrate fit of covers is to be performed.

3. Replacement of three timbers in existing stop log slot upstream of tainter valve pit in the river wall.

4. Fabrication and installation of precast concrete covers over unused miter gate machinery pits in river and intermediate walls. This item, which is similar to the tainter valve pit cover item, includes removal of existing curb concrete, reinforcing, steel beams, grating and handrail at the top of the pit. Following demolition, new concrete, reinforcing, steel beams and steel edge angles are installed to form seats and new precast concrete pit covers and steel handrail is to be fabricated. An acceptance test to demonstrate fit of covers is to be performed.

5. Filling of unused control station recesses in top of river wall and intermediate wall. This item includes removal of a small existing concrete curb and cast iron manhole frame and cover, followed by placing of reinforcing and concrete flush with the top of the surrounding lock wall.

30. NOT USED.

31. AS-BUILT DRAWINGS.

a. "As-Built" Contract Drawings. The Contractor shall maintain a separate set of full-size contract drawings, marked up in red, to indicate as-built conditions. Each as-built contract drawing shall include the Contract Number (DACW43-XX-C-XXXX) associated with the contract. These drawings shall be maintained in a current condition at all times until completion of the work and shall be available for review by Government personnel at all times. All variations from the contract drawings, for whatever reason, including those occasioned by modifications, optional materials, and the required coordination between trades, shall be indicated. These variations shall be shown in the same general detail utilized in the contract drawings. Upon completion of the work, two (2) sets of the marked-up drawings shall be furnished to the Contracting Officer prior to acceptance of the work. The Government will withhold two percent of the total bid price of the items for which as-built contract drawings have not been submitted.

b. "As-Built" Shop Drawings. Upon completion of items of work, the Contractor shall revise the shop drawings to show "as-built" conditions. The notation "Revised to show 'as-built' conditions" shall be placed in red in the lower right corner of each drawing along with the initials of a responsible company representative. Each as-built shop drawing or catalog cut shall be identified by the Contract Number (DACW43-XX-C-XXXX) associated with the contract, and corresponding transmittal number from ENG Form 4025. "As-built" shop drawings of each Contractor-prepared construction drawing should be prepared as soon as possible after the construction detailed on a given drawing has been completed. After the "as-built" shop drawings have been prepared as described above and within 15 days after the contract completion date, the Contractor shall submit four (4) complete sets of as-built shop drawings, including catalog cuts, to the Contracting Officer. The Government will withhold two percent of the total bid price of the item for which as-built shop drawings have not been submitted.

32 AND 33. NOT USED.

34. MEANS OF ESCAPE FOR PERSONNEL QUARTERED OR WORKING ON FLOATING PLANT. Two means of escape shall be provided for assembly, sleeping, and messing areas on floating plants. For areas involving 10 or more persons, both means of egress shall be through standard size doors opening to different exit routes. Where 9 or fewer persons are involved, one of the means of escape may be a window (minimum dimensions 24-inch by 36-inch) which leads to a different exit route. Refer to Section 19 of EM 385-1-1.

35. EMERGENCY ALARMS AND SIGNALS.

a. Alarms. Emergency alarms shall be installed and maintained on

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

b. Signals.

(1) Fire Alarm Signals. The general fire alarm signal shall be in accordance with para 97.13-15b of the Coast Guard Rules and Regulations for Cargo and Miscellaneous Vessels, Subchapter I, 1 Sep 77 (CG257).

(2) Abandon Ship Signals. The signal for abandon ship shall be in accordance with paragraph 97.13-15c of reference cited in (1) above.

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

c. Mooring Lines. Eye loops on mooring lines will be equipped with beckets or handling ropes to protect the hands of deckhands.

36. USE OF MECHANIZED EQUIPMENT ON FLOATING PLANT. When mechanized equipment is operated on floating plant the Contractor shall provide positive and acceptable means of preventing this equipment from moving or falling into the water. The type of equipment addressed by this clause includes front-end loaders, bulldozers, trucks (both on- and off-road), backhoes, track hoes, and similar equipment. If the Contractor plans to use such equipment on floating plant, an Activity Hazardous Analysis must be developed for this feature of work. The plan must include a detailed explanation of the type or types of physical barriers, curbs, structures, etc., which will be incorporated to protect the operator and prevent the equipment from entering the water. Nonstructural warning devices may be considered for situations where the use of structural barriers is determined to be impracticable. The Activity Hazard Analysis must thoroughly address the procedure and shall be submitted to the Contracting Officer for review and acceptance prior to start of this feature of work.

37. OBSTRUCTION OF NAVIGABLE WATERWAYS (DEC 1991). DFARS 252.236-7002.

(a) The Contractor shall--

(1) Promptly recover and remove any material, plant, machinery, or appliance which the contractor loses, dumps, throws overboard, sinks, or misplaces, and which, in the opinion of the Contracting Officer, may be dangerous to or obstruct navigation;

(2) Give immediate notice, with description and locations of any such obstructions, to the Contracting Officer, and

(3) When required by the Contracting Officer, mark or buoy such obstructions until the same are removed.

(b) The Contracting Officer may--

(1) Remove the obstructions by contract or otherwise should the Contractor refuse, neglect, or delay compliance with paragraph (a) of this clause; and

(2) Deduct the cost of removal from any monies due or to become due to the Contractor, or

(3) Recover the cost of removal under the Contractor's bond.

(c) The Contractor's liability for the removal of a vessel wrecked or sunk without fault or negligence is limited to that provided in Sections 15, 19, and 20 of the River and Harbor Act of March 3, 1899 (33 U.S.C. 410 et.seq.).

38. SIGNAL LIGHTS. The Contractor shall display signal lights and conduct its operations in accordance with the General Regulations of the Department of the Army and of the Coast Guard governing lights and day signals to be displayed by towing vessels with tows on which no signals can be displayed, vessels working on wrecks, dredges, and vessels engaged in laying cables or pipe in submarine or bank protection operations, lights to be displayed on dredge pipe lines, and day signals to be displayed by vessels of more than 65 feet in length moored or anchored in a fairway or channel, and the passing by other vessels of floating plant working in navigable channels, as set forth in Commandant U.S. Coast Guard Instruction M16672.2, Navigation Rules: International-Inland (Comdtinst M16672.2) or 33 CFR 81 Appendix A (International) and 33 CFR 84 through 33 CFR 89 (Inland) as applicable.

39. INSPECTION FACILITIES.

a. In order to facilitate inspection, the Contractor will be required, without additional cost to the Government:

(1) To furnish, on the request of the Contracting Officer or any inspector, the use of such boats, boatmen, laborers, and material forming a part of the ordinary and usual equipment and crew of the plant as may be reasonably necessary in inspecting the work.

(2) To furnish, on the request of the Contracting Officer or any inspector, suitable transportation from all points on shore designated by the Contracting Officer to and from the various pieces of plant.

b. Should the Contractor refuse, neglect, or delay compliance with these requirements, the specific facilities may be furnished and maintained by the Contracting Officer, and the cost thereof will be deducted from any amounts due or to become due the Contractor.

40. STONE SOURCES.

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

b. Stone may be furnished from any of the currently listed sources

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

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

d. After the award of the contract, the Contractor shall designate in writing only one source or one combination of sources from which stone will be furnished. If the Contractor proposes to furnish stone from a source not currently listed, only a single additional source for stone may be designated. Samples for acceptance testing shall be provided as required by SECTION 02275. If a source for stone so designated by the Contractor is not accepted for use by the Contracting Officer, the Contractor may not propose other sources but shall furnish the stone from a source listed at no additional cost to the Government.

e. Acceptance of a source of stone is not to be construed as acceptance of all material from that source. The right is reserved to reject materials from certain localized areas, zones, strata, or channels when such materials are unsuitable for stone as determined by the Contracting Officer. Materials produced from a listed or unlisted source shall meet all the requirements of SECTION 02275, of the Technical Provisions of these specifications.

41. NOT USED

42. IDENTIFICATION OF GOVERNMENT-FURNISHED PROPERTY. FAR 52.245-3 (APR 1984)

a. The Government will furnish to the Contractor the property identified in the Schedule, to be incorporated or installed in the work or used in performing the contract. The listed property will be furnished at the place specified in SECTION 00800, Paragraph 6d. The Contractor is required to accept delivery, pay any demurrage or detention charges, and unload and transport the property to the job site at its own expense. When the property is delivered, the Contractor shall verify its quantity and condition and acknowledge receipt in writing to the Contracting Officer. The Contractor shall also report in writing to the Contracting Officer within 24 hours of delivery any damage to or shortage of the property as received. All such property shall be installed or incorporated into the work at the expense of the Contractor, unless otherwise indicated in this contract. Contractors may view the ladder and corner protection at the site visit.

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

ITEM	QUANTITY	ESTIMATED VALUE
Auxiliary Miter Gate (2 Leaves)	1ea	$ 1,317,000
Anchor Bar Set	2ea	$ 72,000

Pintle Ball and Pintle Base	2ea	$ 31,600
Gudgeon Pin Set	2ea	$ 8,000
Maintenance Bulkhead	1ea	$ 200,000
Miter Gate Pick-Up Beam	1ea	$ 30,000
Steel Ladder	1ea	$ 1,500
Steel Corner Protection (Ladder)	4ea	$ 4,500

43 THRU 44. NOT USED.

45. YEAR 2000 COMPLIANCE (Y2K). In accordance with FAR 39.106, the Contractor shall ensure that with respect to any design, construction, goods or services under this contract as well as any subsequent task/delivery orders issued under this contract (if applicable), all information technology contained therein shall be Year 2000 compliant. The Contractor shall:

(a) Perform, maintain, and provide an inventory of all major components to include structures, equipment, items, parts, and furnishings under this contract and each task/delivery order that may be affected by the Y2K compliance requirement;

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

46. HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA (JAN 1997). FAR 52.223-3

(a) "Hazardous material", as used in this clause, includes any material defined as hazardous under the latest version of Federal Standard No. 313 (including revisions adopted during the term of the contract).

(b) The offeror must list any hazardous material, as defined in paragraph (a) of this clause, to be delivered under this contract. The hazardous material shall be properly identified and include any applicable identification number, such as National Stock Number or Special Item Number This information shall also be included on the Material Safety Data Sheet submitted under this contract.

Material (If none, insert "None")	Identification No.
_____	_____
_____	_____

(c) This list must be updated during performance of the contract whenever the Contractor determines that any other material to be delivered under this contract is hazardous.

(d) The apparently successful offeror agrees to submit, for each

item as required prior to award, a Material Safety Data Sheet, meeting the requirements of 29 CFR 1910.1200(g) and the latest version of Federal Standard No. 313, for all hazardous material identified in paragraph (b) of this clause. Data shall be submitted in accordance with Federal Standard No. 313, whether or not the apparently successful offeror is the actual manufacturer of these items. Failure to submit the Material Safety Data Sheet prior to award may result in the apparently successful offeror being considered nonresponsive and ineligible for award.

(e) If, after award, there is a change in the composition of the item(s) or a revision to Federal Standard No. 313, which renders incomplete or inaccurate the data submitted under paragraph (d) of this clause, the Contractor shall promptly notify the Contracting Officer and resubmit the data.

(f) Neither the requirements of this clause nor any act or failure to act by the Government shall relieve the Contractor of any responsibility or liability for the safety of Government, Contractor, or subcontractor personnel or property.

(g) Nothing contained in this clause shall relieve the Contractor from complying with applicable Federal, State, and local laws, codes, ordinances, and regulations (including the obtaining of licenses and permits) in connection with hazardous material.

(h) The Government's rights in data furnished under this contract with respect to hazardous material are as follows:

(1) To use, duplicate and disclose any data to which this clause is applicable. The purposes of this right are to--

(i) Apprise personnel of the hazards to which they may be exposed in using, handling, packaging, transporting, or disposing of hazardous materials;

(ii) Obtain medical treatment for those affected by the material; and

(iii) Have others use, duplicate, and disclose the data for the Government for these purposes.

(2) To use, duplicate, and disclose data furnished under this clause, in accordance with subparagraph (h)(l) of this clause, in precedence over any other clause of this contract providing for rights in data.

(3) The Government is not precluded from using similar or identical data acquired from other sources.

47. PARTNERING. In order to most effectively accomplish this contract, the Government is willing to form a cohesive partnership with the Contractor. This partnership would strive to draw on the strengths of each organization in an effort to achieve a quality project done right the first time, within budget, and on schedule. This partnership would be bilateral in make-up and partnership will be totally voluntary. Any cost associated with effectuating this partnership will be agreed to by all parties and will be shared equally with no change in contract price.

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August 1999

STONE SOURCES

ST. LOUIS DISTRICT

Source No.	Producer	MRM*	Lat.	Long.
1.	Tower Rock Stone Co., Grays Point, Mo.	47.0	37N	89W
2.	West Lake Quarry, Neely's Landing, Mo.	71.5	37N	89W
3.	Tower Rock Stone Co., Ste Genevieve Mo.	127.6	38N	90W
4.	Plattin Quarry, Ste. Genevieve, Mo.	139.0	38N	90W
5.	Mississippi Lime Quarry, Ste. Genevieve, Mo.	155.0	38N	90W
6.	Barnhart Limestone Inc., Barnhart, Mo.	156.0	38N	90W
7.	Bussen Quarry, St. Louis County, Mo.	168.0	38N	90W
8.	Bellefontaine Quarry, Fort Bellefontaine, Mo.	8.0**	38N	90W
9.	Fort Belle Quarry, Ft. Bellefontaine, Mo.	7.0**	38N	90W
10.	Calhoun Quarry, Batchtown, Ill.	241.0	38N	90W
11.	Wayne Smith Quarry, Louisiana, Mo.	281.0	39N	91W
12.	Anna Quarry, Anna, I11.		37N	89W
13.	Bussen Quarry, Eureka, Mo.		38N	90W
14.	Calender Quarry, Pittsfield, Ill.		39N	90W
15.	Central Stone Quarry #1, Huntington, Mo.		39N	91W
16.	Central Stone Quarry #9, Perry, Mo.		39N	91W
17.	Central Stone Quarry #33, Florence, Ill.		39N	91W
18.	Columbia Quarry Co. #15, Cypress, Ill.		37N	89E
19.	Char1eston Stone Co., Charleston, Ill.		39N	88W
20.	Columbia Quarry #1, Columbia, Ill.		38N	90W
21.	Columbia Quarry #9, Dupo, Ill.		38N	90W

Source No.	Producer	MRM*	Lat.	Long.
22.	Falling Spring Quarry Co., Falling Springs, Ill.		38N	90W
23.	Magruder Quarry, Troy, Mo.		38N	90W
24.	Fred Weber Inc., Winfield Mo.		38N	90W
25.	Bluff City Mineral, E. Alton, Ill.		38N	90W
26.	Columbia Quarry Co. #7, Waterloo, Ill.		38N	90W
27.	Seminole Ag. Lime Co., Dexter, Mo.		37N	90W
28.	S-S-S Inc., New London, Mo.		39N	91W
29.	South East Mo. Stone Co., Cape Girardeau, Mo.		37N	89W
30.	Base Rock Minerial, (formally know as Resco, Inc.) Bonne Terre, Mo.		37N	90W
31.	Williamsville Stone Co., Poplar Bluff, Mo.		36N	90W
32.	Nokomis Quarry, Nokomis, Ill.		39N	89W
33.	Brickeys Stone Co., Bloomsdale, Mo.	136.0	38N	90W
34.	Martin Marietta Aggregate, Perryville, Mo.		37N	89W

* Mississippi River Mile

** Missouri River Mile

ACCIDENT PREVENTION PROGRAM
ADMINISTRATIVE PLAN

Willingness to correct safety hazards detected by the Corps is commendable, but a poor substitute for a positive program that prevents or detects and corrects hazards.

Contractor	Contract Name & No.	Date
1	2	3

Project Superintendent	Shifts/day	Hours/shift	Maximum employees/shift
4	5	5a	5b

Superintendent's training in Corps' safety requirements

6

Major Units of Equipment

7

Who will inspect equipment?	Inspector's qualifications	Inspection frequency?
8	8a	8b

Who is responsible for operators' physicals?	Location of all records	Day and hour weekly safety meeting
9	10	11

Who is responsible for employee training?	Who will orient new employees?
12	13

Who is responsible for clean-up?	Where will drinking water be obtained?
14	15

Who will investigate accidents?	Who is responsible for providing personal protective equipment?
16	17

Name Doctors, Hospitals & Ambulance services with whom arrangements have been made for this contract.

Doctor	Hospital	Ambulance
18	18a	18b

What form of communication will be used to summon ambulance?

18c

Names of first aid attendants having certificates	Type of certificate and expiration date	Names of U.S.C.G. licensed boat operators, type license & expiration date
19	19a	20

21 Fire Fighting Equipment				22 First Aid Kits		23 Wash Facilities	
No.	Rating	Type	Location	No.	Type	No.	Type

24 Toilets	
No.	Type

What flammable or combustible liquids or gases will be on job site?

25

Where and how will flammables and combustibles be stored?

26

Who will be responsible for inspection and maintenance of fire fighting equipment?

27

If the Company has a published statement of safety policy, please transmit a copy with the return of your Accident Prevention Program.

On a separate sheet submit your proposed layout of temporary buildings and facilities (including subcontractors) and traffic patterns including access roads, haul roads, R.R.s, utilities, etc.

The _____ will pursue a positive program of training,
(Company)
inspections and hazard control throughout the term of this contract. Mr./Ms. _____
has the responsibility and authority for enforcing them.

_____ _____ _____ _____
Contractor's signature date C.O. or C.O.R. signature date

28

ACCIDENT PREVENTION PROGRAM
ACTIVITY HAZARD ANALYSIS

1. Contract No.	2. Contract Name	3. Corps Command
4. Date	5. Location	6. Estimated Start Date
7. Activity	8. Analyzed by	9. Hazard Analysis Phase & Date

10. Principal Steps of Operation	11. Potential Hazards	12. Precautionary Actions or Controls To Be Implemented

13. Contractor/Superintendent or Safety Officer (Signature & date)	14. Contractor/Project Manager or Representative (Signature & date)

INSTRUCTIONS FOR COMPLETION OF LMV Form 359-R

Item Number	Instruction
1.	Self-explanatory
2.	Self-explanatory
3.	The Area, Resident, Project, or Field Office administering the contract.
4.	Date Hazard Analysis is prepared.
5.	Location of contract or where activity is to be performed.
6.	Estimated start date of the activity being analyzed.
7.	Activity refers to the specific phase of work being analyzed, (i.e., clearing & grubbing, stone placement, form erection, electrical installation, pile driving, etc.).
8.	The person making the analysis, typically the foreman in charge of the activity or the Contractor's Quality Control or Safety Officer.
9.	If this is the initial Hazard Analysis for this activity, indicate "Initial." If this is an updated analysis for this activity, indicate "Update." Hazard Analysis should be reviewed and updated at preparatory inspection. Show date discussed.
10.	The principal steps of operation for the activity should be identified in the sequence in which they occur. All major pieces of equipment used in each step of the operation should be identified.
11.	The hazards associated with each step should be identifed.
12.	Precautionary actions and controls should be specific to the hazard identified. They should be what the contractor actually intends to implement and enforce, not general comments such as, "work will be done in accordance with EM 385-1-1." Inspection procedures for equipment identified in item 10 should be stated in this item, as well as training requirements for personnel involved.
13.	Analysis should be signed by the Contract Superintendent or Safety Officer.
14.	Contractor/Project Manager should sign and date.

ACCIDENT PREVENTION PROGRAM
FUEL OIL TRANSFER - FLOATING PLANT
U.S. Army Engineer Division, Lower Mississippi Valley

Contractor 1	Contract Name & Number 2	Date 3
Officer in Charge of Fuel Transfer 4	Name of Vessel 4a	Fuel to be Transferred 4b

Name of Vessel 5	Names of Qualified Tankermen 5a	Type of Certification and expiration date 5b

Name of Vessel 6	Type of fill nozzle or connection on Vessel 6a	Location of fill pipes openings 6b	Location of vents openings 6c

Type, number, and size of fire fighting equipment to be available during fuel transfer operations.

7

Sequential steps to be followed when taking on fuel.

8

Contractor's Signature	Date	C.O. or C.O.R. Signature	Date

LMV FORM 1 JUL 61 414-R

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RIVER GAGE INFORMATION - MISSISSIPPI RIVER NEAR ALTON, ILLINOIS TO THE MOUTH OF THE OHIO RIVER

GAGE SITE	RIVER BANK (*)	STATE	RIVER MILE	GAGE ZERO (FEET N.G.V.D.)	LEVEL TYPE (3)	FLOOD LEVEL	RECORD LOWS		RECORD HIGHS		CUM. MEAN THRU 1996	
							DATE	LEVEL	DATE	LEVEL	# OF YEARS	LEVEL
Alton		ILL	202.70	400.00	EL.		21-Mar-90	410.79	01-Aug-93	439.55	6	418.8
Melvin Price L&D (upper)		ILL	201.10	395.48	EL.		16-Mar-94	411.67	1,2-Aug-93	438.50	6	418.5
Melvin Price L&D (lower)	L	ILL	200.50	395.48	EL.	416.48	07-Sep-91	397.47	01-Aug-93	438.18	6	407.6
Hartford	L	ILL	196.80	350.00	EL.	417.00	19-Jan-57	390.70	01-Aug-93	436.90	33	405.1
Chain of Rocks	R	MO	190.40	313.91	ST.	101.00	12-Jan-09	72.80	01-Aug-93	121.40	33	87.31
Locks 27 (upper)	L	ILL	185.30	350.00	EL.		28-Jan-54	388.95	01-Aug-93	437.25	33	404.7
Locks 27 (lower) (2)	L	ILL	185.10	350.00	EL.		26-Dec-89	375.65	01-Aug-93	432.80	45	392.8
St. Louis	R	MO	179.60	379.94	ST.	30.00	16-Jan-40	-6.20	01-Aug-93	49.60	135	11.25
Engineer's Depot	R	MO	176.80	379.58	ST.	29.00	16-Jan-40	-6.50	01-Aug-93	47.20	102	10.03
Jefferson Barracks	R	MO	168.70	377.69	ST.	26.00	23,24-Dec-89	-8.60	01-Aug-93	44.10	84	8.62
Water's Point	R	MO	158.50	370.39	ST.	27.00	18-Dec-89	-7.60	01-Aug-93	46.10	96	10.45
Selma	R	MO	145.80	0.00	EL.	390.00	19-Dec-89	356.10	05-Aug-93	409.50	31	375.6
Brickeys	R	MO	136.00	357.78	ST.	26.00	27-Dec-89	-6.40	05-Aug-93	47.00	86	10.75
Little Rock Landing	R	MO	125.50	213.79	ST.	163.00	19-Dec-89	132.30	06-Aug-93	185.00	105	148.5
Chester	L	ILL	109.90	341.05	ST.	27.00	02-Jan-64	-4.30	07-Aug-93	49.70	105	11.52
Bishop Landing	R	MO	100.80	334.11	ST.	29.00	27-Dec-89	-1.70	07-Aug-93	51.30	63	14.25
Red Rock Landing	R	MO	94.10	328.92	ST.	31.00	02-Jan-64	-0.50	07-Aug-93	54.20	79	15.35
Grand Tower	L	ILL	81.90	321.93	ST.	28.00	22-Jan-40	-0.20	07-Aug-93	52.30	111	14.72
Moccasin Springs	R	MO	66.30	313.89	ST.	28.00	21-Jan-40	0.60	08-Aug-93	49.10	81	16.01
Cape Girardeau	R	MO	52.10	304.65	ST.	32.00	15-Jan-09	0.60	08-Aug-93	48.50	100	16.97
Gray's Point	R	MO	46.30	301.18	ST.	25.00	15-Jan-09	0.20	7,8-Aug-93	46.40	118	16.33
Thebes	L	ILL	43.70	300.00	ST.	33.00	15-Jan-09	0.88	07-Aug-93	45.50	62	17.38
Commerce	R	MO	39.50	301.83	ST.	24.00	21-Jan-40	-3.10	24-May-95	41.60	96	12.48
Price Landing	R	MO	28.20	299.75	ST.	24.00	04-Jan-64	-8.80	24-May-95	36.30	24	11.63
Thompson Landing	R	MO	20.20	280.00	EL.	319.00	26-Dec-89	287.50	28-May-95	331.95	31	306.8
Bird's Point	R	MO	2.00	274.53	ST.	38.00	14-Dec-37	-2.10	03-Apr-75	52.40	86	20.08
Cairo (1)		ILL	2.00	270.47	ST.	40.00	24-Dec-1871	-1.00	3,4-Feb-37	59.50	81	25.1

(*) River bank looking downstream: "L" - LEFT BANK, "R" - RIGHT BANK
(1) OHIO RIVER GAGE - River mile indicates distance from the mouth of the Ohio River on the Ohio River (not the Mississippi)
(2) River mile equivalent to 183.6 (LEFT BANK) due to trail dike @ 184.2 (LEFT BANK)
(3) "EL.": Elevation given in feet N.G.V.D. (1929 adjustment); "ST.":Stage given in feet
NOTE: subtract gage zero datum from elevation to obtain stage -or- add gage zero datum to stage to obtain elevation

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ST. LOUIS SLOPE PROFILES RELATIONSHIPS TO RIVER LEVELS @ OTHER GAGE SITES

EXAMPLE: "under stable conditions, a reading of 10 feet @ St. Louis should result in a reading of 11.1 feet @ Chester."

GAGE SITE	RIVER BANK (*)	STATE	RIVER MILE	GAGE ZERO (FEET N.G.V.D.)	LEVEL TYPE (3)	LOW WATER REF. PLANE	ST. LOUIS STAGES (FOR COMPARABLE LEVELS @ OTHER GAGE SITES, SEE BELOW)							
							0.0	5.0	10.0	15.0	20.0	26.0	30.0	40.0
Alton		ILL	202.70	400.00	EL.									
Melvin Price L&D (upper)		ILL	201.10	395.48	EL.									
Melvin Price L&D (lower)	L	ILL	200.50	395.48	EL.									
Hartford	L	ILL	196.80	350.00	EL.	391.5								
Chain of Rocks	R	MO	190.40	313.91	ST.	74.1							101.0	111.2
Locks 27 (upper)	L	ILL	185.30	350.00	EL.									
Locks 27 (lower) (2)	L	ILL	185.10	350.00	EL.		382.0	386.6	391.4	396.5	401.7	408.0	411.8	422.7
St. Louis	R	MO	179.60	379.94	ST.	-3.5	0.0	5.0	10.0	15.0	20.0	26.0	30.0	40.0
Engineer's Depot	R	MO	176.80	379.58	ST.	-3.8	-0.4	4.7	9.6	14.6	19.5	25.1	29.1	38.4
Jefferson Barracks	R	MO	168.70	377.69	ST.	-4.6	-1.1	3.8	8.4	13.1	18.5	23.4	27.4	35.3
Water's Point	R	MO	158.50	370.39	ST.	-3.0	0.5	5.1	10.1	14.6	19.3	24.7	28.5	36.3
Selma	R	MO	145.80	0.00	EL.	361.0	364.6	368.6	373.2	378.0	382.5	388.0	392.2	400.0
Brickeys	R	MO	136.00	357.78	ST.	-1.6	1.9	5.7	10.3	14.9	19.4	24.6	29.2	37.3
Little Rock Landing	R	MO	125.50	213.79	ST.	135.4	138.7	143.5	147.9	152.5	157.5	162.4	166.4	174.4
Chester	L	ILL	109.90	341.05	ST.	-0.6	2.6	6.9	11.1	15.5	20.1	26.5	30.3	39.3
Bishop Landing	R	MO	100.80	334.11	ST.	1.3	4.5	8.6	12.9	17.5	22.2	28.7	32.6	41.5
Red Rock Landing	R	MO	94.10	328.92	ST.	1.8	5.5	9.4	14.3	19.2	24.2	30.8	34.9	43.7
Grand Tower	L	ILL	81.90	321.93	ST.	3.0	6.3	10.2	14.4	19.0	23.5	29.3	32.6	40.8
Moccasin Springs	R	MO	66.30	313.89	ST.	3.9	7.1	11.2	15.3	19.6	24.5	29.7	33.4	40.7
Cape Girardeau	R	MO	52.10	304.65	ST.	5.2	8.4	13.0	16.5	20.5	26.0	31.3	34.6	41.5
Gray's Point	R	MO	46.30	301.18	ST.	5.1	8.1	12.7	16.0	20.1	25.6	31.3	34.5	40.7
Thebes	L	ILL	43.70	300.00	ST.	4.8	7.7	12.2	15.7	19.6	25.3	31.0	34.4	39.9
Commerce	R	MO	39.50	301.83	ST.	0.3	3.0	7.2	11.3	15.4	21.2	26.8	29.8	34.8
Price Landing	R	MO	28.20	299.75	ST.	-6.7	-2.4	2.0	7.2	11.5	17.3	24.7	27.6	32.3
Thompson Landing	R	MO	20.20	280.00	EL.	289.0	292.2	295.8	301.2	305.6	311.1	321.7	324.6	329.5
Bird's Point	R	MO	2.00	274.53	ST.	3.4	7.1	10.5	15.5	19.8	24.9	40.6	43.5	48.5
Cairo (1)		ILL	2.00	270.47	ST.	7.4								

(*) River bank looking downstream: "L" - LEFT BANK, "R" - RIGHT BANK
(1) OHIO RIVER GAGE - River mile indicates distance from the mouth of the Ohio River on the Ohio River (not the Mississippi)
(2) River mile equivalent to 183.6 (LEFT BANK) due to trail dike @ 184.2 (LEFT BANK)
(3) "EL.": Elevation given in feet N.G.V.D. (1929 adjustment); "ST.":Stage given in feet
NOTE: subtract gage zero datum from elevation to obtain stage -or- add gage zero datum to stage to obtain elevation

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SECTION 01025

MEASUREMENT AND PAYMENT

1.1 MOBILIZATION AND DEMOBILIZATION AT LOCK 25. Payment for costs associated with mobilization and demobilization will be made at the applicable sum job prices for “Mobilization and Demobilization”, as defined in SECTION 00700 - CONTRACT CLAUSES.

1.2 LOCK 25 GUARD WALL

1.2.1 Guard Wall Demolition. Payment for demolition associated with the guard wall bridge will be made at the contract Bid Item sum for Guard Wall - Demolition, which price and payment shall constitute full compensation for the work shown on drawing S-2.

1.2.2 Guard Wall Concrete Restoration. Payment for restoration of guard wall and river wall concrete associated with the guard wall bridge will be made at the contract Bid Item sum for Guard Wall - Concrete Restoration, which price and payment shall constitute full compensation for the work shown on drawing S-4.

1.2.3 Temporary Debris Opening Screen. Payment for fabrication and installation of the temporary debris opening screen will be made at the contract Bid Item sum for Guard Wall - Temporary Debris Opening Screen, which price and payment shall constitute full compensation for the debris screen work shown on drawing S-9.

1.2.4 Bridge. Payment for fabrication and installation of the guard wall bridge will be made at the contract Bid Item sum for Guard Wall - Bridge, which price and payment shall constitute full compensation for the work shown on drawing S-5.

1.3 ROCK DAM TEMPORARY REINFORCEMENT

1.3.1 Intake Port Covers (main lock). Payment for fabrication and installation of the intake port covers will be made at the contract Bid Item sum for Rock Dam Temporary Reinforcement - Intake Port Covers (main lock), which price and payment shall constitute full compensation for the intake port cover fabrication and installation work shown on drawing S-9.

1.3.2 Temporary Stabilization. Payment for temporary stabilization of the existing rock dam will be made at the contract Bid Item sum for Rock Dam Temporary Reinforcement - Temporary Stabilization, which price and payment shall constitute full compensation for the work shown on drawing F-1 and described in SECTION 02275 - TEMPORARY STABILIZATION OF ROCK DAM and in SECTION 02240 - PVC GEOMEMBRANE. Note that measurement and payment for intake port cover installation referenced on drawing F-1 is covered in paragraph 1.2.1 of this specification section.

1.4 SILT REMOVAL

1.4.1 Stage 1. Payment for stage 1 silt removal from the upstream face of the existing rock dam will be made at the contract Bid Item sum for Silt Removal - Stage 1, which price and payment shall constitute full compensation for the stage 1 silt removal work shown on drawing F-2 and described in SECTION 02125 - REMOVAL OF SILT BUILD-UP.

1.4.2 Stage 2. Payment for stage 2 silt removal from the downstream face of the existing rock dam and downstream of the existing miter gates will be made at the contract Bid Item sum for Silt Removal - Stage 2, which price and payment shall constitute full compensation for the stage 2 silt removal work shown on drawing F-2 and described in SECTION 02125 - REMOVAL OF SILT BUILD-UP.

1.5 AUXILIARY GATE

1.5.1 Remove Existing Auxiliary Gate. Payment for the removal and disposal of the existing auxiliary gate as described in SECTION 02495 – AUXILIARY MITER GATE INSTALLATION and disposal of the four culvert valves as specified in SECTION 02051 – STRUCTURAL DEMOLITION will be made at the contract Bid Item sum for Removal of Existing Auxiliary Gate, which price and payment shall constitute full compensation for the work.

1.5.2 Install Replacement Auxiliary Gate. Payment for the installation of the replacement auxiliary gate will be made at the contract Bid Item sum for Installation of Replacement Auxiliary Gate, which price and payment shall constitute full compensation for the work described in SECTION 02495 – AUXILIARY MITER GATE INSTALLATION.

1.6 ROCK DAM REMOVAL/DISPOSAL. Payment for removal and disposal of the stabilized rock dam will be made at the contract Bid Item sum for Rock Dam Removal/Disposal, which price and payment shall constitute full compensation for the work shown on drawing F-3 and described in SECTION 02120 - REMOVAL OF ROCK DAM.

1.7 TAINTER VALVE PIT AND CULVERT BULKHEAD

1.7.1 Tainter Valve Pit and Culvert Bulkhead Demolition. Payment for demolition associated with the tainter valve pit and culvert bulkhead will be made at the contract Bid Item sum for Tainter Valve Pit and Culvert Bulkhead - Demolition, which price and payment shall constitute full compensation for the work shown on drawing S-3. The work associated with preventing floatation of the existing timber bulkhead in the upstream bulkhead slot, required by the drawing notes on drawing S-3, is included in this payment item.

1.7.2 Tainter Valve Pit and Culvert Bulkhead Concrete Restoration. Payment for restoration of river wall concrete associated with the tainter valve pit and culvert bulkhead covers will be made at the contract Bid Item sum for Tainter Valve Pit and Culvert Bulkhead - Concrete Restoration, which price and payment shall constitute full compensation for the work shown on drawing S-6. Payment for the neoprene pads shown on drawing S-6 is included in this payment item. Payment for the precast concrete covers is not included in this payment item.

1.7.3 Tainter Valve Pit and Culvert Bulkhead Precast Covers. Payment for fabrication, installation and acceptance testing of the tainter valve pit and culvert bulkhead precast concrete covers will be made at the contract Bid Item sum for Tainter Valve Pit and Culvert Bulkhead - Precast Covers, which price and payment shall constitute full compensation for the precast cover portion of the work shown on drawing S-6 and the work shown on drawing S-7.

1.7.4 Precast Tainter Valve Bulkhead. Payment for fabrication, installation and acceptance testing of the precast concrete bulkhead in the culvert bulkhead slot downstream of the tainter valve pit will be made at the

contract Bid Item sum for Tainter Valve Pit and Culvert Bulkhead - Precast Tainter Valve Bulkhead, which price and payment shall constitute full compensation for the precast bulkhead portion of the work shown on drawing S-8.

1.7.5 Timber Stop Log Replacement. Payment for fabrication and installation of new timber props and beam in the culvert bulkhead slot upstream of the tainter valve pit will be made at the contract Bid Item sum for Tainter Valve Pit and Culvert Bulkhead - Timber Stop Log Replacement, which price and payment shall constitute full compensation for the timber stop log work shown on drawing S-9.

1.8 MITER GATE MACHINERY PIT

1.8.1 Miter Gate Machinery Pit Demolition. Payment for demolition associated with the miter gate machinery pit covers will be made at the contract Bid Item sum for Miter Gate Machinery Pit - Demolition, which price and payment shall constitute full compensation for the demolition work shown on drawing S-13. This payment item includes work on both the intermediate wall and the river wall.

1.8.2 Miter Gate Machinery Pit Concrete Restoration. Payment for restoration of concrete associated with the miter gate machinery pit covers will be made at the contract Bid Item sum for Miter Gate Machinery Pit - Concrete Restoration, which price and payment shall constitute full compensation for work associated with preparation of the seats for the pit covers shown on drawing S-13. This payment item includes work on both the intermediate wall and the river wall. Payment for the neoprene pads shown on drawing S-13 is included in this payment item. Payment for the precast concrete covers is not included in this payment item.

1.8.3 Miter Gate Machinery Pit Precast Covers. Payment for fabrication, installation and acceptance testing of the miter gate machinery pit precast concrete covers will be made at the contract Bid Item sum for Miter Gate Machinery Pit - Precast Covers, which price and payment shall constitute full compensation for the precast cover portion of the work shown on drawing S-13 and the work shown on drawing S-14.Payment for the fabrication and installation of new handrail and the modification of existing handrail shown on drawing S-14 are part of this payment item. This payment item includes work on both the intermediate wall and the river wall.

1.8.4 Control Station (demolition and capping). Payment for demolition of the existing curb and cover and installation of a new concrete cover at the existing control station manhole will be made at the contract Bid Item sum for Miter Gate Machinery Pit - Control Station (demolition and capping), which price and payment shall constitute full compensation for work associated the control station manhole cover shown on drawing S-8. This payment item includes work on both the intermediate wall and the river wall.

1.9 BULKHEAD RECESSES

1.9.1 Cofferdam. Payment for design, fabrication, installation, dewatering, rewatering, removal and disposal of the cofferdam required for construction of the bulkhead recesses in the auxiliary lock chamber walls will be made at the contract Bid Item sum for Bulkhead Recesses - Cofferdam, which price and payment shall constitute full compensation for the work associated with the cofferdam discussed in the general

notes on drawing S-1 and in SECTION 05120 - STRUCTURAL STEEL. This payment item includes work on both the intermediate wall and the river wall.

1.9.2 Demolition and Recess Installation. Payment for demolition associated with the bulkhead recesses and installation of the recesses in the auxiliary lock chamber walls will be made at the contract Bid Item sum for Bulkhead Recesses - Demolition and Recess Installation, which price and payment shall constitute full compensation for the demolition portion of the work shown on drawing S-10 and the recess work shown on drawings S-10 and S-11. This payment item includes work on both the intermediate wall and the river wall.

1.9.3 Acceptance Test. Payment for the bulkhead recess and bulkhead extension acceptance test will be made at the contract Bid Item sum for Bulkhead Recesses - Acceptance Test, which price and payment shall constitute full compensation for the work described in SECTION 05915 - BULKHEAD RECESS AND BULKHEAD EXTENSION ACCEPTANCE TEST.

1.10 BULKHEAD EXTENSION.

1.10.1 Fabrication. Payment for fabrication of the lock chamber bulkhead extension and pick up beam will be made at the contract Bid Item sum for Bulkhead Extension - Fabrication, which price and payment shall constitute full compensation for the work shown on drawing S15 and as described in SECTION 05915 – BULKHEAD RECESS AND BULKHEAD EXTENSION ACCEPTANCE TEST.

1.11 LOCK 25 ELECTRICAL WORK. Payment for all electrical work will be made at the contract Bid Item sum for Electrical Work, which price and payment shall constitute full compensation for the work described in SECTION 16050 – ELECTRICAL WORK and as shown on the drawings.

1.12 ABATEMENT WORK. Payment for all abatement work will be made at the contract Bid Item sum for Abatement Work, which price and payment shall constitute full compensation for the work described in SECTION 02920 – LEAD BASED PAINT EXPOSURE AND DISPOSAL.

1.13 MOBILIZATION AND DEMOBILIZATION AT LOCK 24. Payment for costs associated with mobilization and demobilization will be made at the applicable sum job prices for “Mobilization and Demobilization”, as defined in SECTION 00700 - CONTRACT CLAUSES.

1.14 LOCK 24 GUARD WALL

1.14.1 Guard Wall Demolition. Payment for demolition associated with the guard wall bridge will be made at the contract Bid Item sum for Guard Wall - Demolition, which price and payment shall constitute full compensation for the work shown on drawing S-23.

1.14.2 Guard Wall Concrete Restoration. Payment for restoration of guard wall and river wall concrete associated with the guard wall bridge will be made at the contract Bid Item sum for Guard Wall - Concrete Restoration, which price and payment shall constitute full compensation for the work shown on drawing S-4.

1.14.3 Bridge. Payment for fabrication and installation of the guard wall bridge will be made at the contract Bid Item sum for Guard Wall - Bridge, which price and payment shall constitute full compensation for

the work shown on drawing S-24.

1.15 LOCK 24 ELECTRICAL WORK. Payment for all electrical work will be made at the contract Bid Item sum for Electrical Work, which price and payment shall constitute full compensation for the work described in SECTION 16050 – ELECTRICAL WORK and as shown on the drawings.

-- End of Section 01025 --

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SECTION 01090 - SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES. Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the sponsoring organization, e.g. UL 1 (1985; Rev thru Nov 1992) Flexible Metal Conduit. However, when the sponsoring organization has not assigned a number to a document, an identifying number has been assigned for convenience, e.g UL's unnumbered 1992 edition of their Building Materials Directory is identified as UL-01 (1992) Building Materials Directory. The sponsoring organization number (UL 1) can be distinguished from an assigned identifying number (UL-1) by the dash mark (-).

1.2 ORDERING INFORMATION. The addresses of the organizations whose publications are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the sponsoring organization should be ordered from the source by title rather than by number.

1.2.1 See Paragraph entitled, "Availability of Specifications Listed in The DOD Index of Specifications and Standards (DODISS)", of the Instructions to Bidders for the availability of non-commercial specifications.

ACI INTERNATIONAL (ACI)
P.O. Box 9094
Farmington Hills, MI 48333-9094
Ph: 810-848-3800
Fax: 810-848-3801
Internet: http://www.aci-int.inter.net

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
One E. Wacker Dr., Suite 3100
Chicago, IL 60601-2001
Ph: 312-670-2400
Fax: 312-670-5403
Internet: www.aiscweb.com

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
11 West 42nd St.
New York, NY 10036
Ph: 212-642-4900
Fax: 212-398-0023
Internet: www.ansi.org/

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: cservice@astm.org

AMERICAN WELDING SOCIETY (AWS)
550 N.W. LeJeune Road

Miami, FL 33126
Ph: 305-443-9353
Fax: 305-443-7559

CODE OF FEDERAL REGULATIONS (CFR)
Order from:
Government Printing Office
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Fax: 202-275-7703
Internet: http://www.pls.com:8001/his/cfr.html

CORPS OF ENGINEERS (COE)
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ATTN: Technical Report Distribution Section, Services Branch, TIC
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Vicksburg, MS 39180-6199
Ph: 601-634-2355
Fax: 601-634-2506

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
1300 N. 17th St., Suite 1847
Rosslyn, VA 22209
Ph: 703-841-3200
Fax: 202-457-8473
Internet: http//www.nema.org/

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
One Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
Ph: 800-344-3555
Fax: 800-593-6372
Internet: http://www.nfpa.org

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)
Mail Stop C-13
4676 Columbia Parkway
Cincinnati, OH 45226-1998
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Internet: http://www.cdc.gov/niosh/homepage.html
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Internet: www.sspc.org

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Ph: 800-569-7128
Fax: 303-397-7945
Internet: http://global.ihs.com
E-mail: global@ihs.com

PART 2 MATERIALS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

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SECTION 01130
ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 APPLICABLE PUBLICATIONS. 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.

1.1.1 Code of Federal Regulations (CFR).

40 CFR 261 Identification and listing of Hazardous Waste

1.1.2 Engineering Manuals (EM).

EM 385-1-1 U.S. Army Corps of Engineers Safety and Health Requirements Manual

1.2 DEFINITIONS. Environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents that adversely affect human health or welfare; unfavorably alter ecological balances of plant or animal communities; or degrade the environment from an aesthetic, cultural or historic perspective. Environmental protection is the prevention/control of pollution and habitat disruption that may occur during construction. The control of environmental pollution and damage requires consideration of air, water, land, biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive materials; and other pollutants.

1.3 SUBMITTALS. The Contractor shall submit to the Contracting Officer, in accordance with SECTION 01300 - SUBMITTAL PROCEDURES, the Environmental Protection Plan, detailing the Contractor’s procedures for complying with all applicable environmental protection regulations and the special requirements of this contract.

1.4 ENVIRONMENTAL PROTECTION REQUIREMENTS. The Contractor shall comply with all applicable Federal, State, and local laws and regulations. The Contractor shall provide environmental protective measures and procedures to prevent and control pollution, limit habitat disruption, and correct environmental damage that occurs during construction.

1.4.1 Protection of Features. This section supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. The Contractor shall prepare a list of features requiring protection under the provisions of the contract clause which are not specially identified on the drawings as environmental features requiring protection. The Contractor shall protect those environmental features, indicated specially on the drawings, in spite of interference which their preservation may cause to the Contractor's work under the contract.

1.4.2 Permits. This section supplements the Contractor's responsibility under the contract clause PERMITS AND RESPONSIBILITIES to the extent that the Government has already obtained environmental permits.

1.4.3 Environmental Assessment of Contract Deviations The Contract specifications have been prepared to comply with the special conditions and mitigation measures of an environmental nature which were established during the planning and development of this project. The Contractor is advised that

deviations from the drawings or specifications (e.g., proposed alternate borrow areas, disposal areas, staging areas, alternate access routes, etc.) could result in the requirement for the Government to reanalyze the project from an environmental standpoint. Deviations from the construction methods and procedures indicated by the plans and specifications which may have an environmental impact will require a extended review, processing, and approval time by the Government. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.5 ENVIRONMENTAL PROTECTION PLAN. Within 15 calendar days of Notice of Award, the Contractor shall submit an Environmental Protection Plan for review and acceptance by the Contracting Officer. The Government will consider an interim plan for the first 30 days of operations. However, the Contractor shall furnish an acceptable final plan not later than 30 calendar days after receipt of the Notice to Proceed. Acceptance is conditional and is predicated upon satisfactory performance during construction. The Government reserves the right to require the Contractor to make changes in the Environmental Protection Plan or operations if the Contracting Officer determines that environmental protection requirements are not being met. The plan shall detail the actions which the Contractor shall take to comply with all applicable Federal, State, and local laws and regulations concerning environmental protection and pollution control and abatement, as well as the additional specific requirements of this contract. No physical work at the site shall begin prior to acceptance of the Contractor's plan or an interim plan covering the work to be performed. The environmental protection plan shall include, but not be limited to, the following:

1.5.1 List of State and Local Laws and Regulations. The Contractor shall provide as part of the Environmental Protection Plan a list ofall State and local environmental laws and regulations which apply to the construction operations under the Contract.

1.5.2 Spill Control Plan. The Contractor shall include as part of the environmental protection plan, a Spill Control Plan. The plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by the Emergency Response and Community Right-to-Know Act or regulated under State or local laws or regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

a. The name of the individual who will be responsible for implementing and supervising the containment and cleanup.

b. Training requirements for Contractor's personnel and methods of accomplishing the training.

c. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

d. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

e. The methods and procedures to be used for expeditious contaminant cleanup.

f. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1800-424-8802) if a reportable quantity spill occurs. The plan shall contain a list of the required reporting channels and telephone numbers.

1.5.3 Recycling and Waste Minimization Plan. The Contractor shall submit a Recycling and Waste Minimization Plan as a part of the Environmental Protection Plan. The plan shall detail the Contractor's actions to comply with the following recycling and waste minimization requirements:

a. The Contractor shall participate in State and local government sponsored recycling programs to reduce the volume of solid waste materials at the source.

1.5.4 Contaminant Prevention Plan. As a part of the Environmental Protection Plan, the Contractor shall prepare a contaminant prevention statement identifying potentially hazardous substances to be used on the job site and intended actions to prevent accidental or intentional introduction of such materials into the air, water, or ground. The Contractor shall detail provisions to be taken to meet Federal, State, and local laws and regulations regarding the storage and handling of these materials.

1.5.5 Environmental Monitoring. The Contractor shall include in the plan the details of environmental monitoring requirements under the laws and regulations and a description of how this monitoring will be accomplished.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 SPECIAL ENVIRONMENTAL PROTECTION REQUIREMENTS.

3.1.1 Disposal of Debris and Solid Wastes. Solid waste is rubbish, debris, waste materials, garbage, and other discarded solid materials (excluding hazardous waste as defined in following paragraphs). Solid waste shall be placed in containers and disposed on a regular schedule. All handling and disposal shall be conducted in such a way as to prevent spillage and contamination. The Contractor shall transport all solid waste off Government property and dispose in compliance with Federal, State, and local requirements.

3.1.2 Disposal of Contractor Generated Hazardous Wastes. Hazardous wastes are hazardous substances as defined in 40 CFR 261, or as defined by applicable State and local regulations. Hazardous waste generated by construction activities shall be removed from the work area and be disposed in compliance with Federal, State, and local requirements. The Contractor shall segregate hazardous waste from other materials and wastes, and shall protect it from the weather by placing it in a safe covered location; precautionary measures against accidental spillage such as berming or other appropriate measures shall be taken. Hazardous waste shall be removed from Government property within 60 days. Hazardous waste shall not be dumped onto the ground, into storm sewers or open water courses, or into the sanitary sewer system.

3.1.3 Fuels and Lubricants. Fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum

protection against spills and evaporation. Lubricants and waste oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with Federal, State, and local laws and regulations.

3.2 PROTECTION OF WATER RESOURCES. The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters.

3.2.1 Wastewater. Wastewater directly derived from concrete removal activities shall not be discharged before being treated to remove pollutants.

3.3 PROTECTION OF AIR RESOURCES. Special management techniques as set out below shall be implemented to control air pollution by the construction activities. These techniques supplement the requirements of Federal, State, and local laws and regulations; and the safety requirements under this Contract. If any of the following techniques conflict with the requirements of Federal, State, or local laws or regulations, or safety requirements under this contract, then those requirements shall be followed in lieu of the following.

3.3.1 Particulates. Airborne particulates, including dust particles, from construction activities and processing and preparation of materials shall be controlled at all times, including weekends, holidays, and hours when work is not in progress. The Contractor shall maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, disposal sites, borrow areas, and all other work areas free from airborne dust which would cause a hazard or nuisance.

3.4 INSPECTION. If the Contracting Officer notifies the Contractor in writing of any observed noncompliance with contract requirements or Federal, State, or local laws, regulations, or permits, the Contractor shall inform the Contracting Officer of proposed corrective action and take such action to correct the noncompliance. If the Contractor fails to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action is taken. No time extensions will be granted or costs or damages allowed to the Contractor for any such suspension.

3.5 MAINTENANCE OF POLLUTION CONTROL FACILITIES. The Contractor shall maintain all constructed pollution control facilities and portable pollution control devices for the duration of the Contract or for the length of time construction activities create the particular pollutant.

3.6 TRAINING OF CONTRACTOR PERSONNEL. Contractor personnel shall be trained in environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel monthly. The training and meeting agenda shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, installation and care of facilities and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control. Anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants shall also be discussed.

xxx

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SECTION 01300 - SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL CLASSIFICATION. Submittals are classified as follows:

1.1.1 Government Approved (GA). Governmental approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.1.2 For Information Only (FIO). All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.2 APPROVED SUBMITTALS. The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the CQC requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.3 DISAPPROVED SUBMITTALS. The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be furnished promptly to the Contracting Officer.

1.4 WITHHOLDING OF PAYMENT. Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL. The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) representative and each item shall be stamped, signed, and dated by the CQC representative indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby.

Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

3.2 SUBMITTAL REGISTER (ENG FORM 4288). At the end of this section is one set of ENG Form 4288 listing items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Accident Prevention Program (00800-18), Statement of Required Insurance (00800-24), Environmental Protection Plan (01130-1.3.1), and Quality Control Plan (01440-3.5), shall be submitted as set forth in each applicable specification paragraph, and should not be included as part of the Submittal Register ENG Form 4288. Columns "c" through "p" have been completed by the Government; the Contractor shall complete columns "a" and "r" through "y" and submit the forms to the Contracting Officer for approval within 10 calendar days after Notice to Proceed. The approved submittal register will become the scheduling document and will be used to control submittals throughout the life of the contract. The submittal register and the progress schedules shall be coordinated. The time for submission, procurement, lag/lead and delivery shall be entered through the Resident Management System (RMS) QC module. After entry of that data, the ENG Form 4288 (RMS) shall be produced from the RMS QC module.

3.3 SCHEDULING. Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals. The Contractor's Quality Control representative shall review the listing at least every 60 days and take appropriate action to maintain an effective system. Copies of updated or corrected listing shall be submitted to the Contracting Officer at least every 30 days in the quantity specified.

3.4 TRANSMITTAL FORM (ENG FORM 4025). The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item. The ENG Form 4025 may be prepared by use of the Resident Management System (RMS) QC module.

3.5 SUBMITTAL PROCEDURE. Submittals shall be made as follows:

3.5.1 Procedures. The Contractor shall submit to the Contracting Officer for approval six copies of all shop drawings as called for under the various headings of these specifications.

3.5.2 Deviations. For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

3.6 CONTROL OF SUBMITTALS. The Contractor shall carefully control its procurement operations to ensure that each individual submittal is made on or

before the Contractor scheduled submittal date shown on the approved "Submittal Register."

3.7 GOVERNMENT APPROVED SUBMITTALS. Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Five copies of the submittal will be retained by the Contracting Officer and one copy of the submittal will be returned to the Contractor.

3.8 INFORMATION ONLY SUBMITTALS. Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

3.9 STAMPS. Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR (Firm Name)
_____ Approved
_____ Approved with corrections as noted on submittal data and/or attached sheets(s).
SIGNATURE: _____
TITLE: _____
DATE: _____

3.10 SUBMITTALS REQUIRED WITHIN 15 DAYS AFTER RECEIPT OF NOTICE OF AWARD.

Specification Section/Para No.	Description of Submittal
00800-18	ACCIDENT PREVENTION PROGRAM
a.	An executed LMV Form 358R, Administrative Plan
b.	An executed LMV Form 359R, Activity Hazard Analysis
c.	A copy of Company Policy statement of Accident Prevention
d.	An executed LMV Form 414R, Fuel Oil Transfer
00800-24	STATEMENT OF REQUIRED INSURANCE
01130-1.3.1	ENVIRONMENTAL PROTECTION PLAN
1310-3.1.4	ZERO BASE SCHEDULE Approvable Submission
01440-3.5	QUALITY CONTROL PLAN

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TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on the reverse side prior to initiating this form)*	DATE	TRANSMITTAL NO.

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE: ☐ THIS IS A NEW TRANSMITTAL ☐ THIS IS A RESUBMITTAL OF TRANSMITTAL _____
SPECIFICATION SEC. NO. *(Cover only one section with each transmittal)*	PROJECT TITLE AND LOCATION		CHECK ONE: THIS TRANSMITTAL IS FOR ☐ FIO ☐ GOV'T. APPROVAL

ITEM NO. *a.*	DESCRIPTION OF ITEM SUBMITTED *(Type size, model number/etc.)* *b.*	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. *(See Instruction no. 8)* *c.*	NO. OF COPIES *d.*	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE *g.*	VARIATION *(See Instruction No. 6)* *h.*	FOR CE USE CODE *i.*
				SPEC. PARA. NO. *e.*	DRAWING SHEET NO. *f.*			

REMARKS

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as other wise stated.

_____

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED *(List by Item No.)*	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.

2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.

3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288-R for each entry on this form.

4. Submittals requiring expeditious handling will be submitted on a separate form.

5. Separate transmittal form will be used for submittals under separate sections of the specifications.

6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".

7. Form is self-transmittal, letter of transmittal is not required.

8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.

9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A -- Approved as submitted.

B -- Approved, except as noted on drawings.

C -- Approved, except as noted on drawings. Refer to attached sheet resubmission required.

D -- Will be returned by separate correspondence.

E -- Disapproved (See attached).

F -- Receipt acknowledged.

FX -- Receipt acknowledged, does not comply as noted with contract requirements.

G -- Other *(Specify)*

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

(Reverse of ENG Form 4025-R)

(21-98)

SUBMITTAL REGISTER
(ER 415-1-10)

CONTRACT NO.

LOCK AND DAM 25, AUXILIARY LOCK CLOSURE AND DEBRIS OPENINGS
LINCOLN COUNTY, MISSOURI

CONTRACTOR

SPECIFICATION SECTION

					TYPE OF SUBMITTAL										CLASSI-FICATION			CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			OVERNMENT ACTIO		
ACTIVITY NO. a.	TRANS-MITTAL NO. b.	ITEM NO. c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	INFORMATION ONLY p.	GOVERNMENT APPROVED q.	REVIEWER r.	SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CODE v.	DATE w.	SUBMIT TO GOVERN-MENT x.	CODE y.	DATE z.	REMARKS aa.
			02051-1.4	WORK PLAN					X							X										
			02120-1.2	WORK PLAN					X							X										
			02125-1.2	WORK PLAN					X							X										
			02240-1.3	MATERIAL DATA SHEETS AND QC CERTIFICATES	X										X											
			02240-1.3	LAYOUT AND DETAIL DRAWINGS		X										X										
			02240-1.3	MANUFACTURER'S AND FABRICATOR'S QC MANUALS			X								X											
			02240-1.3	INSTALLER'S QC MANUAL FOR FIELD SEAMING			X								X											
			02240-1.3	QUALIFICATION STATEMENTS					X							X										
			02240-1.3	QC TEST RESULT						X						X										
			02240-1.3	FIELD SEAMING TEST RESULTS						X					X											
			02240-1.3	PVC MILL CERTIFICATES							X				X											
			02240-1.3	PVC GEOMEMBRANE SAMPLE								X			X											
			02240-1.3	WORK PLAN		X										X										
			02275-1.3	WORK PLAN					X							X										
			02275-1.3	BORROW SOURCE ASSESSMENT						X						X										
			02275-1.3	SAMPLING AND TESTING REPORT						X					X											
			02275-1.3	WAYBILLS AND DELIVERY TICKETS									X		X											
			02495-1.4	WORK PLAN					X							X										
			02495-1.4	EQUIPMENT LIST					X							X										
			02920-1.4	LEAD HAZZARD QUALIFICATIONS AND CERT.					X							X										

SUBMITTAL REGISTER
(ER 415-1-10)

CONTRACT NO.

TITLE AND LOCATION

CONTRACTOR

SPECIFICATION SECTION

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			03210-1.3	FABRICATION AND PLACEMENT DRAWINGS		X										X										
			03210-1.3	MATERIAL TEST REPORTS						X					X											
			03210-1.3	EPOXY BAR CERTIFICATES							X				X											
			03210-1.3	COATING AND PATCHING MATERIAL								X			X											
			03307-1.4	CERT. OF COMPLIANCE FOR ACCELERATING ADMIXTURE	X										X											
			03307-1.4	CERT. OF COMPLIANCE FOR WATER-REDUCING ADMIXTURE	X										X											
			03307-1.4	CERT. OF COMPLIANCE FOR CURING MATERIALS	X										X											
			03307-1.4	BATCHING AND MIXING EQUIP.	X										X											
			03307-1.4	CERT. OF COMP. - CONCRETE BONDING COMPOUND	X										X											
			03307-1.4	EPOXY ADHESIVE	X											X										
			03307-1.4	FORMWORK DESIGN					X						X											
			03307-1.4	CONCRETE MIX PROPORTIONS						X						X										
			03307-1.4	CONCRETE STRENGTH REPORT						X						X										
			03307-1.4	CERT. OF COMPLIANCE FOR CEMENTITIOUS MATERIAL							X				X											
			03307-1.4	CERT. OF COMPLIANCE FOR AGGREGATE							X				X											
			03307-1.4	CERT. OF COMPLIANCE FOR AIR-ENTRAINING ADMIXTURE	X										X											
			03425-1.4	SHOP DRAWINGS		X										X										
			03425-1.4	CONCRETE STRENGTH TESTS						X					X											
			03425-1.4	CERT. OF COMPLIANCE FOR CEMENTITIOUS MATERIAL							X				X											
			03425-1.4	CONCRETE MIX PROPORTIONS	X											X										

SUBMITTAL REGISTER
(ER 415-1-10)

CONTRACT NO.

TITLE AND LOCATION

CONTRACTOR

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			03425-1.4	CERT. OF COMPLIANCE FOR POZZOLAN							X				X											
			03425-1.4	CERT. OF COMPLIANCE FOR AIR-ENTRAINING ADMIXTURE							X				X											
			03425-1.4	CERT. OF COMPLIANCE FOR WATER-REDUCING ADMIXTURE							X				X											
			03425-1.4	CERT. OF COMPLIANCE FOR ACCELERATING ADMIXTURE							X				X											
			03425-1.4	CERT. OF COMPLIANCE FOR AGGREGATE							X				X											
			03425-1.4	AIR CONTENT TESTS							X				X											
			03425-1.4	PRECAST MEMBER RECORDS									X		X											
			05120-1.4	SHOP & ERECTION DWGS		X										X										
			05120-1.4	MILL TEST REPORTS							X				X											
			05120-1.4	WELDER QUALIFICATIONS									X		X											
			09940-1.3	QUALIFICATIONS AND EXPERIENCE					X							X										
			09940-1.3	ACCIDENT PREVENTION PLAN					X							X										
			09940-1.3	CONFINED SPACE PROCEDURE					X							X										
			09940-1.3	RESPIRATORY PROTECTION PLAN					X							X										
			09940-1.3	AIRBORNE SAMPLING PLAN					X							X										

SUBMITTAL REGISTER
(ER 415-1-10)

CONTRACT NO.

TITLE AND LOCATION

CONTRACTOR

SPECIFICATION SECTION

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			09940-1.3	VENTILATION ASSESSMENT					X							X										
			09940-1.3	MEDICAL SURVEILLANCE					X							X										
			09940-1.3	WASTE CLASS., HANDLING AND DISPOSAL PLAN					X							X										
			09940-1.3	WATER QUALITY PLAN					X							X										
			09940-1.3	PAINT FORMULAS								X				X										
			09940-1.3	SPEC. AND PROPRIETARY PAINT								X				X										
			09940-1.3	THINNERS								X				X										
			09940-1.3	INSPECTION AND OPERATIONS									X			X										
			13036-1.3	COFFERDAM DESIGN DWGS		X										X										
			13036-1.3	DEWATERING SYSTEM DWGS		X									X											
			16050-1.10.1	ELECTRICAL DATA	X											X										
			16050-1.10.2	ELECTRICAL REPORTS						X						X										

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DIVISION 1 - GENERAL REQUIREMENTS

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PART 3	EXECUTION	
3.1	IMPLEMENTATION	01310-1

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SECTION 01310

CONTRACTOR-PREPARED NETWORK ANALYSIS SYSTEM

PART 1 GENERAL

1.1 SCOPE. The progress chart to be prepared by the Contractor pursuant to the Contract Clause entitled "Schedule for Construction Contracts" shall consist of a network analysis system as described below. In preparing this system the scheduling of construction is the responsibility of the Contractor. The requirement for the system is included to assure adequate planning and execution of the work and to assist the Contracting Officer in appraising the reasonableness of the proposed schedule and evaluation progress of the work. The progress chart shall indicate completion in the performance period inserted in Item 11 on Page 1 of Standard Form 1442.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 IMPLEMENTATION.

3.1.1 An example of one of the numerous acceptable types of network analysis systems is shown in Appendix A of Corps of Engineers Regulation ER 1-1-11 entitled "Network Analysis System," single copies of which are available to bona fide bidders upon request. Other systems which are designed to serve the same purpose and employ the same basic principles as are illustrated in Appendix A will be accepted subject to the approval of the Contracting Officer.

3.1.2 The system shall consists of diagrams and accompanying mathematical analyses and shall be developed using computer software that support the Standard Data Exchange Format (SDEF). Vendors who currently support the SDEF are as follow:

Aldergraph Systems Aldergraph	-	Version 5.2
Welcome Software Tech. Open Plan	-	Version 5.1
Pinnell-Busch Engr PMS-80	-	Version 6.40
Adv. Proj. Approach PPMS-30,000	-	Version 4.02
Primavera Systems PRIMAVERA (For DOS)	-	Version 5.0

All zero base and revised scheduling data shall be supplied to the Government on appropriate disk as directed by the Contracting Officer. The diagram shall show elements of the project in detail and the entire project in summary.

a. Diagrams shall show the order and interdependence of activities and the sequence in which the work is to be accomplished as planned

by the Contractor. Government actions that affect progress and contract required dates for completion of all or parts of the work shall be shown. The following information shall be shown on the diagrams for each activity: activity number, description of the activity, type of calendar, and activity duration in calendar days. Each updated network diagram shall show the date of the latest revision. The activity number shall be a maximum of five (5) integers for each I and J node or ten integers with precedence activity numbers. The activity numbers shall be numbered sequentially. Completed and in-progress activities shall be highlighted on each updated diagram.

b. Detailed network activities shown on a detailed or subnetwork diagram shall include, in addition to construction activities, the submittal and approval of samples of materials and shop drawings, the procurement of critical materials and equipment, fabrication of special material and equipment and their installation and testing. All activities of the Government that affect progress, and contract required dates for completion of all or parts of the work, will be shown. The detail of information shall be such that duration times of activities will range from zero (0) to thirty (30) days with not over two percent (2%) of the activities exceeding these limits. The Contractor shall identify by separate activity in accordance with this special provision those items for which he will seek payment for as stored or fabricated material prior to actual construction installation. No payment will be processed for items not so identified. The completion date shall be constrained in accordance with SECTION 00700 - CONTRACT CLAUSES, paragraph entitled "Commencement, Prosecution, and Completion of Work". Detailed networks shall be time scaled, and shall be plotted to show a continuous flow from left to right with no arrows from right to left. The critical path shall be highlighted in some manner on this and all drawings.

c. Summary Network. If the project is of such size that the entire network cannot be readily shown on standard 30-inch x 42-inch sheet of plotter paper, a summary network diagram shall be provided. Related activities shall be grouped on the network. The summary network shall be time scaled using units of approximately one-half inch equals one week or other suitable scale approved by the Contracting Officer. Weekends and holidays shall be indicated. Where float or slack exists, the activities shall be shown at their early dates.

3.1.3 Logic Analysis. The logic analysis of the network analysis system shall be a series of tabulations of each activity that is shown on the detailed network diagram. The program or means in making the logic analysis shall be capable of computing the early and late start and finish dates of all activities including completed and partially completed activities. The program shall also be capable of accepting revised logic and completion dates as modified by approved adjustments and provide re-computations as necessary of all start and finish dates. The tabulation shall be in the form of individual sorts or groups as follows:

a. By activity number from the lowest to the highest

b. By the total float or slack, then in order of the earliest allowable start dates

c. In order of the earliest allowable start dates

d. The following information shall be furnished as a minimum with each logic sort for each activity:

(i) Activity number

(ii) Activity description

(iii) Estimated duration of activities (in calendar days)

(iv) Current duration of activity (in calendar days)
(v) Earliest start date (by calendar date)

(vi) Earliest finish date (by calendar date)

(vii) Scheduled or actual start date (by calendar date)

(viii) Scheduled or actual finish date (by calendar date)

(ix) Latest start date (by calendar date)

(x) Latest finish date (by calendar date)

(xi) Total float

(xii) Calendar description

(xiii) Subcontractor description.

3.1.4 Submission, Approval, and Revision Procedures.

a. Preliminary Submittal.

(i) A preliminary network defining the Contractor's planned operations during the first (sixty) 60 calendar days after Notice to Proceed will be submitted within (ten) 10 days after receipt of Notice to Proceed. The Contractor's general approach for the balance of the project shall be indicated by proposed network diagrams and analysis. All Feature Minimum Activities and contract completion shall be included in the preliminary schedule. Cost of activities expected to be completed or partially completed before submission and approval of the whole schedule should be included.

(ii) The proposed initial network analysis system hereafter called the "Zero Base Schedule" shall consist of a detailed network diagram, a summary diagram, and a logic analysis. The network diagrams shall be submitted in 4 copies (one reproducible) and three prints along with the required software and computer data. The logic and monetary analysis shall be submitted in 4 copies. The proposed complete network analysis shall be submitted within forty (40) calendar days after receipt of Notice to Proceed. If an approvable schedule is not obtained within sixty (60) calendar days after NTP, 10% retainage will be held on the pay estimate in progress at that time.

(iii) The Contractor shall participate in a review and evaluation of the proposed original network diagrams, logic and backup material by the Contracting Officer. Any revisions necessary as a result of this review shall be resubmitted for approval of the Contracting Officer within ten (10) calendar days after the conference. The selection and number of activities shall be subject to the Contracting Officer's approval.

(iv) After approval, the Zero Base Schedule shall then be used by the Contractor for planning, organizing and directing the work, for reporting progress, and requesting payment for work accomplished. The Contractor shall provide 7 complete copies of the final approved network

analysis system as described above. The copies shall be submitted within ten calendar days after approval.

b. Periodic Progress Update Reports.

(i) If the Contractor desires to make changes in its method of operating and scheduling, or requests a time extension after final approval of the network analysis system, the Contracting Officer shall be notified in writing, within 10 days of the events necessitating the change, and the details of the change. If the Contracting Officer considers these changes to be of a major nature, the Contractor may be required to revise and submit for approval without additional cost to the Government, all or the affected portion of the detailed diagrams and the summary diagram to show the effect on the entire project. No request for a time extension will be considered unless accompanied by a detailed diagram showing all effects of the time extension on the construction schedule and contract completion date.

(ii) The Contractor shall submit, in support of each payment request, a report of the actual construction progress by updating the network analysis system. The update shall consist of revising logic, activity durations, and anticipated completion dates as necessary to reflect current construction methods and progress. Any activity that relates to the effects of a change (Contract Clause entitled "Changes") or claim item (Contract Clause entitled "Disputes") shall be specially coded for identification purposes. This coding for identification purposes shall be unique for each change or claim item. The format of the updated logic shall consist of a listing of all changes to the Network Analysis System and a complete Logic Analysis as specified in 01310-3.1.3. The proposed update information shall be reviewed and approved by the Contracting Officer.

(iii) After review and approval of the proposed update information, the Contractor shall submit three copies and revised computer data, on an appropriate floppy disk, of the logic analysis of the agreed upon update, no more than five calendar days after approved by the Contracting Officer directed by the Contracting Officer. The Contractor shall also provide three copies and revised computer data of detailed network diagram and the summary network diagram resulting from updating.

(iv) Along with the submitted preliminary monthly network analysis system update the Contractor shall also submit a written narrative report which shall include, but not be limited to, the items started and completed that period by date, a description of the problem areas (current and anticipated), delaying factors and their impact, and an explanation of corrective actions taken or proposed.

(v) Changes by Contract Modification. When Notice to Proceed with changes in the work, must be issued prior to settlement of price and/or time to avoid delay and additional expense, the Contractor shall revise the network logic and/or duration times estimates of all activities effected by the modification. The revisions shall be submitted for concurrence of the Contracting Officer prior to inclusion in the network. The format for said revisions shall be in conformance with 01310-3.1.3. A list of the proposed changes will also be submitted. No request for time extensions shall be granted until the revised network logic has been submitted and approved. Inclusion in the network and use of revised logic and/or duration time estimates for updating, shall not be construed as extensions of time to the dates required in the Contract. The changes are for the purpose of keeping the schedule up-to-date to reflect the work to be accomplished and to include the best time estimates for work yet to be done. When approved by the

Contracting Officer, the revised logic and/or duration changes shall be the basis for an equitable adjustment of the contract time for performance of the work. The Contractor shall revise the time for completion of the contract used in the network analysis upon notification by the Contracting Officer of any time extensions. In the event the Contractor requests an extension of the contract completion date, such justification, NAS data and supporting evidence shall be furnished, as the Contracting Officer may deem necessary for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof of delay, based on revised activity logic, duration, and costs is obligatory to any approvals.

(1) Justification of Delay. The schedule must clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The Contracting Officer's determination as to the number of allowable days of contract extension, shall be based upon the NAS schedule updates in effect for the time period in question and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in the extension of the predicted contract completion dates, according to the schedule, shall not be a cause for a time extension to the contract completion date.

(2) Submission Requirements. The Contractor shall submit a justification for each request for a change in the contract completion date based upon the most recent schedule update at the time of Notice to Proceed or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum, a list of affected activities with their associated NAS activity number, a brief explanation of the causes of the change, an analysis of the overall impact of the changes proposed, and a subnetwork of the affected area.

3.1.5 Float or Slack. Float or slack is defined as the amount of time between the early start date, and the late start date, or the early finish date and the late finish date, of any of the activities in the NAS schedule. Float or slack available in the schedule at any time, shall not be considered for the exclusive use or benefit of either the Government or the Contractor. Extensions of time for performance required under the Contract Clauses entitled, "Changes", "Differing Site Conditions", Default (Fixed Price Construction) or "Suspension of Work" will be granted only to the extent that equitable time adjustments for the activities affected exceed the total float or slack along the channels involved at the time of Notice to Proceed was issued for the change.

3.1.6 Separate payment will not be made for providing a Network Analysis system as required above, and the cost thereof shall be included in the applicable contract price for items on which payment is provided.

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SECTION 01440 - CONTRACTOR QUALITY CONTROL

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.

1.1.1 American Society for Testing and Materials (ASTM).

ASTM D 3740 (1995)	Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E 329 (1995)	Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 PAYMENT. Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

PART 2 - PRODUCTS. (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL. The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause entitled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both on-site and off-site, and shall be keyed to the proposed construction sequence.

3.2 QUALITY CONTROL PLAN.

3.2.1 General. The Government will consider an interim plan for the first 60 days of operation to be submitted no later than 15 days after receipt of Notice of Award. Subsequent to submittal of an interim plan, the Contractor shall furnish for acceptance by the Government, not later than 35 days after receipt of Notice of Award, the original and one copy of the total Contractor Quality Control Plan proposed for use in implementing the requirements of the Contract Clause entitled "Inspection of Construction". If an interim plan is not submitted, the Contractor shall submit for approval within 15 days after receipt of Notice of Award, the total Quality Control Plan specified above. The plan shall identify personnel, procedures, control, instructions, test, records, and forms to be used. Construction will be permitted to begin only after acceptance of the CQC Plan.

3.2.2 Content of the CQC Plan. The CQC plan shall include, as a minimum, the following to cover all construction operations, both on-site and off-site, including work by subcontractors, fabricators, suppliers, and purchasing agents:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall

implement the three phase control system for all aspects of the work specified. The staff shall include a CQC system manager who shall report to the project manager or someone higher in the Contractor's organization. Project Manager in this context shall mean the individual with responsibility for the overall management of the project including quality and production.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm, which describes the responsibilities and delegates the authorities of the CQC System Manager.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, off-site fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with SECTION 01300 - SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities will be approved by the Contracting Officer.)

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks and has separate control requirements. It could be identified by different trades or disciplines, or it could be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list shall be agreed upon during the coordination meeting.

3.2.3 Acceptance of Plan. Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in the CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4 Notification of Changes. After acceptance of the QC plan, the Contractor shall notify the Contracting Officer in writing a minimum of seven calendar days prior to any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING. After the Preconstruction Conference, before start of construction, and prior to acceptance by the Government of the Quality Control Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control

system. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and off-site work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION. The Contractor shall identify an individual within its organization at the worksite who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. This CQC System Manager shall be on the site at all times during construction and shall be employed by the Contractor. This Contractor Quality Control System Manager shall be Corps' certified and shall be approved by the Contracting Officer. To become "certified" the manager must have completed the course entitled "Construction Quality Management for Contractors". This course is offered quarterly at the St. Louis Corps of Engineers District Office. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. Period of absence may not exceed one (1) week at any one time, and not more than ten (10) workdays during a calendar year. The requirements for the alternate will be the same as for the designated CQC Manager.

3.4.1 CQC Organizational Staffing. The Contractor shall provide a CQC staff which shall be at the worksite at all times during progress, with complete authority to take any action necessary to ensure compliance with the contract.

3.4.1.1 CQC Staff. Following are the minimum requirements for the CQC staff. These minimum requirements will not necessarily assure an adequate staff to meet the CQC requirements at all times during construction. The actual strength of the CQC staff may vary during any specific work period to cover the needs of the work period. When necessary for a proper CQC organization, the Contractor shall add additional staff at no cost to the Government. This listing of minimum staff in no way relieves the Contractor of meeting the basic requirements of quality construction in accordance with contract requirements. All CQC staff members shall be certified subject to acceptance by the Contracting Officer.

3.4.1.2 CQC System Manager. The CQC System Manager shall be assigned no other duties.

3.4.2 Organizational Changes. The Contractor shall obtain Contracting Officer's acceptance before replacing any member of the CQC staff. Requests shall include the names, qualifications, duties, and responsibilities of each proposed replacement.

3.5 SUBMITTALS. Submittals shall be made as specified in SECTION 01300 - SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals are in compliance with the contract requirements.

3.6 CONTROL. The controls shall include at least three phases of control to be conducted by the CQC System Manager for all definable features of work, as follows:

3.6.1 Preparatory Phase. This phase shall be performed prior to beginning work on each definable feature of work and shall include:

a. A review of each paragraph of applicable specifications.

b. A review of the contract drawings.

c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. A check to assure that provisions have been made to provide required control inspection and testing.

e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

g. A review of the appropriate activity hazard analysis to assure safety requirements are met.

h. Discussion of procedures for constructing the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that phase of work.

i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

j. The Government shall be notified at least 24 hours in advance of beginning any of the required action of the preparatory phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase. This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

a. A check of preliminary work to ensure that it is in compliance with contract requirements. Review minutes of the preparatory meeting.

b. Verification of full contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with sample panels is appropriate.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

f. The Government shall be notified at least (24) hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

g. The initial phase should be repeated for each new crew to work on-site, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase. Daily checks shall be performed to assure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final followup checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon or conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases. As determined by the Government, additional preparatory and initial phases may be conducted on the same definable features of work if the quality of on-going work is unacceptable, if there are changes in the applicable CQC staff, on-site production supervision or work crew, if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

3.7 TESTS.

3.7.1 Testing Procedure. The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. The Contractor shall perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an off-site or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories.

3.7.2.1 Capability Check. The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.2 Capability Recheck. If the selected laboratory fails the capability check, the Contractor will be assessed any charges incurred to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

3.7.3 On-Site Laboratory. The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4 Furnishing or Transportation of Samples for Testing Costs incidental to the transportation of samples or materials shall be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the Corps of Engineers Division Laboratory, f.o.b., at the following address:

For delivery by mail:

Waterways Experiment Station
P.O. Box 631
Vicksburg, MS 39181-0631

For other deliveries:

Waterways Experiment Station
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

Coordination for each specific test, exact delivery location, and dates shall be made through the Area Office.

3.7.5 Materials Testing and Inspection. Testing shall be the responsibility of the Contractor and shall be perfomed at no additional cost to the Government. All testing shall be performed by a Corps of Engineers validated commercial testing laboratory. Both the field and permanent laboratory shall be validated. (Contact Materials Testing Center, Waterways Experimental Station, Vicksburg, Mississippi, Telephone 601-634-3974 for laboratory verifications.) If the Contractor elects to establish testing facilities, work requiring testing will not be permitted until the Contractor's facilities have been validated by the Materials Testing Center.

3.8 COMPLETION INSPECTION. At the completion of all work or any increment thereof established by a completion time stated in the Contract Clause entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the CQC System Manager shall conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings and specifications. Such a list of deficiencies shall be included in the CQC documentation, as required by paragraph DOCUMENTATION below, and shall include the estimated date by which

the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected and so notify the Government. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time stated for completion of the entire work or any particular increment thereof if the project is divided into increments by separate completion dates.

3.9 DOCUMENTATION. The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on the form as produced through the Resident Management System (RMS) QC module that includes, as a minimum, the following information:

a. Contractor/subcontractor and their area of responsibility.

b. Operating plant/equipment with hours worked, idle, or down for repair.

c. Work performed each day, giving location, by craftsman and hours worked.

d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase should be identified (Preparatory, Initial, Follow-up). List deficiencies noted along with corrective action.

e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

f. Submittals reviewed, with contract reference, by whom, and action taken.

g. Off-site surveillance activities, including actions taken.

h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

i. Instructions given/received and conflicts in plans and/or specifications.

j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 24 hours after the date(s) covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every seven days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 NOTIFICATION OF NONCOMPLIANCE. The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the worksite, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.11 IMPLEMENTATION OF GOVERNMENT RESIDENT MANAGEMENT SYSTEM (RMS) FOR CONTRACTOR QUALITY CONTROL OF CONTRACT.

3.11.1 Government Furnished CQC Programming Module. The Contractor shall utilize a Government furnished CQC Programming Module (A computerized executable file which is DOS based and operates on a minimum of 80386bps @ 20 MHz, IBM compatible computer). The Module includes a Daily CQC Reporting System for which must also be used. This form may be in addition to other Contractor desired reporting forms. However, all other such reporting forms shall be consolidated into this one Government specified Daily CQC Report Form. The Contractor will also be required to complete Government-Furnished Module elements which include, but are not limited to, subcontractor codes, planned cumulative progress earnings, subcontractor information showing trade, name, address, point-of-contact, and insurance expiration dates, definable features of work, pay activity and activity information, required Quality Control tests tied to individual activities, planned User Schooling tied to specific specification paragraphs and contractor activities, Installed Property Listing, Transfer Property Listing and Submittal information relating to specification section, description, activity number, review period and expected procurement period. The sum of all activity values shall equal the contract amount, and all Bid Items, Options and Additives shall be separately identified, in accordance with the "Bidding Schedule". Bid Items may include multiple Activities, but Activities may only be assigned to one such Bid Item. This Module shall be completed to the satisfaction of the Contracting Officer prior to any contract payment (except for Bonds, Insurance and/or Mobilization, as approved by the Contracting Officer) and shall be updated as required.

3.11.2 Quality Assurance Comments. During the course of the contract, the Contractor will receive various Quality Assurance comments from the Government that will reflect corrections needed to Contractor activities or reflect outstanding or future items needing the attention of the Contractor. The Contractor shall acknowledge receipt of these comments by specific number reference on its Daily CQC Report, and shall also reflect on its Daily CQC Report when these items are specifically completed or corrected to permit Government verification.

3.11.3 Contractor's Scheduling System. The Contractor's schedule system shall include, as specific and separate activities, all Preparatory Phase Meetings (inspections), all O&M Manuals and all Test Plans of Electrical and Mechanical Equipment or Systems that require validation testing or instructions to Government representatives.

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SECTION 01500 - TEMPORARY CONSTRUCTION FACILITIES

PART 1 GENERAL.

1.1 GENERAL REQUIREMENTS. As soon as practicable, but not later than 15 days after the date established for commencement of work, the Contractor shall provide the temporary facilities specified herein. The temporary facilities shall be maintained by the Contractor during the life of the contract and upon completion and acceptance of the work shall be removed from the site of the work.

1.1.1 No Separate Payment. Payment for materials and equipment furnished under this section will not be paid for separately, and all costs in connection therewith shall be included in other items for which payment is provided.

PART 2 PRODUCTS

2.1 TEMPORARY FIELD OFFICE TRAILERS. A temporary field office trailer shall be provided at Lock and Dam 25, for use by the Government, complete with any necessary electrical power to operate the trailer, and all telephone service. The trailer shall be located near the site of the work at a location designated by the Contracting Officer.

2.1.1 Trailer Features. The temporary field office trailer, shall be a standard trailer approximately 12 feet wide by 36 feet long and have a minimum of 7 feet in headroom. It shall be equipped with approved electrical wiring, at least one double convenience outlet and the required switches and fuses to provide 110-120 volt power. The trailer shall be waterproof, be supplied with heat in season, have a minimum of two doors, electric lights, a battery operated smoke detector alarm, a sufficient number of adjustable windows for adequate light and ventilation. Sanitary facilities shall be furnished in accordance with Section 02.B of EM 385-1-1. The windows and doors shall be screened and the doors provided with dead bolt type locking devices or a padlock and heavy duty hasp bolted to the door. Door hinge pins shall be non-removable. The windows shall be arranged to open and to be securely fastened from the inside. Glass panels in windows shall be protected by bars or heavy mesh screens to prevent easy access to the trailer through these panels. In warm weather, air conditioning capable of maintaining the office at 50 percent relative humidity and a room temperature 20 degrees below the outside temperature when the outside temperature is 95 degrees Fahrenheit, shall be furnished.

2.1.2 Equipment To Be Provided. The trailer shall be provided with two desks with chairs, five additional chairs, a drafting table, two standard office tables, and one legal size file cabinet capable of being locked. A supply of approved drinking water shall be provided. The trailer shall be equipped with a refrigerator having minimum capacity of 12 cubic feet, and a microwave oven having a minimum capacity of 1.5 cubic feet and 750 watts minimum power. The trailer shall also be equipped with a copier, an answering machine, a FAX machine with separate dedicated telephone line, and two cordless telephones with a common telephone line. The Contractor shall also extend the T-1 telephone line to the temporary office trailer. The Contractor will be responsible for the cost of monthly telephone service, FAX line service and the average cost of long distance telephone calls up to $200.00 per month for each office trailer. The trailer shall also be equipped with a 'Pentium' computer at 100 mhz-plus; 16 MB memory; 2GB-plus hard drive; 28,800

bps modem. The computer shall be compatible with DOS 6.2 and Windows 95 and shall also be supplied with an HP Laser Jet 4 printer or better.

2.1.3 Security Provisions. Adequate outside security lighting shall be provided. The Contractor shall be responsible for the security of its own equipment. In addition, the Contractor shall notify the appropriate law enforcement agency and request them to make periodic security checks of the temporary field office trailer.

2.1.4 Janitorial Services. The Contractor shall furnish janitorial services at least twice weekly based on a five-day work week for the temporary field office trailers and perform any required maintenance of these facilities during the entire life of the contract. Toilet facilities shall be kept clean and sanitary at all times. Janitorial services shall include providing necessary toiletry supplies, and shall be performed at such a time and in such a manner to least interfere with field office operations but need be accomplished only when the trailers are in daily use.

2.2 TEMPORARY PROJECT AND SAFETY SIGNS. The Contractor shall furnish and erect one temporary project sign and one safety sign at each project site at the location designated by the Contracting Officer. The signs shall conform to the requirements of U.S. Army Corps of Engineers Sign Standard Manual EP-310.1-6a, Section 16 entitled, "Construction Project Signs", Pages 16.1 through 16.4, copies of which are enclosed at the end of this section. Information will be furnished by the Contracting Officer as to the location and wording of the signs.

2.3 TEMPORARY PROJECT SAFETY FENCING. The Contractor shall furnish and erect temporary project safety fencing at the work sites. The safety fencing shall be a high visibility orange colored, high density polyethylene grid or approved equal, a minimum of 42 inches high, supported and tightly secured to steel posts located on maximum 10 foot centers, constructed at the approved location.

PART 3 EXECUTION

3.1 CLEANUP. Construction debris, waste materials, packaging material and the like shall be removed from the work sites daily. Any dirt ormud which is tracked onto paved or surfaced roadways shall be cleaned away.

3.2 RESTORATION OF STORAGE AREA. Upon completion of the project, areas used by the Contractor for the storage of equipment or material, or other use, shall be restored to the original or better condition.

xxx

The use of signs to identify Corps managed or supervised design, construction, and rehabilitation projects—both for military and civil works is an important part of efforts to keep the public informed of Corps work. For this purpose, a construction project sign package has been adopted. This package consists of two signs; one for project identification and the other to show on-the-job safety performance of the contractor.

These two signs are to be displayed side by side and mounted for reading by passing viewers. Exact placement location will be designated by the contracting officer.

The panel sizes and graphic formats have been standardized for visual consistency throughout all Corps operations.

Panels are fabricated using HDO plywood with dimensional lumber uprights and bracing. The sign faces are non-reflective vinyl.

All legend sare to be die-cut or computer-cut in the sizes and typefaces specified and applied to the white panel backgorund following the graphic formats shown on pages 16.2-3. The Communications Red panel on the left side of the construction project sign with Corps signature (reverse version) is screen printed onto the white background.

A display of these two signs is shown on the following two pages. Mounting and fabrication details are provided on page 16.4.

Special applications or situations not covered in these guidelines should be referred to the District/Division sign coordinator.

Below are two samples of the construction project identification sign showing how this panel is adaptable for use to identify either military (top), or civil works projects (bottom). The graphic format for this 4′ x 6′ sign panel follows the legend guidelines and layout as specified below. The large 4′ x 4′ section of the panel on the right is to be white with black legend. The 2′ x 4′ section of the sign on the left with the full Corps signature (reverse version) is to be screen printed Communications Red on the white background.

This sign is to be placed with the Safety Performance Sign shown on the following page. Mounting and fabrication details are provided on page 16.4.

Special applications or situations not covered in these guidelines should referred to the District/Division sign coordinator.

Legend Group 1: One- to two-line description of Corps relationship to project.
Color: White
Typeface: 1.25″ Helvetica Regular
Maximum line length: 19″

Legend Group 2: Division or District Name (optional). Placed below 10.5″ Reverse Signature (6″ Castle).
Color: White
Typeface: 1.25″ Helvetica Regular

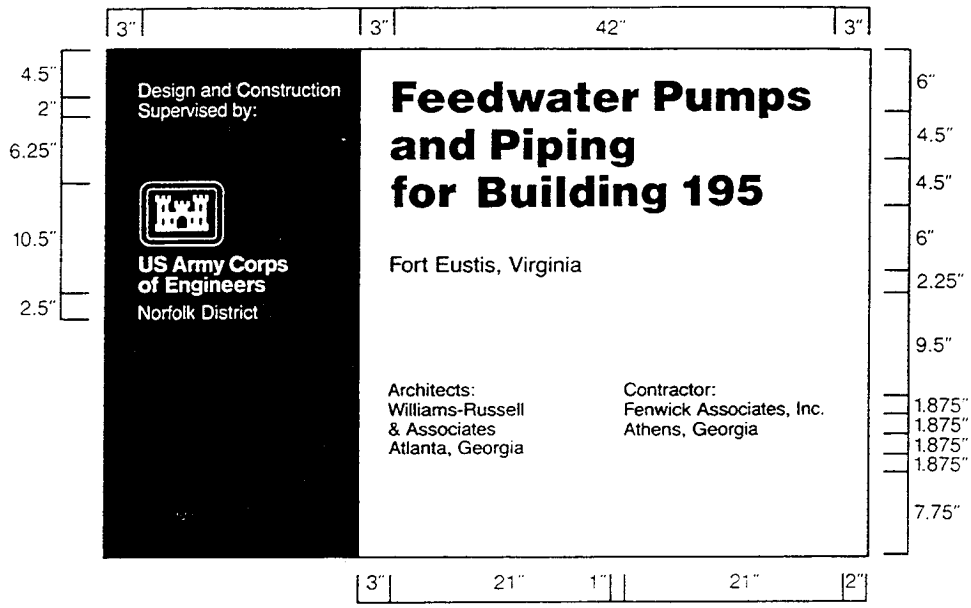
Legend Group 3: One- to three-line project title legend describes the work being done under this contract.
Color: Black
Typeface: 3″ Helvetica Bold
Maximum line length: 42″

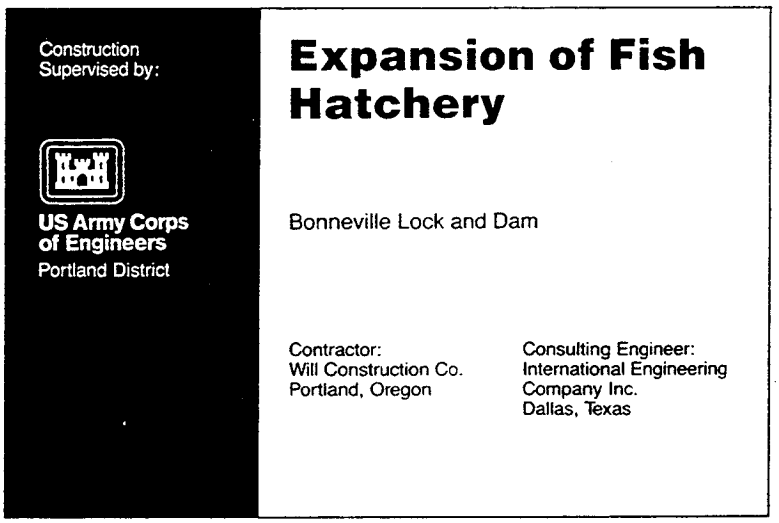
Legend Group 4: One- to two-line identification of project or facility (civil works) or name of sponsoring department (military).
Color: Black
Typeface: 1.5″ Helvetica Regular
Maximum line length: 42″

Cross-align the first line of Legend Group 4 with the first line of the Corps Signature (US Army Corps) as shown.

Legend Groups 5a-b: One- to five-line identification of prime contractors including: type (architect, general contractor, etc.), corporate or firm name, city, state. Use of Legend Group 5 is optional.
Color: Black
Typeface: 1.25″ Helvetica Regular
Maximum line length: 21″

All typography is flush left and rag right, upper and lower case with initial capitals only as shown. Letter- and word-spacing to follow Corps standards as specified in Appendix D.





Sign Type	Legend Size	Panel Size	Post Size	Specification Code	Mounting Height	Color Bkg/Lgd
CID-01	various	4″ x 6″	4″ x 4″	HDO-3	48″	WH-RD/BK

Each contractor's safety record is to be posted on Corps managed or supervised construction projectgs and mounted with the construction project identification sign specified on page 16.2.

The graphic format, color, size and typefaces used on the sign are to be reproduced exactly as specified below. The title with First Aid logo in the top section of the sign, and the performance record captions are standard for all signs of this type. Legend Groups 2 and 3 below identify the project and the contractor and are to be placed on the sign as shown.

Safety record numbers are mounted on individual metal plates and are screw-mounted to the background to allow for daily revisions to posted safety performance record.

Special applications or situations not covered in these guidelines should be referred to the District/Division sign coordinator.

Legend Group 1: Standard two-line title "Safety is a Job Requirement", with (8" od.) Safety Green First Aid logo. Color: To match PMS 347
Typeface: 3" Helvetica Bold
Color: Black

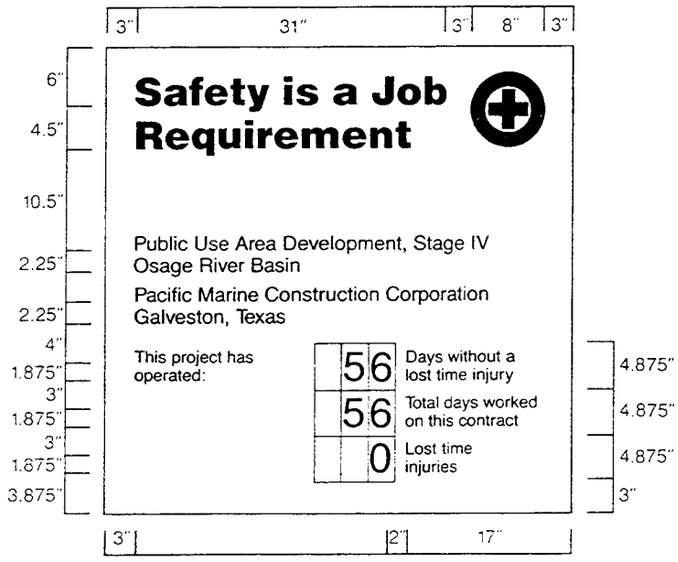
Legend Group 2: One- to two-line project title legend describes the work being done under this contract and name of host project.
Color: Black
Typeface: 1.5" Helvetica Regular
Maximum line length: 42"

Legend Group 3: One- to two-line identification: name of prime contractor and city, state address.
Color: Black
Typeface: 1.5" Helvetica Regular
Maximum line length: 42"

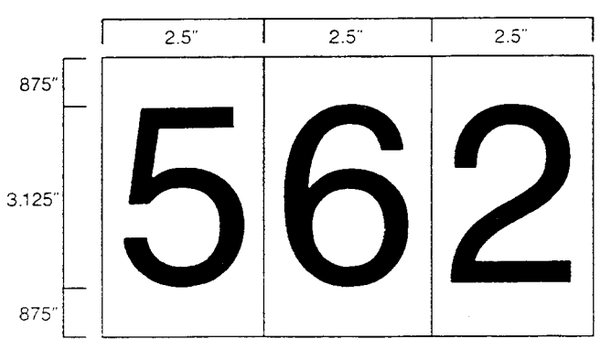
Legend Group 4: Standard safety record captions as shown.
Color: Black
Typeface: 1.25" Helvetica Regular

Replaceable numbers are to be mounted on white .060 aluminum plates and screw-mounted to background.
Color: Black
Typeface: 3" Helvetica Regular
Plate size: 2.5" x .5"

All typography is flush left and rag right, upper and lower case with initial capitals only as shown. Letter- and word-spacing to follow Corps standards as specified in Appendix D.



Sign Type	Legend Size	Panel Size	Post Size	Specification Code	Mounting Height	Color Bkg/Lgd
CID-02	various	4" x 4"	4" x 4"	HDO-3	48"	WH/BK-GR



All Construction Project Identification signs and Safety Performance signs are to be fabricated and installed as described below. The signs are to be erected at a location designated by the contracting officer and shall conform to the size, format, and typographic standards shown on pages 16.2-3. Detailed specifications for HDO plywood panel preparation are provided in Appendix B.

Shown below the mounting diagram is a panel layout grid with spaces provided for project information. Photocopy this page and use as a worksheet when preparing sign legend orders.

For additional information on the proper method to prepare sign panel graphics, contact the District sign coordinator.

The sign panels are to be fabricated from .75" High Density Overlay Plywood. Panel preparation to follow HDO specifications provided in Appendix B.

Sign graphics to be prepared on a white non-reflective vinyl film with positionable adhesive backing.

All graphics except for the Communications Red background with Corps signature on the project sign are to be die-cut or computer-cut non-reflective vinyl, pre-spaced legends prepared in the sizes and typefaces specified and applied to the background panel following the graphic formats shown on pages 16.2-3.

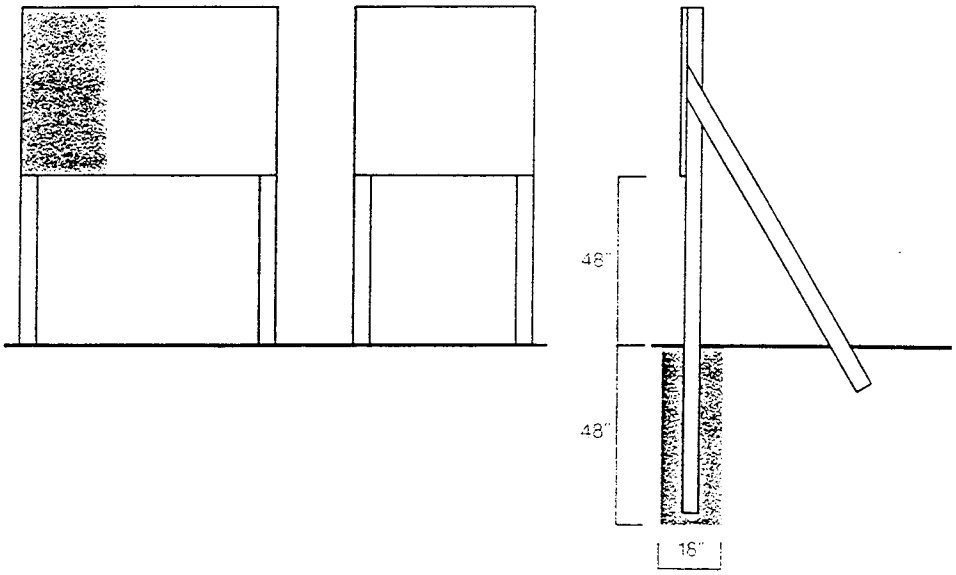
The 2' x 4' Communications Red panel (to match PMS-032) with full Corps signature (reverse version) is to be screen printed on the white background. Identification of the District or Division may be applied under the signature with white cut vinyl letters prepared to Corps standards. Large scale reproduction artwork for the signature is provided on page 4.8 (photographically enlarge from 6.875" to 10.5").

Drill and insert six (6) .375" T-nuts from the front face of the HDO sign panel. Position holes as shown. Flange of T-nut to be flush with sign face.

Apply graphic panel to prepared HDO plywood panel following manufacturers' instructions.

Sign uprights to be structural grade 4" x 4" treated Douglas Fir or Southern Yellow Pine, No.1 or better. Post to be 12' long. Drill six (6) .375" mounting holes in uprights to align with T-nuts in sign panel. Countersink (.5") back of hole to accept socket head cap screw (4" x .375").

Assemble sign panel and uprights. Imbed assembled sign panel and uprights in 4' hole. Local soil conditions and/or wind loading may require bolting additional 2" x 4" struts on inside face of uprights to reinforce installation as shown.



Construction Project Sign
Legend Group 1: Corps Relationship

1. _____
2. _____

Legend Group 2: Division/District Name

1. _____
2. _____

Legend Group 3: Project Title

1. _____
2. _____
3. _____

Legend Group 4: Facility Name

1. _____
2. _____

Legend Group 5a: Contractor/A&E

1. _____
2. _____
3. _____
4. _____
5. _____

Legend Group 5b: Contractor/A&E

1. _____
2. _____
3. _____
4. _____
5. _____

Safety Performance Sign
Legend Group 1: Project Title

1. _____
2. _____

Legend Group 2: Contractor/A&E

1. _____
2. _____

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SECTION 02051

STRUCTURAL DEMOLITION

PART 1 GENERAL

1.1 SCOPE

Work covered under this section includes:

For creation of debris openings in the guard wall: Removal of concrete and reinforcing steel, removal of curtain wall (sheet pile sections) beneath guard wall, removal of timber piles beneath guard wall, removal of handrail and check posts, removal of steel wall armor, removal of electrical power lines and conduits in guardwall.

To create a flush surface to allow vehicular traffic on top of the river wall: Removal of concrete, reinforcing steel, steel beams, grating and appurtenant items on the river wall around the unused auxiliary locktainter valve pit and stop log slots.

To create a flush top surface on the river wall and intermediate wall: Removal of concrete, reinforcing steel, steel beams, grating and appurtenant items around the unused auxiliary lock miter gate machinery pits and around the unused miter gate control station manholes.

For creation of recesses for lock chamber bulkheads in the auxiliary lock faces of the river wall and intermediate wall: Removal of concrete, reinforcing steel, wall armor and appurtenant items between top of walls and bottom of lock chamber.

1.2 GENERAL REQUIREMENTS

The work includes demolition, salvage of items and materials, and removal of resulting rubbish and debris. Rubbish and debris shall be removed from Government property daily, unless otherwise directed, to avoid accumulation at the project site. Materials that cannot be removed daily shall be stored in areas specified by the Contracting Officer. In the interest of occupational safety and health, the work shall be performed in accordance with EM 385-1-1, Section 23, Demolition, and other applicable Sections. In the interest of conservation, salvage shall be pursued to the maximum extent possible; salvaged items and materials shall be disposed of as specified.

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.

<u>ENGINEERING MANUALS (EM)</u>

EM 385-1-1 (1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

<u>CODE OF FEDERAL REGULATIONS (CFR)</u>

29 CFR 1926.62 Safety and Health Regulations for Construction - Lead

1.4 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted to the Contracting Officer in accordance with SECTION 01300 - SUBMITTAL PROCEDURES.

STATEMENTS:

Work Plan; GA.

The procedures proposed for the accomplishment of the work. The procedures shall provide for safe conduct of the work, including procedures and methods to provide supports, lateral bracing and shoring when required, careful removal and disposition of materials, protection of property which is to remain undisturbed, protection from current and debris flowing through debris openings in the guard wall, coordination with other work in progress, and anticipated disconnections of utility services. The procedures shall include a detailed description of the methods and equipment to be used for each operation, and the sequence of operations in accordance with EM385-1-1. This shall be coordinated with the required lead based paint removal and disposal plan required by Section 02920 – LEAD BASED PAINT EXPOSURE AND DISPOSAL.

1.5 DUST CONTROL

The amount of dust resulting from demolition shall be controlled to prevent the spread of dust to occupied portions of the construction site, and to avoid creation of a nuisance in the surrounding area. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as ice, flooding and pollution, or be detrimental to existing equipment to remain.

1.6 PROTECTION

1.6.1 Protection of Personnel

During the demolition work the Contractor shall continuously evaluate the condition of the portions of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of structural element to be removed will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area. The Contractor shall ensure that no elements of existing structure to remain and determined to be unstable during demolition work are left unsupported, and shall be responsible for placing and securing bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

1.6.2 Protection of Existing Property

Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The Contractor shall take necessary precautions to avoid damage to existing construction and equipment to remain in place. Any damaged items shall be repaired or replaced as directed by the Contracting Officer. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The

Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

1.6.3 Protection From the Weather

Portions of existing structures to remain shall be protected from the deleterious effects of weather while they are exposed.

1.6.4 Protection From Current

Contractor shall take precautions to avoid damage or injury from currents and debris flowing through the existing and new debris openings in the guard wall.

1.6.5 Environmental Protection

The work shall comply with the requirements of SECTION 01130.

1.7 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.8 USE OF EXPLOSIVES

Use of explosives will not be permitted.

1.9 AVAILABILITY OF WORK AREAS

Areas in which the work is to be accomplished will be available in accordance with SECTION 00800-8.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CONCRETE REMOVAL.

3.1.1 General

No work shall commence until the Contractor has received the Contracting Officer's approval in writing. Concrete and embedded metals shall be removed only as indicated on the contract drawings or as directed by the Contracting Officer. After the concrete has been removed, any remaining deteriorated concrete, in loose or shattered areas, that may have resulted from the action of the demolition tools, as determined by the Contracting Officer, shall be removed at no cost to the Government.

3.1.2 Power Tools

The Contractor shall use sawing equipment, as well as hand held air, or hydraulic-driven, chipping hammers for concrete removal. All horizontal or vertical edges shall be saw cut. Precautions shall be taken to prevent chipping hammers and chisels from vibrating on reinforcing steel. Removal of embedded metals shall be by saw cutting or flame cutting with ends of items to remain ground free of burrs, sharp edges and surface projections. All demolition equipment shall be subject to the approval of the Contracting Officer. No blasting or expansive agents shall be permitted.

3.1.3 Electrical Trenches

The Contractor shall trench the lock walls in the areas as shown on the drawings. The trenches shall be sized to fit two 3-inch electrical conduits. The Contractor shall place the conduits in the trench and cover with 2-inches of new concrete as a minimum.

3.2 TIMBER PILE REMOVAL

Timber piles to be removed beneath guard wall shall be cut off at river bottom; they shall not be pulled.

3.3 DEMOLITION OF ELECTRICAL POWER WIRE AND CONDUIT IN GUARDWALL

Electrical wiring for the navigation lights at the upstream end of the guardwall is located in conduits in the concrete to be removed at the debris openings. The contractor shall provide temporary, constant power to the navigation lights at the upstream end of the guardwall during construction.

3.4 UTILITIES

Subject to approval of the Contracting Officer, temporarydisconnection of utility services not associated with lock and dam operations, may be permitted as necessary to safely perform the work. Disconnection of utilities necessary for lock operations will only be permitted with written approval of the Contracting Officer. When utility lines are encountered that are not indicated on the drawings, the Contracting Officer shall be notified prior to further work in that area.

3.5 DISPOSITION OF MATERIAL

Title to material and equipment to be demolished, except as listed below, is vested in the Contractor upon receipt of NoticeTo Proceed. The Government will not be responsible for the condition, loss or damage to such property after notice to proceed.

3.5.1 Salvageable Items and Material

Contractor shall salvage items and material to the maximum extent possible.

3.5.1.1 Material Salvaged for the Contractor

Material salvaged for the Contractor shall be stored as approved by the Contracting Officer and shall be removed from Government property before completion of the contract. Material salvaged for the Contractor shall not be sold on site.

3.5.1.2 Material Salvaged for the Government

Certain sections of handrail to be demolished by the Contractor shall be retained by the Government. The Contractor shall not demolish any handrail until the Contracting Officer has identified handrail sections to be retained. The handrail segments to be retained shall be removed bymethods which will not render the handrail unsuitable for future use.

3.5.2 Unsalvageable Material

Concrete, and other noncombustible material, shall be disposed of off site in accordance with all Federal, State and local regulations.

3.5.3 Culvert Valve Disposal

The Contractor shall dispose of the four culvert valves located on the lower end of the Intermediate wall of Lock and Dam 25. Disposal shall be offsite and in accordance to all applicable Federal, State and local regulations.

3.6 CLEAN UP

Debris shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

-- End of Section --

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SECTION 02120
REMOVAL OF ROCK DAM

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

Work covered by this section consists of furnishing all plant, labor, equipment and materials, and performing all operations in connection with demolition of the existing stabilized rock dam. Graded Stone C from the rock dam shall be disposed of at locations on Cuivre Island as shown on the drawings, and the remaining materials and debris shall be removed and disposed of off-site at a location to be furnished by the Contractor. Demolition shall consist of removal of all temporary stabilizing measures including the outer protection (bedding) layers, the PVC geomembrane and the geomembrane anchoring systems; the clay layer; the concrete walkway along the crest of the dam; all existing rock dam materials; the existing sheet pile cutoff wall; the cover plates for the auxiliary side filling ports for the main lock; and the temporary debris screen in the debris opening of the upper guard wall.

The work includes patching all holes in the sidewalls of the auxiliary lock gate bay resulting from the removal of the rock dam.

The work shall also include inspection of the auxiliary side filling port intake screens to verify their structural integrity to be operational. The Contractor shall report the condition of the screens in writing to the Contracting Officer.

All work shall be performed in the wet, except for those sections of the rock dam located above upper pool level.

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01300 - SUBMITTAL PROCEDURES:

STATEMENTS:

Work Plan; GA.

The work plan shall be submitted for approval at least 30 days prior to start of work. The work plan shall include a detailed description of the methods and equipment to be used and the sequence of operations to accomplish the removal of the existing rock dam as identified in these specifications. The procedures shall provide for safe conduct of the work, protection of property which is to remain undisturbed, and coordination with other work in progress for this project.

The work plan shall indicate any diver assistance required in removing the rock dam and affiliated structures, and identify the proposed methods and the off-site location for disposal of materials accumulated during the rock dam demolition.

1.3 PROTECTION

1.3.1 Protection of Personnel

During the demolition, the Contractor shall continuously evaluate on-going operations and take immediate action as necessary to protect all personnel working in and around the demolition site, both on land and within the auxiliary lock gate bay.

1.3.2 Protection of Existing Property

Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The Contractor shall take necessary precautions to avoid damage to existing items to remain in place or to remain the property of the Government including the auxiliary lock gate bay walls, newly installed miter gate, the auxiliary side filling ports, and all other permanent structures at the lock and dam site. Any damaged items shall be repaired or replaced as approved by the Contracting Officer.

1.3.3 Environmental Protection

The work shall comply with the requirements of SECTION 01130 - ENVIRONMENTAL PROTECTION, and all applicable Federal, State, and Local regulations/permits associated with the removal and disposal of the temporary rock dam materials.

Graded Stone C recovered during the removal of the temporary rock dam shall be stockpiled on Cuivre Island at locations shown on the contract drawings.

1.4 USE OF EXPLOSIVES

Use of explosives will not be permitted.

1.5 SEQUENCE OF WORK

Removal of the existing stabilized rock dam shall commence after removal of the existing auxiliary miter gate and subsequent installation of the new auxiliary miter gate. The Contractor shall coordinate the work of this section with all other work.

1.6 PERMIT / REGULATORY REQUIREMENTS

Any permitting required for disposal of the rock dam materials exclusive of Graded Stone C at an off-site location is the Contractor's responsibility.

1.7 CHARGES

The Contractor will pay charges imposed by the disposal site owner for disposal of material in the Contractor-furnished disposal area.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 REMOVAL OF ROCK DAM

The existing stabilized rock dam shall be removed to the elevations shown on the drawings or to the top of the underlying sills and/or concrete slabs, whichever occurs first. Removal of the stabilized rock dam shall also consist of removal of the concrete walkway along the crest of the rock dam; cutting off the existing sheetpile cutoff wall and anchorages; and removing the sheetpiles, all as shown on the drawings.

The Contractor shall remove the rock dam materials using the clamshell bucket dredging method, or other method as approved by the Contracting Officer's Representative.

Sheetpile cutoff wall removal shall include burning and/or cutting the connections and removal of the anchors along the sidewalls of the auxiliary lock gate bay, and removing the sheetpiles by cutting them to a depth 6inches below concrete sill elevation as indicated on the drawings.

After rock dam removal operations are complete, the Contractor shall airlift any remaining silt and debris from the concrete slab at the bulkhead sill location as shown on the drawings a maximum of one day prior to lock chamber bulkhead acceptance test.

3.2 FILLING

Holes in the floor or walls of the auxiliary lock gate bay resulting from removal of the PVC geomembrane anchors, sheetpile connections, and the side filling port plate covers shall be filled in accordance with procedures for epoxy grouting in SECTION 03307 - CAST-IN-PLACE CONCRETE.

3.3 DISPOSITION OF MATERIAL

Graded Stone C recovered during the removal of the temporary rock dam shall be stockpiled on Cuivre Island at locations shown on the contract drawings.

The Contractor shall furnish the off-site disposal area for all other materials recovered from the rock dam removal operations. Alldisposition of materials shall be performed in accordance with applicable Federal, State and Local regulations.

The Contractor shall place the materials recovered from the rock dam on a barge and transport the material off-site for disposal. Rubbish and debris shall be removed from Government property daily, unless otherwise directed, to avoid accumulation at the project site. Materials that cannot be removed daily shall be stored in areas specified by the Contracting Officer.

Title to material to be demolished is vested in the Contractor upon receipt of notice to proceed. The Government will not be responsible for the condition, loss or damage to such property after notice to proceed.

3.3.1 Salvageable Items and Material

Contractor shall salvage items and material to the maximum extent possible.

3.3.1.1 Material Salvaged for the Contractor

Material salvaged for the Contractor shall be stored as approved by the Contracting Officer and shall be removed from Government property before completion of the contract. Material salvaged for the Contractor shall not be sold on the site.

3.3.1.2 Items Salvaged for the Government

The following items reserved as property of the Government will be removed prior to the commencement of work under this contract:

Hand rails along sidewalk across crest of existing rock dam.

3.3.1.3 Unsalvageable Material

Temporary stabilization materials from the rock dam exclusive of Graded Stone C, sheetpiles, and other noncombustible material excavated during the rock dam removal operations shall be legally disposed of off-site.

3.4 CLEAN UP

Debris shall be removed from the barge and transported to off-site disposal areas in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

-- End of Section --

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SECTION 02125
REMOVAL OF SILT BUILD-UP

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

Work covered by this section consists of furnishing all plant, labor, equipment, and materials, and performing all operations in connection with the excavation, transportation, and disposal of silt deposits built up along the upstream slope of the rock dam, between the downstream slope of the rock dam and the existing miter gate structure, and downstream of the miter gate, all as shown on the drawings. For the work downstream of the miter gate, the Contractor shall remove silt as necessary to obtain access to the site for their work barges and to perform the specified contract work.

Silt removal operations shall be performed in two stages as indicated on the drawings.

All silt removal operations will be performed in wet conditions at upper and lower pool levels at the time of excavation.

The excavated silt, sand, rock, mud, and any timber, tires, miscellaneous debris, graded stone C and filter cloth, as shown on Reference Drawing M-L25-200/154, recovered during silt removal operations shall be disposed of at an off-site location furnished by the Contractor.

Maintaining the upper pool level is paramount during all phases of the auxiliary lock gate bay closure. Therefore, silt removal operations along the upstream slope of the rock dam shall be performed under the observation of the Contracting Officer. If increased seepage accompanied by rockfill movement along the upstream or downstream slopes of the rock dam is noted during the upstream silt removal phase, such work shall be stopped and the condition brought to the attention of the Contracting Officer for direction concerning continuation of silt removal operations or whether placement of the specified temporary stabilization measures shall commence without completion of the upstream silt removal operations.

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01300 - SUBMITTAL PROCEDURES:

STATEMENTS:

Work Plan; GA

The work plan shall be submitted for approval at least 30 days prior to start of work. The work plan shall include a detailed description of the dredge methods and equipment proposed to be used to remove the silt from the areas shown on the drawings; a logistical plan which indicates the number of barges planned to be used during silt removal operations, proposed barge tie-up locations, barge transport routes and anticipated frequency of use of the main lock during silt removal operations; proposed barge unloading locations for disposal of the silt off-site; and proposed quality control measures to

confirm that the silt has been removed within the limits and to the depths indicated on the drawings.

The work plan shall also include a description/identification of the off-site disposal area to be furnished by the Contractor.

The procedures for excavation and disposal of the silt materials shall provide for safe conduct of the work. If the proposed method of removal is by dredging, the Contractor shall obtain a 404 permit and provide a copy to the Contracting Officer.

1.3 CHARACTER OF MATERIALS TO BE REMOVED

The material to be removed to restore the depth within the limits specified on the drawings is that composing the shoaling that has occurred since the rock dam was constructed and the auxiliary lock gate bay was last dredged. Materials to be removed and disposed of are identified by the Contracting Officer to be silt, sand, rock, timber, tires, miscellaneous debris, mud and graded stone C and filter cloth as shown on Reference Drawing M-L25-200/154. Samples of silt collected at Lock 25 between the rock dam and the miter gate, and downstream of the miter gate, were found not to contain lead.

1.4 PROJECT/SITE CONDITIONS

The areas, extent, and approximate thickness of silt build-up to be removed from the auxiliary lock gate bay are shown on the drawings. Such areas include upstream of the existing rock dam, between the downstream slope of the rock dam and the existing miter gate structure, and downstream of the miter gate.

The top of silt layer shown on the drawings is based on the results of sounding surveys of the bottom of the auxiliary lock gate bay performed by the Contracting Officer. The drawings already prepared are believed to represent accurately conditions existing at the time of the soundings, but the depths shown thereon may be verified and corrected by soundings taken before dredging. Actual thickness and distribution of the silt deposits may vary from that shown on the drawings at the time of construction. The Contractor shall obtain from the Contracting Officer the most recent sounding survey data locating the top of silt prior to commencement of the work.

Depending on off-site disposal location to be furnished by the Contractor, silt removal operations along the upstream slope of the rock dam may require the silt to be barged through the main lock and transported downstream for disposal. All such activity shall require prior coordinating with the Contracting Officer. The Contractor shall secure a transfer location for dredged material, if required.

1.5 PERMIT / REGULATORY REQUIREMENTS

The Contractor shall comply with conditions and requirements of the Corps of Engineers Permit and other State or Federal permits for silt removal operations. The Contracting Officer will secure the permits for silt removal.

Any permitting required for disposal of silt, debris, and miscellaneous materials off-site is the Contractor's responsibility.

1.6 CHARGES

The Contractor will pay charges imposed by the disposal site owner for disposal of material in the Contractor-furnished disposal area.

1.7 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain during the life of the contract, environmental protective measures. Also, provide environmental protective measures required to correct conditions, such as oil spills or debris, that occur during the dredging operations. Comply with Federal, State, and Local regulations pertaining to water, air, and noise pollution.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 INSPECTION

The Contractor shall establish and maintain quality control for all operations to assure compliance with the contract requirements and maintain records of his quality control for such items as excavation (lines and grades).

Inspect the work, keep records of work performed, and ensure that gages, targets, ranges, and other markers to be used for quality control measures are in place and usable for the intended purpose. Furnish, at the request of the Contracting Officer, boats, boatmen, laborers, and materials necessary for inspecting, and surveying the work.

3.2 SILT REMOVAL

3.2.1 Order of Work

Silt removal shall proceed in accordance with the order of work indicated on the drawings and in the Order and Coordination of Work, SECTION 00800-29, and only in coordination with the Contracting Officer.

3.2.2 Interference with Navigation

Minimize interference with the use of channels and the main lock. The Contracting Officer will direct the shifting or moving of barges to accommodate the movement of vessels, if necessary.

3.2.3 Ranges, Gages, and Lines

Furnish, set, and maintain ranges, buoys, and markers needed to define the work and to facilitate inspection. Establish and maintain gages in locations observable from each part of the work so that the depth may be determined. Suspend dredging when the gages or ranges cannot be seen or followed.

3.2.4 Excavation

Excavation shall consist of the removal and transporting of silt, sand, rock, timber, tires, miscellaneous debris, mud and graded stone C and filter cloth as shown on Reference Drawing M-L25-200/154 to an off-site disposal

area. Excavation shall be performed to the lines, grades, and sections indicated on the drawings or as otherwise required. Along the temporary rock dam, the Contractor shall remove silt material to the top of therockfill on the upstream and downstream slopes of the dam, respectively, or to the elevations shown on the drawings, whichever occurs first.

All of the excavation will be performed in the wet. Excavation shall be performed by clamshell bucket or dragline.

After excavation operations by clamshell bucket are completed, any remaining silt shall be removed from the top of concrete by airlifting methods at locations indicated on the drawings. Such airlifting methods shall be performed a maximum of one day in advance of the new miter gate installation.

3.3 DISPOSAL OF EXCAVATED MATERIAL

3.3.1 Method of Disposal

The material excavated during silt removal operations shall be transported by barge away from the project site and be disposed of at an off-site location furnished by the Contractor.

3.3.2 Disposal in Indicated Fill Areas

The excavated silt material shall be transported to and deposited at a location to be furnished by the Contractor.

Any material that is deposited elsewhere than in places designated or approved by the Contracting Officer will not be paid for and the Contractor may be required to remove such misplaced material and deposit it where directed at his expense.

3.4 PROTECTION

Before commencing silt removal work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The Contractor shall take necessary precautions to avoid damage to existing items to remain in place including the walls of the auxiliary lock gate bay and other permanent structures at the lock and dam site. Any damaged items resulting from the dredging/silt removal operations shall be repaired or replaced as approved by the Contracting Officer.

3.5 FIELD QUALITY CONTROL

The Contractor shall take soundings after dredging/silt removal to ensure that the silt has been removed to the depths indicated on the drawings.

-- End of Section --

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SECTION 02240
PVC GEOMEMBRANE

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

Work covered by this section consists of furnishing all plant, labor, equipment and materials, and performing all operations required to furnish, haul, and place a textured PVC geomembrane over the flattened upstream slope of the temporary rock dam, as specified and as shown on the drawings, and maintain the geomembrane until placement of the overlying protective (bedding) layers is completed and accepted.

The execution of this work is considered part of the work for SECTION 02275 - TEMPORARY STABILIZATION OF ROCK DAM.

1.2 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 751(1995) (Method A)	Test Method for Coated Fabrics
ASTM D 792(1991) (Method A)	Test Methods for Density and Specific Gravity Relative Density) of Plastics by Displacement
ASTM D 882(1995a)	Test Methods for Tensile Properties of Thin Plastic Sheeting
ASTM D 1004(1994a)	Test Methods for Initial Tear Resistance of Plastic Film(Die C) and Sheeting
ASTM D 1204(1994)	Test Methods for Linear Dimensional Changes of Non-rigid Thermoplastic Sheeting or Film at Elevated Temperatures.
ASTM D 1593(1992)	Specification for Non-rigid Vinyl Chloride Plastic Sheeting
ASTM D 1790(1994)	Test Method for Brittleness Temperature of Plastic Sheeting by Impact.
ASTM D 3083(1989)	Specification for Flexible Poly (Vinyl Chloride) Plastic Sheeting for Pond, Canal, and Reservoir Lining
ASTM D 4437(1988)	Standard Practice for Determining the Integrity of Field Seams Used in the Joining of Flexible Polymeric Membrane
ASTM D 5199 (1991)	Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes

PVC GEOMEMBRANE INSTITUTE

PGI 1197	Specification for PVC Geomembrane

GEOSYNTHETIC RESEARCH INSTITUTE (GRI)

GRI Test Meth GM-7(1991)	Accelerated Curing of Geomembrane Test Strip Seams Made by Chemical Fusion Methods

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01300 - SUBMITTAL PROCEDURES:

DATA

Materials; FIO.

Submit manufacturer's certified raw and sheet material data sheets along with a copy of quality control certificates. The certified data sheets shall be attested to by a legally authorized official from the manufacturer. Certified test results shall be submitted to the Contracting Officer a minimum of 30 days prior to delivery of geomembrane to the site.

DRAWINGS

Layout and Detail Drawings; GA.

Geomembrane panel layout and penetration detail drawings shall be submitted for approval a minimum of 30 days prior to delivery of geomembrane to the site. The proposed panel placement shall indicate seam direction and panel sizes drawn to scale. Each panel shall be given an identification number or letter and labeled with the size of the panel.

Work Plan; GA.

A work plan for subaqueous placement of the geomembrane shall be submitted to the Contracting Officer for review 30 days prior to the start of placement. The plan shall show complete placing procedures, equipment and sequencing and shall include, as a minimum, the following items:

(1) Weights or other anti-flotation devices or procedures.

(2) Securing of initial placement (tie-offs, tie downs, etc.)

(3) Horizontal control of placing equipment to assure required overlap of complete coverage of the slope by the geomembrane.

(4) Any diver assistance required in placement and inspection of the geomembrane liner.

INSTRUCTIONS

Tests, Inspections, and Verifications; FIO.

Manufacturer's and fabricator's quality control manuals, which describe

testing procedures, frequency of testing and acceptance/rejection criteria for quality control testing.

Field Seaming; FIO.

Installer's method and plan of field seaming and quality control manual.

STATEMENTS

Qualifications; GA.

Manufacturer's, fabricator's, installer's, and independent laboratory's qualification statements including project experience and resumes of key personnel proposed to be involved in the installation of the PVC geomembrane for this project shall be submitted for approval at least 30 days prior to placement of the geomembrane. Evidence of experience shall include a list of completed facilities totaling at least the number of square feet per category shown below in Paragraph 1.4. The list shall include the name and the purpose of the facility, location, geomembrane thickness, total square footage of the installation, date of installation, owner or project manager and engineer or designer. Installers shall submit proof of experience in underwater placement of PVC geomembrane. Include the contact name and telephone number of the appropriate person who can discuss this project.

REPORTS

Tests, Inspections, and Verifications; GA.

Manufacturer's and fabricator's certified quality control test results.

Field Seaming; FIO.

Installer's certified quality control test results.

CERTIFICATES

Geomembrane; FIO.

The Contractor shall furnish the Contracting Officer, in duplicate, a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the geomembrane. The mill certificate or affidavit shall attest that the geomembrane meets the chemical, physical and manufacturing requirements stated in this specification.

SAMPLES

Geomembrane Sample; FIO.

One 12 by 12 inch minimum size geomembrane sample along with appropriate identification for quality assurance testing and permanent record of actual furnished material.

1.4 QUALIFICATIONS

1.4.1 Manufacturer

Manufacturer is responsible for compounding the PVC (polyvinyl chloride) polymer and production of the PVC sheets. Manufacturer shall have produced

the proposed geomembrane sheets for at least five completed projects having a total minimum area of 20 million square feet that meets the requirements established in PGI 1197.

1.4.2 Fabricator

The fabricator is responsible for seaming geomembrane sheets into panels. Fabricator shall have fabricated the proposed PVC geomembrane panels for at least five completed projects having a total minimum area of 2 million square feet for containment purposes that meets PGI 1197 properties.

1.4.3 Installer

The installer is responsible for field handling, deploying, field seaming, anchoring, and field quality control testing of the PVC geomembrane. The installer shall have installed the proposed PVC geomembrane material for at least five completed projects having a total minimum area of 2 million square feet, plus have experience in placement of PVC geomembrane in moving-water, subaqueous conditions in at least two completed projects. At least one seamer shall have experience seaming a minimum of 500,000 square feet of the proposed geomembrane using the same type of seaming equipment and geomembrane thickness specified for this project.

The Contractor shall engage the services of a technical representative of the manufacturer, fabricator, or a company experienced insubaqueous placement of geomembranes. The representative shall design, or assist in designing, the procedures for the subaqueous geomembrane placement and shall supervise the initial placement of the geomembrane.

1.5 DELIVERY, STORAGE AND HANDLING

Only approved PVC geomembrane panels shall be delivered to the project site. Geomembrane shall not be off-loaded unless the Contracting Officer's Representative is present and storage site approved. The geomembrane shall be stored so that it is protected from puncture, abrasion, excessive heat or cold, material degradation, adhesion of individual layers or other damaging circumstances. Damaged geomembrane shall be removed from the site.

1.6 EQUIPMENT

Equipment used in performance of the work shall be in accordance with the geomembrane manufacturer's recommendations and shall be maintained in satisfactory working condition.

1.7 PROJECT CONDITIONS

1.7.1 Install in Wet Condition

Placement of PVC liner below upper pool level shall be performed in wet conditions, requiring the use of a barge and such other equipment as necessary, plus the use of divers, to place the liner along the full face of the upstream slope of the rock dam.

1.7.2 Layout of Site

Layout of site is shown on the drawings.

1.7.3 Pre-Construction Meeting

A pre-construction meeting shall be held prior to liner placement. The purpose of the meeting is to identify the responsibility and authority of all parties involved (Contracting Officer, Installer, etc.), and to present any changes in procedures which may be necessary to facilitate the successful installation of the geomembrane.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Raw Materials

Resin used in manufacturing the PVC geomembrane shall be made of virgin uncontaminated ingredients. Materials with previous service life or which are recycled will not be allowed. Resins shall not contain fatty acid residues, epoxy, or secondary plasticizers.

2.1.2 Sheet Materials

A sheet is defined as a manufactured seamless geomembrane unit with a width equal to or greater than five feet. Geomembrane sheets shall be uniform in color, thickness, and surface texture. The sheets shall be free of and resistant to fungal or bacterial attack and they shall be free of cuts, abrasions, holes, blisters, contaminants and other imperfections.

2.1.3 PVC Geomembrane Physical Properties

The textured PVC geomembrane sheets and factory seams shall meet or exceed the physical requirements listed in Table 1. Conformance testing shall be performed in accordance with the manufacturer's approved quality control manual. Test values shown in Table 1, except when specified as minimum or maximum, are average lot property values.

TABLE 1. GEOMEMBRANE PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TEST VALUE
Thickness, mils, (nominal)	ASTM D 1593	40
Thickness, %	ASTM D 1593	5%
Specific Gravity	ASTM D 792	1.2
Tensile Strength at Break, lbs/in. width	ASTM D 882	97
Elongation at Break, percent, minimum	ASTM D 882	400
Modulus at 100% lbs/in. width	ASTM D 882	41

Tear Resistance, lbs, minimum	ASTM D 1004 Die C	10.5
Low Temperature Brittleness, °C	ASTM D 1790	-29
Dimensional Stability, Percent	ASTM D 1204	3
Water Extraction, % Loss, maximum	ASTM D 3083	0.2%
Volative Loss % Loss, maximum	ASTM D 1203(A)	0.5%
Hydrostatic Resistance psi, minimum	ASTM D 751 Method A	120

2.1.4 Thickness Measurement

For textured geomembrane, a screw or ported micrometer shall be used to take a minimum of five thickness readings along the edge across each panel/sheet width and at least two thickness measurements shall be taken along each panel/sheet length. Panels/sheets whose thickness falls below the specified minimum value shall be rejected and replaced.

2.1.5 Factory Seams

PVC geomembrane sheets shall be manufactured as wide as possible to minimize factory seams and field seams or overlaps. PVC geomembrane sheets shall be factory seamed into maximum sized panels to minimize field seaming. Panels are factory or field fabricated geomembrane units which are composed of several geomembrane sheets seamed together. Factory seaming shall be by methods approved by the geomembrane manufacturer. Seams shall meet the minimum shear and peel strength requirements shown as follows:

PROPERTY	TEST METHOD	TEST VALUE
Peel Strength, lbs/in.	ASTM D 882	15
Shear Strength, lbs/in.	ASTM D 882	77.6

Factory seams shall extend to the end of the sheet so that no unbonded edges greater than 1/8 inch wide are present.

2.1.6 Securing Pins/Anchors

The edges of the PVC geomembrane shall be anchored to the sidewalls of the auxiliary lock gate bay with wooden, aluminum, or stainless steel batten strips anchored to the concrete and/or other anchoring method, all as recommended and approved in writing by the geomembrane fabricator for this project application.

During installation, a crease with extra play in the PVC geomembrane should be kept along the intersection of the rock dam slope and the concrete sidewalls, and sandbags or other measures be used to secure the panel to the underlying clay layer at the intersection with the walls. Such measures

should be kept in place during placement of the overlying protective bedding layers.

The PVC geomembrane shall be secured to the auxiliary lockrockfill closure dam walkway by sandbags, anchors, or other methods, all as recommended in writing by the geomembrane fabricator for this application.

2.2 TESTS, INSPECTIONS, AND VERIFICATIONS

2.2.1 Manufacturing, Sampling, and Testing

2.2.1.1 Resin Materials

Resin shall be tested in accordance with the approved geomembrane manufacturer's quality control manual. Any resin which fails to meet the geomembrane manufacturer's specified physical properties shall not be accepted for manufacturing the sheet.

2.2.1.2 Geomembrane Sampling

Geomembrane sheets shall be randomly sampled and tested in accordance with the manufacturer's approved quality control manual. Sheets not meeting the minimum requirements specified in Table 1 shall be rejected.

2.2.2 Fabrication, Sampling, and Testing

2.2.2.1 General

Prior to or during factory seaming, roll goods shall be visually inspected on both sides for defects and impurities. Defects and impurities shall be removed and repaired prior to completion of the fabrication process. Thickness measurements shall be made at the center and each edge of the beginning and end of each roll of material in accordance with the methods specified in Table 1. Rolls having a thickness less than the minimum value specified in Table 1 shall be rejected.

2.2.2.2 Non-Destructive Factory Seam Testing

Non-destructive seam testing shall be conducted in accordance with the fabricator's approved quality control manual. Continuous visual inspection shall be performed on the seams during fabrication. Defective seams shall be repaired, retested and approved prior to continuation of the seaming process.

2.2.2.3 Destructive Factory Seam Testing

During fabrication, a minimum of one destructive test sample shall be taken per 750 feet of factory seam length. Where possible, these samples shall be taken from extra material at the beginning or end of panel seams to avoid panel damage and alteration of the panel geometry. The samples shall be a minimum of 12 inches wide by 24 inches long with the seam centered lengthwise. Each sample shall be cut into two equal pieces with one piece retained by the fabricator and one piece given to the Contracting Officer for quality assurance testing and permanent record. Each sample shall be tagged to identify: (1) manufacturer's roll number; (2) date cut; (3) panel from which cut; (4) location in panel; (5) top sheet; (6) visual inspection comments; and (7) quality control inspector's name. The fabricator's seam samples shall be tested for bonded seam and peel adhesion in accordance with

ASTM D 882. To be acceptable, four out of five replicate test specimens shall meet specified seam strength requirements.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Surface Preparation

Surface preparation shall include placement of a three-foot thick layer of clay over the full upstream face of the rock dam per SECTION 02275 - TEMPORARY STABILIZATION OF ROCK DAM. Sticks, stones, rubbish, or any other debris which could damage the overlying PVC geomembrane shall be removed from the clay surface prior to placement of the geomembrane. Any damage to the subgrade caused by the Contractor's operations shall be repaired.

3.1.2 Anchor Attachment

The geomembrane shall be attached to the sidewalls of the auxiliary lock gate bay and along the walkway on the crest of the rock dam to prevent movement of the geomembrane by the river current during installation or prior to placement of the overlying protective bedding layers. Geomembrane anchorage shall be as recommended in writing by the geomembrane fabricator. The maximum spacing for geomembrane anchors shall be 2 feet along the intersection of the upstream slope of the rock dam and the sidewalls of the lock, and along the sidewalk at the top of the rock dam. If conditions encountered during installation require it, the number of anchors shall be increased as necessary upon the request of the Contracting Officer.

3.2 GEOMEMBRANE DEPLOYMENT

3.2.1 General

The geomembrane shall be placed in such a manner as to minimize handling at the locations shown on the drawings. At the time of installation, the geomembrane shall be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation, or storage. The liner shall be placed in a relaxed condition and shall be free of tension or stress upon completion of installation.

3.2.2 Placement

The geomembrane shall be placed full width and length of the upstream face of the rock dam with minimum handling. The procedures and equipment used shall not damage the geomembrane or underlying clay layer. Geomembrane damaged during installation or during placement of the overlying protective layers shall be removed or repaired, at the Contracting Officer's discretion and as specified in Paragraph 3.3.2.2 at no additional cost to the Government. Adequate ballast (e.g. sand bags) shall be placed on the geomembrane prior to anchoring and placement of overlying protective bedding layers to prevent uplift by the river current without damaging the geomembrane. The method used to deploy the geomembrane shall not scratch, crimp or excessively elongate the geomembrane as determined by the Contracting Officer.

The geomembrane shall be placed with seams oriented perpendicular to the toe of the dam. At underwater placement locations, minimum overlap shall be 5 feet provided a diver is used to assist in placing the geomembrane;

otherwise, minimum overlap length shall be 10 feet. Above upper pool elevation, minimum overlaps shall be 18 inches.

The PVC geomembrane shall be secured to the auxiliary lockrockfill closure dam walkway by sandbags, anchors, or other methods, all as recommended in writing by the geomembrane fabricator for this application.

The Contractor shall fold the PVC geomembrane and extend placement of the geomembrane a minimum of two feet above the line of intersection between the rock dam and the sidewalls of the auxiliary lock gate bay and anchor the geomembrane to the concrete walls to prevent seepage.

During installation, a crease with extra play in the PVC geomembrane should be kept along the intersection of the rock dam slope and the concrete sidewalls, and sandbags or other measures be used to secure the panel to the underlying clay layer at the intersection with the walls. Such measures should be kept in place during placement of the overlying protective bedding layers.

Due to the difficulties associated with field seaming in asubaqueous placement environment, fabricator and installer shall select the size of the geomembrane panels. For this project, the Contractor shall have the option of using one or two geomembrane panels to cover the upstream slope of the rock dam.

3.2.3 Wrinkles

The method used to deploy the geomembrane shall minimize wrinkles. The geomembrane manufacturer and installer shall coordinate efforts to provide sufficient slack in the deployed geomembrane for the coldest temperature anticipated to prevent tensile stresses in the geomembrane and its seams during installation and after the geomembrane is covered. The geomembrane shall have adequate slack to prevent uplift from the bedding material at any location.

3.3 FIELD SEAMING

3.3.1 Field Seams

3.3.1.1 General Requirements

For this project, the Contractor has the option of using one or two geomembrane panels to cover the upstream slope of the rock dam. Due to the difficulties associated with field seaming below water, it is anticipated that field seams will not be required unless the installer opts to field seam the panels above upper pool level or if patches are required to cover holes or punctures in the PVC geomembrane.

3.3.1.2 Seams

Geomembranes shall be seamed by thermal fusion or chemical methods as recommended by the geomembrane manufacturer. Seaming adhesives, solvents, or chemical cleaning agents shall be stored away from the geomembrane and only spill-resistant containers shall be used while working on the geomembrane. If low temperatures slow the curing process of chemically fused seams and delay seam testing, a small portable field oven with constant temperature control shall be used in accordance with GRI Test Meth GM-7 to accelerate sample curing.

3.3.2 Defects and Repairs

3.3.2.1 Destructive Seam Test Repairs

Seams that fail destructive seam testing may be overlaid with a strip of new material and seamed (cap stripped). Alternatively, the seaming path shall be retraced to an intermediate location a minimum of 10 feet on each side of the failed seam location. At each location a 12 by 18 inch minimum size seam sample shall be taken for two additional shear strength and two additional peel adhesion tests using an approved quantitative field tensiometer. If these tests pass, then the remaining seam sample portion shall be sent to the independent laboratory for five shear strength and five peel adhesion tests in accordance with ASTM D 4437. To be acceptable, four out of five replicate test specimens must meet specified seam strength requirements. If these laboratory tests pass, then the seam shall be cap stripped between that location and the original failed location. If field or laboratory tests fail, then the process is repeated. After cap stripping, the entire cap stripped seam shall be non-destructively tested.

3.3.2.2 Patches

Tears, holes, blisters and areas with undispersed raw materials or foreign material contamination shall be repaired with patches. Patches shall have rounded corners, be made of the same geomembrane, and extend a minimum of 6 inches beyond the edge of defects. Minor localized flaws shall be repaired by spot welding or seaming as recommended by the Fabricator. Repairs shall be non-destructively tested. The Contracting Officer inspector may also elect to perform a destructive seam test on a suspect area.

3.3.2.3 Visual Inspection and Evaluation

Immediately prior to covering the geomembrane, seams and non-seam areas shall be visually inspected by the Contracting Officer for defects, holes, or damage due to construction activities. Each suspect location shall be non-destructively tested. Each location that fails non-destructive testing shall be repaired in accordance with Paragraph 3.3.2.2, Patches, and non-destructively tested prior to acceptance.

3.4 PENETRATIONS

Geomembrane penetration details shall be as recommended by the geomembrane manufacturer, fabricator or installer, and as approved by the Contracting Officer. Factory fabricated boots shall be used wherever possible. Tailored area field seams shall be non-destructively tested in accordance with the installer's approved quality control manual. Seams that fail non-destructive testing shall be repaired in accordance with the installer's approved quality control manual and non-destructively tested prior to acceptance.

3.5 PROTECTION AND BACKFILLING

The deployed and seamed geomembrane shall be covered with the required protective bedding layers per SECTION 02275 - TEMPORARY STABILIZATION OF ROCK DAM, within one day of acceptance. Permanent folding over of geomembrane wrinkles will not be allowed prior to or during placement of cover materials. Placement of cover layer shall proceed from the toe of the upstream slope of the rock dam and gradually progress upslope. The protective bedding layer

materials shall not be dropped from heights in excess of 3 feet onto the underlying PVC geomembrane.

-- End of Section --

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SECTION 02275
TEMPORARY STABILIZATION OF ROCK DAM

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

In order to hold the upper pool level during the auxiliary lock closure miter gate removal and installation, it will be necessary to stabilize the existing rock dam constructed at the upstream end of the auxiliary lock gate bay. The work covered by this section consists of furnishing all plant, labor, equipment, and materials, and performing all operations in connection with the temporary stabilization of the existing rock dam for the area shown on the drawings, in accordance with these specifications.

The temporary stabilization measures include flattening the upstream slope of the rock dam from 1V on 1.5H to 1V on 2.0H with Graded Stone C; placing a 3-foot thick layer of clay across the flattened upstream slope of the dam; placing a PVC geomembrane over the clay layer and attaching the geomembrane to the sidewalls of the auxiliary lock gate bay; and then covering the geomembrane with a 6-inch thick layer of 3/4-inch minus material and a 12-inch thick layer of 6-inch minus stone.

Temporary stabilization work shall commence after the following work items have been completed: 1) plate covers have been placed over the auxiliary side filling ports for the main lock per plans and specifications; 2) silt build-up has been removed from the upstream slope and toe of the existing rock dam in accordance with the drawings and SECTION 02125 - REMOVAL OF SILT BUILD-UP; and 3) screens have been placed in the upper guard wall debris opening in accordance with the drawings. Silt removal along the upstream slope and toe of the existing rock dam shall be performed under the observation of the Contracting Officer. If increased seepage accompanied byrockfill movement along the upstream or downstream slopes of the rock dam is noted during the silt removal phase, such work shall be stopped and if directed by the Contracting Officer, commence temporary stabilization work without completion of upstream silt removal operations.

The PVC geomembrane shall meet the requirements of, and be installed in accordance with, SECTION 02240 - PVC GEOMEMBRANE.

1.2 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 127	(1993)	Specific Gravity and Absorption of Coarse Aggregate
ASTM D 422	(1990)	Particle-Size Analysis of Soils
ASTM D 1140	(1992)	Amount of Material in Soils Finer than the No. 200 Sieve

ASTM D 2487	(1993)	Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 4318	(1995)	Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01300 - SUBMITTAL PROCEDURES:

STATEMENTS

Work Plan; GA

The work plan shall be submitted for approval at least 30 days prior to start of work. The work plan shall include a detailed description of the methods and equipment to be used for each operation of the temporary stabilization measures as identified in the drawings and these specifications, including proposed quality control methods to be used to confirm that the temporary stabilization measures have been installed to the grades and limits shown on the drawings. The work plan shall also include a proposed logistical plan to ensure that the Contractor's proposed work barge/tie-up locations are satisfactory to the Contracting Officer and do not impede barge traffic through the main lock.

The work plan shall identify proposed borrow and quarry sources for the temporary stabilization measure materials, as well as proposed methods to transport the materials to the site of work.

The work plan shall indicate any diver assistance services to be supplied by the Contractor which will be required while placing the temporary stabilization measures.

REPORTS

Borrow Source Assessment; GA

The Borrow Source Assessment Report shall be submitted for approval at least 30 days prior to delivery of clay to the site. No clay placement shall begin until the Borrow Source Assessment Report is approved. The report shall include the following: location of the borrow source; locations and logs of subsurface explorations; and laboratory test results.

Sampling and Testing; FIO

Copies of laboratory test reports shall be submitted before placing materials. These reports shall include: gradation test results (ASTM D 422) for the 3/4-inch minus material and the LMVD Standard Test Method for Gradation of Riprap for the 6-inch minus material and for Graded Stone C; gradation test results (ASTM D 422, including hydrometer) and Atterberg Limits (ASTM D 4318) for clay material. Test reports should indicate that the materials meet the specifications.

RECORDS

Waybills and Delivery Tickets; FIO

Copies of waybills and delivery tickets shall be submitted during the progress of the work for all materials actually used in the temporary stabilization of the dam including Graded Stone C, clay, 3/4-inch minus graded rockfill material, and 6-inch minus stone.

1.4 PROJECT CONDITIONS

1.4.1 Dam Stabilization in Wet Condition

Temporary stabilization measures along the upstream slope of the existing rock dam will be performed in wet conditions. There is no bulkhead or cutoff wall to protect the work from the currents of the upper pool of the Mississippi River.

1.4.2 Layout of Site

Layout of site is shown on the drawings.

1.4.3 Work During Winter Months

The Contractor is forewarned that ice builds up within the upstream end of the auxiliary lock gate bay during winter months. Temporary dam stabilization work may not be able to be performed upstream of the rock dam during the winter months when ice is present in the river.

PART 2 PRODUCTS

2.1 MATERIALS

Natural materials to be used in the temporary stabilization of the rock dam include stone, graded rockfill (bedding) material, and clay. The bedding layers which form the protective cover over the PVC geomembrane shall consist of 3/4-inch minus graded rockfill and 6-inch minus stone, respectively. All stone to be used in flattening the existing rock dam (excluding bedding layers) shall be Graded Stone C. The bedding and clay materials shall conform to the requirements established in these specifications.

2.1.1 General

All stone used for the bedding layers and flattening of the existing rock dam shall be durable material as approved by the Contracting Officer. Stone shall be of a suitable quality to ensure permanence in the structure and in the climate in which it is to be used. The stone shall be free from cracks, seams, and other defects that would tend to unduly increase its deterioration from natural causes. The inclusion of objectionable quantities of dirt, sand, clay, and rock fines will not be permitted.

2.1.2 Sources and Evaluation Testing

All stone shall be obtained from the sources listed at the end of the Special Provisions.

If the Contractor proposes to furnish stone from a source not listed in the Special Provisions, the Contractor shall make such investigations as

necessary to determine whether acceptable stone can be produced from the proposed source. Satisfactory service records on work outside the Corps of Engineers will be acceptable. If no such records are available, the Contractor shall make tests to ensure the acceptability of the stone for this work. Tests to which the materials may be subjected to will include petrographic analysis, specific gravity, abrasion, absorption, wetting and drying, freezing and thawing, and such other tests as may be considered necessary to demonstrate to the satisfaction of the Contracting Officer that the materials are acceptable for use in the work. The following guidance is provided for use by the Contractor in analyzing a new source of stone. Stone that either weighs less than 155 pounds per cubic foot or has more than 2 percent absorption will not be accepted unless other tests and service records show that the stone is satisfactory. The method of tests for unit weight and absorption will be ASTM C 127. Samples of stone shall be taken by the Contractor under the supervision of the Contracting Officer at least 60 days in advance of the time the placing of the stone is expected to begin. The tests shall be conducted by the Contractor in accordance with applicable Corps of Engineers methods of test given in the Handbook of Concrete and Cement, and shall be performed at an approved testing laboratory. The cost of the testing shall be borne by the Contractor.

2.1.3 Gradation Test

The Contractor shall perform a gradation test for Graded Stone C and 6-inch minus stone in accordance with LMVD Standard Test Method for Gradation of Riprap, a copy of which is attached at the end of this section. At least one test shall be performed. The test sample shall be taken by the Contractor under the supervision of the Contracting Officer. Each test sample shall be representative of the stone being shipped and shall consist of not less than 15 tons for the Graded Stone C. The sample shall be collected in a random manner which will provide a sample accurately reflecting the actual gradation arriving at the project site. If collected by the truckload, each truckload shall be representative of the gradation requirements. The Contractor shall provide all necessary screens, scales and other equipment, and the operating personnel therefor, and shall grade the sample, all at no additional cost to the Government. The gradation tests shall be reported using LMV Form 602-R, Gradation Test Data Sheet, a copy of which is attached at the end of this section. Additional tests, at the Contractors expense, will be required if the stone furnished appears by visual inspection to be of questionable gradation.

2.2 GRADED STONE C

Stone to be used for flattening the upstream slope of the rock dam shall be Graded Stone C well-graded within the prescribed limits shown below. Neither the width nor the thickness of any piece shall be less than one-third of its length.

STONE WEIGHT (LBS.)	CUMULATIVE % FINER BY WEIGHT
500	100
400	95
250	70 - 100
100	50 - 80

30	32 - 58
5	15 - 34
1	2 - 20
Less than 1/2-inch max dimension	0 - 5

2.3 3/4-INCH MINUS MATERIAL

Bedding material immediately overlying the PVC geomembrane shall consist of 3/4-inch minus material which is reasonably well graded between the prescribed limits as specified below. The material shall be composed of tough, durable particles, shall be reasonably free from thin, flat and elongated pieces, and shall contain no organic matter nor soft, friable particles in quantities considered objectionable by the Contracting Officer.

SIEVE DESIGNATION	% BY WEIGHT PASSING SQUARE-MESH SIEVE
1 inch	100
1/2 inch	40 - 70
No. 4	20 - 50
No. 10	15 - 40
No. 40	5 - 25
No. 200	0 - 10

NOTE 1: The values are based on aggregates of uniform specific gravity, and the percentages passing the various sieves may require appropriate correction by the Contracting Officer when aggregates of varying specific gravities are used.

2.4 6-INCH MINUS STONE

The outer protective (bedding) layer of rockfill shall consist of subrounded, 6-inch minus durable rock meeting the following gradation requirements:

Sieve Designation	% By Weight Passing
6 inch	90 - 100
3 inch	35 - 70
No. 4	0 - 20

2.5 CLAY LAYER

The clay layer shall consist of stiff, medium to highly plastic soils meeting the requirements of a lean clay (CL) or fat clay (CH) as classified in the Unified Soil Classification System (ASTM D 2487).

The clay shall be free of roots, debris, organic or frozen material, and shall have a maximum clod size of six inches at the time of placement. The clay must be free of sticks, stones, rubbish, or any othermaterial which may damage the overlying PVC geomembrane.

The Contractor must locate the source of the clay and submit necessary reports for approval as specified in Paragraph 1.3.

2.6 PVC GEOMEMBRANE

PVC geomembrane shall meet the requirements set forth in Section 02240, PVC GEOMEMBRANE.

PART 3 EXECUTION

3.1 EXAMINATION

The Contractor shall examine the site prior to commencement of the work to gain familiarity with the logistics required to work at the site and to determine whether conditions are acceptable to complete the required temporary stabilization measures indicated in these specifications.

If the Contractor, in the course of the work, finds any discrepancy between the plans and the specifications, or between plans and physical conditions of the locality, or any errors or omissions in the plans or in layout as given by survey points and instructions, he shall immediately inform the Contracting Officer, in writing, and the Contracting Officer shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk.

3.2 ROCK SLOPE PREPARATION

3.2.1 Removal of Silt Build-up

Silt build-up along the upstream slope and toe of the existing rock dam shall be removed and disposed of in accordance with all local, state, and federal regulations, and as shown on the drawings and specified in SECTION 02125 - REMOVAL OF SILT BUILD-UP.

If increased seepage is noted through the rock dam accompanied by rockfill movement along the upstream or downstream slopes of the rock dam during upstream silt removal operations, such condition shall be brought to the attention of the Contracting Officer for direction concerning further work efforts. At the discretion of the Contracting Officer, the Contractor may be directed to discontinue silt removal operations and to proceed immediately with placement of temporary stabilization measures directly on top of the remaining silt deposits.

3.2.2 Preparation to Flatten Upstream Slope of Existing Rock Dam

Remove all wood and any debris accumulated on the upstream slopeof the rock dam prior to placement of additional Graded Stone C.

3.3 GRADED STONE C

3.3.1 General

Graded Stone C shall be placed on the existing rock dam to flatten the slope to 1V on 2H as shown on the drawings or as otherwise required by the Contracting Officer. Graded Stone C gradation requirements are presented in Paragraph 2.2.

3.3.2 Placement

Graded Stone C shall be placed directly on the existing rock dam upstream slope in such manner as to produce a reasonably well-graded mass of rock with the minimum practicable percentage of voids, and shall be constructed within the specified tolerance to the lines and grades shown on the drawings. A tolerance of plus 6 inches from the slope lines and grades shown on the drawings will be allowed in the finished surface of the rock dam upstream slope. The larger stones shall be well distributed and the entire mass of stones in their final position shall be roughly graded to conform to the gradation specified in Paragraph 2.2. The finished slope shall be free from objectionable pockets of small stones and clusters of larger stones. Placing the Graded Stone C by dumping into chutes or by similar methods likely to cause segregation of the various sizes will not be permitted. All stone placed underwater shall be placed by lowering of the stone bucket to within 5 feet of the bottom before dumping. The desired distribution of the various sizes of stones throughout the mass shall be obtained by selective loading of the material at the quarry or other source; by controlled dumping of successive loads during final placing, or by other methods of placement which will produce the specified results. Rearranging of individual stones by mechanical equipment or by hand (above water level) will be required to the extent necessary to obtain a reasonably well-graded distribution of stone sizes as specified above. The Contractor shall maintain the Graded StoneC until accepted and any material displaced prior to acceptance and due to the Contractors negligence shall be replaced at his expense to the lines and grades shown on the drawings.

3.4 CLAY LAYER

3.4.1 General

A 3-foot thick clay-rich soil layer shall be placed over the full width and length of the flattened upstream slope of the rock dam as shown on the drawings. In addition, a 6-inch thick (minimum) layer of clay shall be placed over the full width of the upstream end of the PVC liner between the edge of protective cover layers and edge of liner.

No compaction efforts shall be required below upper pool level due to subaqueous placement of the clay layer on the lower sections of the slope. Above upper pool elevation, the Contractor shall select such means and method to uniformly distribute the clay across the flattened upstream face of the dam and mechanically compact the clay layer to effectively fill the interstitial space between rockfill components along the face of the rockfill slope.

3.4.2 Placement

The clay layer shall be placed uniformly over the flattened upstream slope of the dam and along the upstream end of the PVC liner to the lines and grades shown on the drawings. The clay shall be placed by clamshell bucket or

by other method as approved by the Contracting Officer as soon as practical after the Graded Stone C placement operations have been completed, but starting no later than 1 day after completion and acceptance of the flattened upstream slope.

Placement of the clay layer shall proceed from the toe of the flattened upstream slope and gradually progress upwards. All clay placed underwater along the upstream face of the dam shall be placed by lowering the clamshell bucket to within 3 feet of the flattened slope before dumping. Clay placed along the flattened upstream slope of the dam above upper pool level can be placed with a clamshell bucket, or end-dumped from a barge and spread with a dozer, backhoe, or other equipment as approved by the Contracting Officer.

3.5 PVC GEOMEMBRANE

PVC geomembrane shall be placed over the full length and width of the stabilized upstream slope of the rock dam as specified in SECTION 02240 - PVC GEOMEMBRANE and as shown on the drawings.

3.6 PROTECTIVE COVER (BEDDING) LAYERS:

3.6.1 General

Two bedding layers, composed of a 6-inch thick layer of 3/4inch minus material choke stone material and a 12-inch thick layer of 6-inch minus stone, shall be placed over the flattened upstream slope of the rock dam as shown on the drawings to form a protective cover for the underlying PVC geomembrane.

Any damage to the underlying PVC geomembrane during placement of the protective bedding layers shall be repaired in accordance with SECTION 02240 - PVC GEOMEMBRANE before proceeding with the work.

3.6.2. Placement

Bedding material shall be spread uniformly over the PVC geomembrane in a satisfactory manner, to the slope lines and grades indicated on the drawings or as directed by the Contracting Officer. Placing of material bymethods which will tend to segregate particle sizes within the bedding layers will not be permitted.

Placement of the bedding materials shall proceed from the toe of the flattened upstream slope and gradually progress upslope covering the PVC geomembrane. To protect the PVC geomembrane, all bedding materials placed underwater along the upstream face of the dam shall be placed by lowering the clamshell bucket to within three feet of the flattened slope before dumping.

Bedding materials placed along the flattened upstream slope of the dam above upper pool level can be placed with a clamshell bucket, or end-dumped from a barge and spread with a dozer, backhoe, or other equipment as approved by the Contracting Officer, provided such method results in introduction of the bedding materials to the underlying PVC geomembrane at a height of no greater than two feet.

3.7 FIELD QUALITY CONTROL

3.7.1 Quality Control Plan

The Contractor shall develop a quality control program to ensure that the temporary stabilization measures have been constructed to the lines and grades shown on the drawings and specified in this section. Such proposed program shall be included as part of the work plan to be submitted to the Contracting Officer for approval.

3.7.1 Ranges, Gages, and Lines

As a minimum, the Contractor shall furnish, set and maintain ranges, buoys, or other such survey markers as needed to define the limits of the work and to facilitate inspection. The Contractor shall establish and maintain gages in locations observable from each part of the working area so that the extent and intermediate location depths of fill can be determined to confirm that the temporary stabilization measures have been installed to the grades and limits shown on the drawings.

3.7.2 Inspection by Divers

The Contractor shall employ divers as necessary to inspect the upstream face of the dam below upper pool level upon completion of material placement of each layer of the temporary stabilization measure if other quality control methods cannot be employed satisfactorily. The divers shall confirm that the materials have been relatively uniformly distributed across the upstream face of the dam and that there are no significant areas where a given stabilization measure layer is missing. The diver shall report his findings to the Contracting Officer and, where necessary, the Contractor shall place additional material at such areas where the stabilization measure layer is not satisfactory.

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STANDARD TEST METHOD FOR GRADATION OF RIPRAP

A. Select a representative sample (Note No. 1), weigh and dump on hard stand.

B. Select specific sizes (see example) on which to run "individual weight larger than" test. (See Note No. 2). Procedure is similar to the standard aggregate gradation test for "individual weight retained."

C. Determine the largest size stone in the sample. (100 percent size)

D. Separate by "size larger than" the selected weights, starting with the larger sizes. Use reference stones, with identified weights, for visual comparison in separating the obviously "larger than' stones. Stones that appear close to the specific weight must be individually weighed to determine size grouping. Weigh each size group, either individually or cumulatively.

E. Paragraph d above will result in "individual weight retained" figures. Calculate individual percent retained (heavier than), cumulative percent retained, and cumulative percent passing (lighter than). Plot percent passing, along with the specification curve on Eng Form 4055.

Notes

1. Sample Selection. The most important part of the test and least precise is the selection of a representative sample. No "standard' can be devised; larger quarry run stone is best sampled at the shot or muck pile by given direction to the loader; small graded riprap is best sampled by random selection from the transporting vehicles. If possible, all parties should take part in the sample selection, and agree before the sample is run, that the sample is representative.

2. Selection of Size for Separation. It is quite possible and accurate to run a gradation using any convenient sizes for the separation, without reference to the specifications. After the test is plotted on a curve, the gradation limits may be plotted. Overlapping gradation with this method are no problem. It is usually more convenient, however, to select points from the gradation limits, such as the minimum 50 percent size, the minimum 15 percent size, and one or two others, as separation points.

Example Gradation

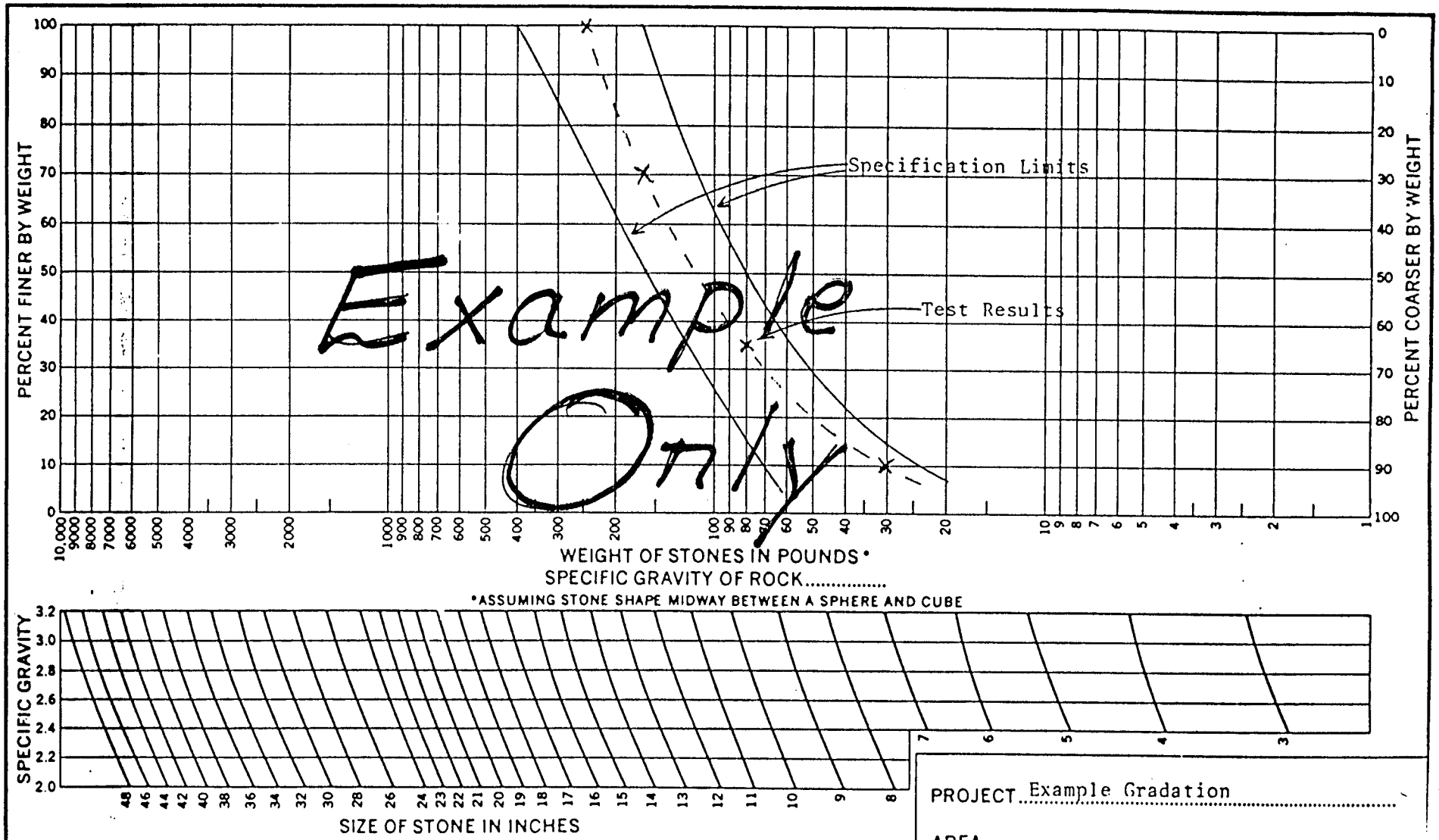
Specifications

Stone Weight in Lbs	Percent Finer by Weight
400-160	100
160-80	50
80-30	15

Example Worksheet

Stone Size Lbs	Individual Wt. Retained	Individual Percent Retained	Cumulative Percent Retained	Cumulative Percent Passing
400	0	0	–	100
160	9,600	30	30	70
80	11,200	35	65	35
30	8,000	25	90	10
30	3,200	10	100	–
	32,000 lbs			

NOTE:
Largest stone 251 lbs



PROJECT Example Gradation

AREA.....

DATE.....

RIPRAP GRADATION CURVES

ENG FORM 4055
APR 67

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GRADATION TEST DATA SHEET

Sample No.: _____

Type of Stone Tested _____

Quarry _____

Date of Test _____

Testing Rate _____ Tons

Contractor _____

Location _____

TEST REPRESENTS

Contract No.	District	Tons
	TOTAL	

GRADATION

Stone Size (lbs)	Weight Retained	Individual % Retained	Cumulative % Ret.	Cumulative % Pass	Specification % Finer by wt
Total Weight					

Remarks: _____

I certify that the above stone sample is representative of the total tonnage covered by this test report:

Contractor Representative _____

Government Representative _____

LMV FORM 602-R
Dec 87

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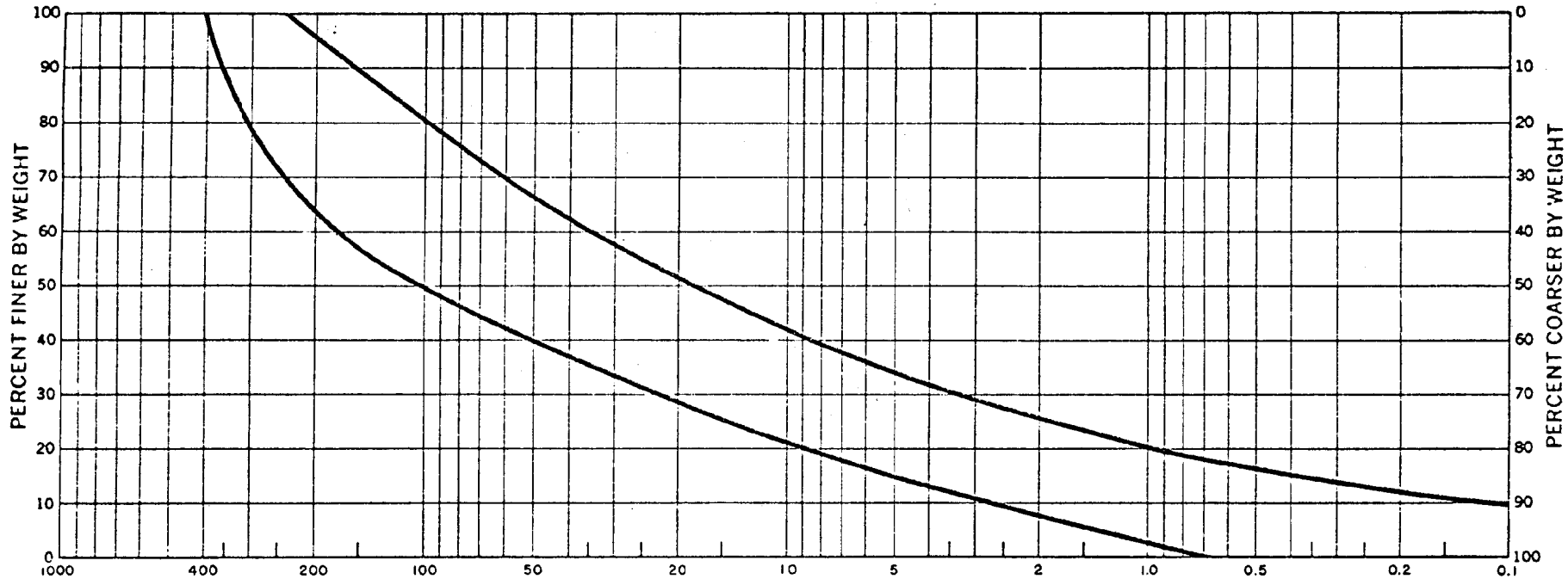

STONE WEIGHT (LBS)	CUMULATIVE % FINER BY WEIGHT
400	100
250	70 - 100
100	50 - 80
30	32 - 58
5	15 - 34
1	2 - 20
less than ½" max dimension	0 - 5

NOTE: 5% of the material can weigh more than 400 pounds. However no piece shall weigh more than 500 pounds.

GRADATION

GRADED STONE C

September 1976

PLATE IV

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SECTION 02495
AUXILIARY MITER GATE INSTALLATION

PART 1 - GENERAL

1.1 SCOPE. The work covered by this section consists of providing all equipment, materials and labor for removing the existing auxiliary miter gate and installing the replacement auxiliary miter gate.

1.2 QUALITY CONTROL.

1.2.1 General. The Contractor shall establish and maintain quality control for all operations to assure compliance with contract requirements and maintain records of quality control for all operations including but not limited to the following:

(1) Materials.
(2) Fabrication and Workmanship.
(3) Installation.

1.2.2 Reporting. A copy of the records and tests, as well as the records of corrective action taken, shall be furnished to the Government daily.

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

1.3.1 American National Standards Institute (ASME).

B 18.21.1-94	Lock Washers (Inch Series)
B 18.22.1-65 (R 1990)	Plain Washers

1.3.2 American Society for Testing and Materials (ASTM).

A 307-94	Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
A 370-94 (Rev. A)	Mechanical Testing of Steel Products

1.3.3 American Welding Society (AWS).

D 1.1-94	Structural Welding Code - Steel

1.4 SUBMITTALS. Government approval is required for submittals with a “GA” designation; submittals having an “FIO” designation are for information only. The following shall be submitted in accordance with SECTION 01300 – SUBMITTAL PROCEDURES:

1.4.1 Work Plan; GA. The Contractor shall submit a statement describing the proposed plan for performing the work.

1.4.2 Equipment; GA. The Contractor shall submit a statement describing the equipment proposed for use in performing the work at the site.

PART 2 - PRODUCTS

2.1 GOVERNMENT FURNISHED EQUIPMENT. The Government will furnish the completely fabricated auxiliary miter gate and appurtenant items necessary for installation. The new gates will be delivered to Lock 25. The Contractor shall unload the gates from the barge within 14 days of delivery. All remaining items will be delivered to the Contractor at Locks 25. All equipment and unused parts shall be returned to the Government in good condition to the Corps of Engineers Service Base located at Mississippi River mile 177.

2.1.1 Auxiliary Miter Gate. The auxiliary miter gate consists of a right and left leaf which are opposite hand but otherwise identical. The right hand leaf is on the right hand side of the lock when viewed looking downstream. The miter gate leaf diagonals have been prestressed at the factory and no further diagonal adjustment will be necessary. The approximate weight of each leaf is 230,000 lbs. The replacement auxiliary miter gate will be furnished on a standard 35 ft x 135 ft hopper barge, with each leaf positioned end to end along the centerline of the barge. The auxiliary miter gate is shown on reference drawings M-L25 21/32 through 21/38. Appurtenant items are shown on additional reference drawings listed below.

2.1.2 Anchor Bar Set. The anchor bars and related parts are shown on reference drawing M-L25-S3 / S-1. The set consists of anchor bars, sleeve nuts, gudgeon links, pins, and turned bolts. The Government will furnish the anchor bars assembled with the gudgeon link properly installed with bushing MK 21/50A-2 pressed into the assembly shown on reference drawing M-L25 21/50A.1.

2.1.3 Bearing Casting Shims. Each miter gate leaf is furnished with one ½" shim installed at each bearing casting. An additional twelve shims per leaf of varying thicknesses are furnished loose. The bearing casting shims are shown on reference dwg. M-L25 21/49.

2.1.4 Pintle Ball and Pintle Base. A replacement pintle base and pintle ball are furnished for each gate leaf. The pintle base and pintleball are shown on reference dwg. M-L25 21/49A.

2.1.5 Gudgeon Pin Set. The gudgeon pin and related parts are shown on reference dwg. M-L25 21/50A.1. The gudgeon pin, keeper ring, keeper bolts, collars, rings, and bushings will be furnished for each gate leaf.

2.1.6 Miter Gate Pick-Up Beam. The Government will furnish the pick-up beam necessary to pick the existing auxiliary miter gate.

2.1.7 Shackles. The Government will furnish one 3½" shackle to be used with the single point pick-up on the replacement auxiliary miter gate and two 2½" shackles to be used on the tipping lugs of the replacement auxiliary miter gate.

2.2 PAINTING. The miter end lock and paint surfaces on the miter gate leafs or appurtenant items that are damaged during the Contractors handling shall be prepared and painted in accordance with the requirements of SECTION 09940, PAINTING.

PART 3 - EXECUTION

3.1 REMOVAL OF EXISTING AUXILIARY MITER GATE.

3.1.1 Condition of Auxiliary Lock Chamber. The Contractor should anticipate silt above and below the bottom girder of the existing auxiliary miter gate. This silt shall be removed to facilitate the removal and installation procedure.

3.1.2 Disposition of Existing Auxiliary Miter Gate. The existing auxiliary miter gate shall be placed on a Contractor furnished barge. It shall be the responsibility of the Contractor to dispose of theexisting miter gate in a safe and legal manner.

3.1.3 Position of Crane Barge and Transport Barges. The Contractor may position the crane barge and transport barge for gate removal as desired subject to approval of the Contracting Officer. The positioning of barges shall be defined in the Contractor's work plan.

3.1.4 Preparation of Existing Auxiliary Gate. Before placing the pickup beam upon the existing auxiliary gate, the walkway shall be removed. Thermal cutting of walkway members is permissible, cutting as close as practicable to the top girder members. The top girder members of theexisting auxiliary gate shall not be damaged during this operation. The turnbuckle that fastens the two leafs together at the miter end shall be removed. Any air or water lines crossing upon the auxiliary miter gate or interfering at the lock wall shall be removed under the direction of the Contracting Officer. Each auxiliary gate leaf shall be swung approximately two degrees or as much as possible from the closed position. This shall be accomplished mechanically using a cable attached to the top girder and a suitable check post on the lock wall approved by the Contracting officer.

3.1.5 Hoisting of Existing Auxiliary gate. The pick-up beam shall be positioned on the top girder so that the single point pick-up lug is aligned with the midpoint between the quoin and miter contact blocks. The gate leaf shall be hoisted using the single point pick-up. An auxiliary tipping line shall be attached to the small pick-up lug at the miter end of the pick-up beam.

3.1.6 Removal Procedure for Auxiliary Gate Leafs. During the removal procedure the anchor bars A15 and A16, shown on reference drawing M-L25 20/16 and 20/16A, shall be supported by blocking or other means to prevent damage to gate anchors GA1. After the pick-up beam has been installed and the hoisting line attached, the gate leaf shall be slightly raised, just to the point that load to the gudgeon pin is relieved. At this point gudgeon pin GP1 shall be removed by use of an auxiliary crane. Any alternate method of removing GP1 must be approved by the Contracting Officer. After GP1 is removed, pin P3 shall be removed and anchor bar A15 with gudgeon link GL1 attached shall be rotated until clear of the gate. The leaf shall then be vertically raised clear of the water, moved into position over the transport barge and lowered. The gate leaf shall be safely and securely fastened to the transport barge. Both existing gate leafs shall be removed before proceeding with installation of the replacement gate.

3.1.7 Anchor Bar Demolition. Once the gate leaf is removed the existing anchor bars A15 and A16 shall be disassembled and removed. The existing anchor bar assembly is shown on reference drawings M-L25-20/16.1 and M-L25-20/16A. Pins P1 shall be removed by use of an auxiliary crane. Any alternate method of removing pins P1 must be approved by the Contracting Officer. During the removal procedure gate anchor GA1 must not be damaged in any manner including the application of heat. All of the components of the existing anchor bars, P1, P3, GL1, A15, and A16 shall become the property of the Contractor to dispose of in a safe and legal manner.

3.1.8 Removal of Existing Pintle Ball and Pintle Base. Once the gate leaf is removed, the existing pintle ball and pintle base shall be removed. This shall be accomplished using a suitable crane and a diver to attach an eyebolt to the existing pintle ball.

3.2 INSTALLATION OF REPLACEMENT AUXILIARY MITER GATE

3.2.1 Inspection of Sill. Before installation of the replacement auxiliary gate, the Contractor shall employ a diver to conduct a survey of the sill and pintle areas of the auxiliary lock that addresses the condition of concrete, embedded metals, silt and debris. The Contractor shall furnish a written report of this survey to the Contracting Officer. The Contractor shall not proceed with installation until the survey has been submitted and approved by the Contracting Officer.

3.2.2 Position of Crane Barge and Delivery Barge. The Contractor may position the crane barge and delivery barge for gate installation as desired subject to approval of the Contracting Officer. The positioning of barges shall be defined in the Contractor's work plan.

3.2.3 Preparation of Replacement Auxiliary Gate. Before installation, with the replacement miter gate on the delivery barge, the following items shall be completed.

3.2.3.1 Walkway. The walkway is shown on reference drawing M-L25 21/54.1. The two center portions of the walkway shall be removed to allow access to the pick-up lug. The walkway sections shall be temporarily placed at a location that will not interfere with the installation procedure and shall be approved by the Contracting Officer. The walkway sections shall be disconnected by removing the bolts in the post sockets along the top girder. The walkway sections shall be hoisted by attachment through two holes in the toe plate on each side. If not already removed, the radiused portion of the walkway at the quoin end shall also be removed by removing the nuts and bolts that fasten it to the gudgeon hood.

3.2.3.2 Miter Seal. The Contractor shall adjust the position of the miter seal as necessary to achieve the position illustrated on reference drawing M-L25 21/50.1. The miter seal is adjusted by loosening the jam nuts and turning the adjustment bolts. The miter seal shall be positioned such that the outside edge of the seal projects 1/16" beyond the apex of bearing casting C3 for the right leaf, and 1/16" beyond the lowest point of the concaved surface of bearing casting C2 for the left leaf. The miter seal shall further be positioned such that it is plum relative to the gate leaf. The Contractor shall ensure that all jamb nuts are tight after the adjustment is complete. A representative of the Contracting Officer shall inspect and approve the positioning of the miter seals.

3.2.3.3 Installation of Replacement Anchor Bars. Before installation, gate anchors GA1 shall be inspected and any loose bolts shall be tightened or replaced as necessary. The pin holes shall be gently cleaned of loose material, scale, and oxidation. Pins P1 shall be test fit into GA1. The test fit shall be witnessed by a representative of the Contracting Officer. Any necessary modification to GA1 to achieve a satisfactory fit shall be approved by the Contracting Officer. The replacement anchor bars shall be assembled as shown on reference drawings M-L25-20/16.1 and M-L25-20/16A, except pin P3 (MK S-01-4) shall not be installed. The anchor bar assemblies consisting of anchor bars and gudgeon link shall be hoisted into position and pins P1 installed. Anchor bar MK S-01-1 with gudgeon link MK S-01-5 installed shall be rotated to

clear the gate leaf as it is installed. The anchor bar assemblies shall be blocked to maintain a horizontal position and to prevent damage to gate anchor GA1 until the gate leaf is installed.

3.2.3.4 Installation of Replacement Pintle Ball and Pintle Base. Any silt or debris shall be removed from the pintle area. The pintle ball / Pintle base assembly shall be lowered into position using a suitable crane. A diver shall verify proper installation and remove the temporary eyebolt used for hoisting.

3.2.4 Installation of Auxiliary miter gate. The gate leaf shall be hoisted using the single point pick-up lug located at the approximate center of the gate leaf. The hoisting line shall be fastened to the pick-up lug using the Government furnished 3½" shackle. An auxiliary line shall be fastened to the tipping lug near the gudgeon hood using the Government furnished 2½" shackle. The gate leaf shall be raised from the hopper barge and swung to position so that the pintle socket is aligned over the pintle ball. The gate leaf shall further be positioned so that the miter end is rotated approximately two degrees upstream from the sill. The gate leaf shall then be lowered until it can be determined that the pintle socket has definitely engaged the pintle ball At this point the hoisting line may be slightly raised or lowered to align the gudgeon with the pintle. Anchor bar MK S-01-1 shall be rotated into position so that the gudgeon link MK S-01-5 is aligned. Once alignment has been achieved the gudgeon pin shall be installed after first installing the rings and collars as shown on reference drawing M-L25 21/50A.1. After the gudgeon pin is installed, keeper ring MK 21/50A-9 shall be installed. Pin MK S-01-4 shall then be installed connecting Gudgeon link MK S-01-5 and anchor bar MK S-01-2. Once the gudgeon pin is installed and anchor bar components assembled the tension in the hoisting line maybe .

3.2.5 Adjustment of Replacement Auxiliary Miter gate. Adjustment of the Auxiliary gate shall consist of turning the sleeve nuts on the anchor bars so that the center of the gudgeon pin is directly over the center of the pintle. The centerlines of the pintle shall be established using survey equipment with the lock wall and monolith joints used for reference. Adjustment of the sleeve nuts shall be accomplished with the gate leaf in the farthest open position possible with regard to the existing rock dam. Once the anchor bar adjustment has been approved by the Contracting Officer, it may be necessary to add or remove shims at bearing casting C1, C2 or C3. Shims at these locations shall be added or removed so there is full and complete alignment and complete bearing. The alignment and bearing is between bearing castings C2 and C3 at the miter end and between bearing casting C1 and the bearing casting mounted to the concrete recess at the quoin end. Final adjustment of the auxiliary miter gate shall be approved by the Contracting Officer.

3.2.6 Final Adjustment of Miter Seal. If in the opinion of the Contracting Officer the miter seal requires further adjustment, the Contractor shall accomplish the adjustment of underwater portions of the seal using a diver.

3.2.7 Walkway Installation. After all adjustments are complete and approved by the Contracting Officer, the walkway shall be reinstalled. This includes the two center portions and the quoin section.

3.2.8 Miter End Gate Lock. The contractor shall install a gate lock for the miter end consisting of two one inch diameter bolts conforming to ASTM A307 with backing nuts and washers. The bolts should be located in the position of the mitering device shown on reference drawing M-L25 21/59. The

mitering device shown on this drawing does not apply to the auxiliary gate. The contractor shall submit a drawing for approval showing the location of the proposed miter end gate lock.

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SECTION 02920
LEAD BASED PAINT EXPOSURE AND DISPOSAL

PART 1 - GENERAL

1.1 APPLICABLE PUBLICATIONS. The following publications of the issues listed below, but referred to thereafter by the basic designation only, form a part of this specification to the extent referenced:

1.1.1 Code of Federal Regulations (CFR).

29 CFR 1910.20	Access to Employee Exposure and Medical Records
29 CFR 1910.23	Guarding Floor and Wall Openings and Holes
29 CFR 1910.134	Respiratory Protection
29 CFR 1910.145	Specification for Accident Prevention Signs and Tags
29 CFR 1926.20	General safety and health provisions
29 CFR 1926.21	Safety training and education
29 CFR 1926.25	Housekeeping
29 CFR 1926.28	Personal protective equipment
29 CFR 1926.51(f)	Washing facilities
29 CFR 1926.55	Gases, vapors, fumes, dusts, and mists
29 CFR 1926.57	Ventilation
29 CFR 1926.59	Hazardous Communication Standard
29 CFR 1926.62	Lead
29 CFR 1926.103	Respiratory Protection
29 CFR 1926.353(c)	Ventilation. Welding, Cutting, or Heating of Metals of Toxic Significance.
40 CFR 61, Subpart A	General Provisions
40 CFR 61.152	Standard for Waste Disposal for Manufacturing, Demolition, Renovation, Spraying and Fabricating Operations
40 CFR 241	Guidelines for the Land Disposal of Solid Wastes
40 CFR 257	Criteria for Classification of Solid Waste Disposal Facilities and Practices

1.1.2 American National Standards Institute (ANSI).

Z88.2-92 Practice for Respiratory Protection

1.1.3 U.S. Army Corps of Engineers (COE); Engineering Manual (EM)

EM 385-1-1 Corps of Engineers Safety and Health Requirements Manual

1.1.4 National Institute For Occupational Safety and Health (NIOSH).

Manual of Analytical Methods, 3rd Ed., Vols 1 and 2

1.2 EXPOSURE AND DISPOSAL.

1.2.1 Definitions.

Abatement: A comprehensive process of eliminating exposure or potential exposure to lead-based paint which must include testing, measures for worker protection, containment of dust and debris, cleanup of waste, and clearance testing.

EPA Identification: The unique number assigned by EPA to each generator or transporter of hazardous waste, and each treatment, storage, or disposal facility.

Exposure Monitoring: The personal air monitoring of an employee's breathing zone to determine the amount of contaminant (e.g. lead) to which he/she is exposed.

Generator: Any person who first creates a hazardous waste, or any person who first makes the waste subject to the Subtitle C regulation (e.g., imports a hazardous waste, initiates a shipment of a hazardous waste from a treatment and disposal facility, or mixes hazardous wastes of different DOT shipping descriptions by placing them into a single container).

Hazardous Waste: As defined in RCRA the term "hazardous waste" means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may:

1. Cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

2. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

As defined in the regulations, a solid waste is hazardous if it meets one of four conditions:

1. Exhibits a characteristic of a hazardous waste (40 CFR Sections 261.20 through 262.24).

2. Has been listed as hazardous (40 CFR Section 261.31 through 261.33).

3. Is a mixture containing a listed hazardous waste and a non-hazardous solid waste (unless the mixture is specifically excluded or no longer exhibits any of the characteristics of hazardous waste)

4. Is not excluded from regulation as a hazardous waste.

High Phosphate Detergent: Detergent which contains at least 5% trisodium phosphate (TSP).

Incinerator: Any enclosed device using controlled flame combustion that neither meets the criteria for classification as a boiler nor is listed as an industrial furnace.

Manifest: The shipping document, EPA form 8700-22, used for identifying the quantity, composition, origin, routing, and destination of hazardous waste during its transportation from the point of generation to the point of treatment, storage, or disposal.

Medical Removal: The temporary removal of workers due to elevated blood lead levels as defined this specification.

MSHA: Mine Safety and Health Administration.

RCRA: Resource Conservation and Recovery Act of 1976 and its amendments.

TCLP: Toxic Characteristic Leaching Procedure, contained in 40 CFR Part 261 subpart C.

Transporter: Any person engaged in the off-site transportation of hazardous waste within the United States, by air, rail, highway, or water, if such transportation requires a manifest under 40 CFR Part 262.

1.2.2 General Description and Scope of Work. The work under these specifications shall include furnishing all equipment and materials; providing all labor, supervision, administration, and management; and supplying all construction equipment, materials, and services necessary to perform demolition, removal or handling of components with lead-based paint complete in accordance with the specifications, drawings, and other contract documents.

(2) The following explanations and listings and those contained in Paragraph 02920-3.3 are intended to give a general definition of the scope of the work under these specifications, and shall not be construed to be an itemized listing of each element of work required. The Contractor shall be responsible for conforming in all respects to the details and requirements of the specifications, drawings, and other contract documents. The Contractor shall be responsible for determining all local conditions and factors which would affect the prosecution, completion, and cost of the materials, labor, and services to be provided under this Contract. There will be no financial adjustment which is based on lack of knowledge of onsite conditions or their effect on the cost of the work.

1.2.2.1 Lead-Based Paint Exposure. All metals requiring demolition, including the miter gates, are painted with lead-based paint. The lead-based paint exposure will involve paint on surfaces which are to be cut, abraded, or disturbed during demolition and rehabilitation at the facilities. All sections of this specification involving personal protection and medical monitoring are to be implemented for all employees who may be exposed to lead-based paint.

(1) All painted materials designated for removal in the contract shall be assumed to contain lead-based paint unless proven otherwise to the satisfaction of the Contracting Officer or duly authorized representative.

(2) All metals from demolition activities including the miter gates shall be transported to an approved metal recycling facility.

1.3 CONTRACTOR COMPLIANCE AND RESPONSIBILITY.

1.3.1 Permits and Notifications. The Contractor shall obtain all necessary permits and certifications of personnel in conjunction with lead exposure, and provide timely notification of such actions as may be required by Federal, State of Missouri, regional, and local authorities. The Contractor shall be responsible for all testing required to obtain the necessary permits and certifications. Fees and/or charges for these permits shall be included in the Contract Price. The Contractor shall submit copies of the required permits, notifications, and certifications to the Contracting Officer or duly authorized representative prior to any on site activities.

1.3.2 Coordination Meeting. Representatives of the Contractor shall attend a coordination meeting at a time and place selected by the Contracting Officer or duly authorized representative to discuss matters relative to the execution of this Contract. The Contractor's representatives shall attend additional meetings as required by the Contracting Officer or duly authorized representative thereafter to expedite the work.

1.3.3 Worker Training. The Contractor shall institute a training program and assure participation of the workers who are subject to exposure to lead based paint.

The Contractor shall assure that each employee is informed of the following:

(1) The content of the OSHA lead standard 29 CFR 1926.62 and its appendices.

(2) The purpose, proper selection, fitting, use, and limitations of respirators.

(3) The purpose and a description of the medical removal protection program, including information concerning the adverse health effects associated with excessive exposure to lead based paint with particular attention to the adverse reproductive effects on both males and females.

(4) The hazards to the fetus and additional precautions for employees who are pregnant.

(5) Engineering controls and work practices associated with the employee's job assignment.

(6) The content of any compliance plan in effect.

(7) Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies, and should not be used at all except under the direction of a licensed physician.

All worker education programs must discuss and make available the OSHA Hazard Communication Standard 29 CFR 1926.59. Employers shall also check local

requirements, as some states have adopted their own right-to-know regulations. OSHA standard 29 CFR 1910.20, Access to Employee Exposure and Medical Records, requires that workers be given access to their medical and exposure records and to results from any studies conducted by the employer. The worker may also request an explanation of what his or her medical records mean. In addition, the standard gives workers the right to examine industrial hygiene sampling information, results of biological monitoring, exposure records, and material safety data sheets.

1.3.4 Worker Medical Surveillance. The Contractor shall provide medical examinations for all employees who are potentially exposed to lead at or above the OSHA action level. Medical surveillance shall be provided at no cost to employees and must be at a reasonable time and place. The medical exam shall be performed by, or under the supervision of a licensed physician. The employer must notify employees in writing of their blood lead levels. If the employees' blood lead levels exceed the numerical criterion for medical removal, they are qualified for temporary medical removal with protection benefits.

1.3.4.1 Pre-placement Medical Examination. Before exposure to lead and before respirator fit testing, workers must be referred to a physician for a medical examination. The content of the exam shall include at least the items listed in the following Paragraph entitled Physical Examination.

1.3.4.2 Physical Examinations. Medical examinations must include the following:

(1) A detailed work and medical history that pays particular attention to past lead exposure and past gastrointestinal, hematologic, renal, cardiovascular, reproductive, and neurological problems as well as personal habits such as smoking and hygiene.

(2) A thorough physical examination that pays particular attention to teeth, gums, and hematologic, gastrointestinal, renal, cardiovascular, and neurological systems.

(3) Evaluation of pulmonary status to determine whether the worker is capable of wearing a respirator.

(4) A blood pressure measurement.

(5) A blood sample and analysis that determines blood lead levels, hemoglobin and hematocrit, red cell indices, peripheral smear morphology, blood urea nitrogen, serum creatinine, and zinc protoporphyrin.

(6) A routine urinalysis with microscopic examination.

(7) Pregnancy testing, or laboratory evaluation of male fertility, if requested by a worker.

(8) Any other tests which are recommended by the examining physician.

1.3.4.3 Periodic Medical Examination. A periodic medical examination must be provided at least annually to all employees for whom a blood sampling test conducted any time during the preceding 12 months indicated a blood lead level at or above 40 Fg of lead per deciliter of whole blood (often referred to as 40 Fg/dl). The following conditions necessitate more frequent medical examinations:

(1) As soon as possible after a worker notifies the employer that he or she has signs or symptoms associated with lead toxicity.

(2) Whenever the worker desires medical advice concerning the effects of current or past exposure to lead.

(3) Whenever workers seek medical advice concerning the effects lead exposure can have on the ability to procreate a healthy child.

(4) Whenever workers show difficulty in breathing during a respirator fit test or during respirator use.

(5) As medically appropriate for workers who were removed due to lead exposure.

(6) Immediately upon notification that a worker is pregnant.

1.3.4.4 Special Provisions for Blood Lead Monitoring. Blood lead and zinc protoporphyrin must be monitored when the following conditions occur:

(1) At least every 2 months during the first 6 months of lead removal employment, and every 6 months thereafter.

(2) At least every 2 months for each worker whose last blood sampling and analysis indicated a lead level at or greater than 40Fg/dl. Continue testing at least every 2 months until two consecutive tests indicate blood lead levels less than 40 Fg/dl.

(3) At least monthly when the worker has been medically removed.

When the results of the above sampling indicate that the employee's blood lead level exceeds the criterion for medical removal, a second follow-up blood sampling test must be administered within 2 weeks after the employer receives the results of the first test. Analysis of blood samples must be conducted by a laboratory approved by OSHA. Employers or examining physician may contact their local OSHA area office for a current list of approved labs.

1.3.4.5 Information Provided to Examining Physician. The following information must be provided to the examining physician:

(1) Copy of the standard (29 CFR 1926.62) and appendices.

(2) Description of worker's duties as it relates to his/her exposure.

(3) Exposure level or anticipated exposure level to lead.

(4) Personal protective equipment used or expected to be used.

(5) Prior blood lead determinations.

(6) Any written medical opinions concerning a worker that are in control of the employer.

1.3.4.6 Written Medical Opinion. The Examining Physician shall provide a written medical opinion to the Contractor for each employee. Each employee

shall be provided a copy of their individual results. The following information shall be provided:

(1) Whether the employee has any detected medical condition which would place his/her health at increased risk from lead exposure.

(2) Any special protective measures or limitations on worker's exposure to lead.

(3) Any limitation on respirator use, including whether a powered air purifying respirator can be worn if a physician determined that a negative pressure respirator could not be worn.

(4) Results of blood lead determinations. The employer must implement and act consistent with these recommendations.

(5) Findings of lab results or diagnoses unrelated to the workers exposure to lead should not be communicated to employers or included in the written opinion.

(6) Employees should be advised by each physician of any medical condition, occupational or non-occupational, which necessitates further medical exam or treatment.

1.3.4.7 Chelation. No employee shall be subjected to prophylactic chelation at any time. If therapeutic or diagnostic chelation is to be performed, the employer must assure that it be done under the supervision of a licensed physician in a clinical setting with thorough and appropriate medical monitoring and that each employee is notified in writing prior to its occurrence.

1.3.4.8 Medical Removal Protection. Medical removal is designed to give employees time to reduce blood lead levels. With good engineering, work practices, personal hygiene, and respiratory protection practices in place, very few employees should reach removal trigger levels. There are different types of removals. While employees are removed, they must be placed in jobs that will not result in additional exposure to lead. Removal from lead exposed occupations is triggered by results of employee blood testing or a physician's orders.

1.3.5 Recordkeeping. The purpose of recordkeeping is to comply with any applicable local, state, and federal regulations, and to document ongoing exposure and medical monitoring of workers. The Contractor is responsible for maintaining written records of exposure monitoring, medical surveillance, and medical removal for the period of time stated in the following sections.

1.3.5.1 Exposure Monitoring Records. A Certified Industrial Hygienist shall review the exposure monitoring results and recommend an appropriate course of action. Within five working days after the receipt of monitoring results, the employer must notify each employee, in writing, of theresults which represent that employee's exposure and a description of any corrective actions to be implemented. Exposure monitoring records shall contain the following information:

(1) Dates, number, duration, location, and results of each sample taken.

(2) A description of the sampling procedures used to determine representative employee exposures.

(3) A description of the sampling and analytical methods used and evidence of their accuracy.

(4) The type of respirator worn.

(5) The worker's name, social security number, and job classification of employee monitored, and of all other employees whose exposure the measurement is intended to represent.

(6) Environmental variables that could affect measurement of the worker's exposure (e.g., temperature and humidity).

(7) Exposure monitoring records shall be maintained by the Contractor for 40 years or for the duration of employment plus 20 years, whichever is longer.

1.3.5.2 Medical Surveillance Records. Medical surveillance records shall include:

(1) The worker's name, social security number, and a description of duties.

(2) A copy of the physician's written opinions.

(3) Results of any airborne exposure monitoring done for that worker and the representative exposure concentrations supplied to the physician.

(4) Medical complaints related to lead exposure.

(5) A copy of the medical exam results, including medical and work history and a description of laboratory procedures.

(6) Results of any airborne exposure monitoring done for that worker and the representative exposure concentrations supplied to the physician.

(7) Medical complaints related to lead exposure.

(8) A copy of the medical exam results, including medical and work history and a description of laboratory procedures.

(9) A copy of standards or guidelines used to interpret the test results.

(10) A copy of the results of any biological monitoring.

Medical surveillance records shall be maintained for 40 years or for the duration of employment plus 20 years, whichever is longer.

1.3.5.3 Medical Removal Records. Medical removal records shall include the following information:

(1) The name and social security number of the worker.

(2) The date of each occasion that the worker was removed from current exposure to lead.

(3) The date on which the worker was returned to his or her former job status.

(4) A brief explanation of how each removal was or is being accomplished.

(5) A statement indicating whether or not the reason for the removal was an elevated blood lead level.

These records shall be maintained by the Contractor for at least the duration of any worker's employment.

1.3.5.4 Availability. All records must be made available upon request to the Assistant Secretary of Labor for OSHA and the Director of NIOSH for examination and copying. The Contractor must do the following upon request:

(1) Make environmental monitoring, biological monitoring, and medical removal records available to affected employees, former employees, or authorized employees for examination and copying.

(2) Make employee's medical records available to affected employee or authorized employee or to a physician or other person designated by such affected employee or authorized employee for examination and copying.

1.3.5.5 Transfer of Records. Whenever the employer ceases to do business, the successor employer must receive and retain all recordsrequired to be maintained. When the employer ceases to do business and there is no successor employer to receive and retain the records, these records must be transmitted to the Director of NIOSH. At the expiration of the retention period for the records required to be maintained, the employer must notify the Director of NIOSH at least 3 months prior to the disposal of such records and must transmit those records to the Director of NIOSH if requested within the period.

1.4 CONTRACTOR QUALIFICATIONS AND CERTIFICATIONS. The following shall be submitted to the Contracting Officer or duly authorized representative prior to the start of the lead abatement. No work shall begin until the following submittals have been reviewed and approved by the Contracting Officer or duly authorized representative.

1.4.1 Safety and Health Personnel Qualifications. The Contractor shall utilize a Certified Industrial Hygienist (CIH) with overall responsibility to develop, implement, and oversee enforcement of the Lead-Based Paint Removal and Disposal Plan as defined in Paragraph 02920-1.4.6, including the Contractor's personal air monitoring program. The CIH shall have demonstrable expertise in worker air monitoring programs; in the establishment of respiratory protection programs; a working knowledge of applicable state, federal, and occupational safety and health regulations; and formal educational training in occupational safety and health. **The CIH is not required to be present at the worksite on a full-time basis.** The IH shall be responsible for the ongoing implementation and enforcement of the Lead-Based Paint Removal and Disposal Plan, including the workerair monitoring program to the Crew Supervisor. **The IH shall conduct regular onsite supervision and continued evaluation of the effectiveness of the plan and shall be on site on a full time basis for the duration of the project.**

1.4.2 Licenses. Maintain current licenses as required by applicable State or local jurisdictions for the abatement, removal, transporting,

disposal or other regulated activity relative to the work of this contract. Submit copies of all State and local licenses and permits necessary to carry out the work of this contract.

1.4.3 Permits and Notifications. Submit copies of current valid permits and notifications as described in Paragraph 02920-1.3.1.

1.4.4 Submittals. Submittals shall be made in accordance with the applicable provisions of SECTION 01300 - CONTRACTOR SUBMITTAL PROCEDURES. Prior to starting any work involving lead based paint, the Contractor shall attend a preconstruction meeting. The time and place of the meeting will be designated by the Contracting Officer or duly authorized representative. All submittals from the Contractor shall be approved by the Contracting Officer or duly authorized representative prior to start of work. At that meeting the Contractor shall provide a detailed written account of the following:

(1) Lead-Based Paint Removal and Disposal Plan (described in Paragraph 02920-1.4.6).

(2) Proposed work schedule for all operations.

(3) Accident Prevention Plan as described in Far Clause 52.236-13 and EM 385-1-1.

(4) Written report on the Contractor's staff including the chain of command to be utilized at the work site.

(5) Proof that the environmental health testing laboratory used for air sample analysis is currently accredited for inorganic analysis by the American Industrial Hygiene Association (AIHA) and the American Association of Laboratory Accreditation (AALA).

(6) The name, address, and telephone number of the Certified Industrial Hygienist selected to prepare the Lead-Based Paint Removal and Disposal Plan, direct monitoring, perform training, and a copy of his/her American Board of Industrial Hygiene (ABIH) certification showing certification number and date.

(7) The prepared Contingency Plan for emergencies at the work site; including fire, accident, heat related injury, toxic atmosphere, power failure, etc. Include in the Plan specific procedures for decontamination or work area isolation. Include detail procedures on plans in event of detection of unexpected airborne lead contamination in the site area or on the adjoining grounds, or spilling of lead containers being hauled to storage and/or disposal. Provide Contractor's and Contracting Officer or duly authorized representative's point of contact telephone numbers, locations of police, fire department, hospitals, clinic, and all emergency service agencies closest to the work areas. These shall be prominently posted. Evacuation plans shall be included in the Contingency Plan. As part of the Plan, written notification shall be provided to the police, fire and emergency medical personnel of the planned asbestos abatement and disposal activities, the work schedule, and particularly any barriers or site features that may affect access and response capabilities.

(8) An equipment list which shall include manufacturer's data (brand name, model, capacity performance characteristics), quantities and any other pertinent information for all equipment and materials to be used in all operations performed on this project. This shall include but not be limited to the following:

a. Respirators and cartridges.

b. HEPA vacuums and vacuum equipment.

c. Other portable HEPA filter exhaust ventilation equipment.

d. Protective clothing and other personnel protection equipment.

e. Trucks used to haul waste.

f. Waste shipping containers.

g. Air sampling pumps.

h. Calibration devices.

Manufacturer's certificates of compliance shall be submitted that all respiratory protection devices utilized on the site are approved by NIOSH. Provide manufacturer's certificate of HEPA filtration capabilities for all cartridges and filters and HEPA vacuum systems. Provide manufacturer's product brochures and statements of capability for negative air pressure system.

(9) A comprehensive list of materials or manufacturer's descriptive literature along with all applicable Material Safety Data Sheets for review and acceptance of all major materials proposed for use in work under this Contract prior to the start of lead related work.

(10) All licenses, permits, notifications, and certificates as discussed herein.

(11) The Contractor shall submit proof that its employees have been trained in accordance with provisions stated in Paragraph 02920-1.3.5. The Contractor shall also submit proof that employees are involved in a medical surveillance program as outlined in Paragraph 02920-1.3.6.

(12) Waste Disposal Plan (described in Paragraph 02920-1.4.9).

1.4.5 Lead Based Paint Review. Prior to any work at the site, conduct a site visit with the Contracting Officer or duly authorized representative. The Contractor shall be responsible for determining the exact nature and extent of the materials to be removed or disturbed and all local conditions and factors which would affect the prosecution, completion, and cost of the materials, labor, and services to be provided under this Contract. There will be no financial adjustment which is based on lack of knowledge of onsite conditions or their effect on the cost of the work.

1.4.6 Lead-Based Paint Exposure, Removal and Disposal Plan The Contractor shall utilize a Certified Industrial Hygienist to develop a written Lead-Based Paint Exposure, Removal and Disposal Plan to be followed during the removal and disposal of lead containing materials in this project. The Certified Industrial Hygienist shall inspect the worksite where lead-based paint is to be encountered prior to development of the plan. The signature and certification number of the Certified Industrial Hygienist shall be marked on the Lead-Based Paint Exposure, Removal and Disposal Plan. As a minimum, the Safety, Health, and Accident Prevention Program; employee training; personal protective equipment and clothing; employee decontamination; air

monitoring and sampling; medical examinations and fitness reports; all necessary Material Safety Data Sheets; a detailed schedule sequencing the abatement work and the interfacing with other trades and Government lock personnel involved in asbestos abatement and construction; and waste storage and disposal shall be addressed in the Lead-Based Paint Removal and Disposal Plan. This plan shall also address abatement prior to cutting, grinding and other disturbance of the auxiliary gate steel surfaces. This plan shall be submitted to the Contracting Officer or duly authorized representative for review. Descriptions, drawings, and site layouts of worksite isolation enclosures and negative air pressure systems locations, decontamination and temporary waste storage facilities, and the boundaries of contaminated work areas shall also be provided for review and acceptance prior to the start of work as part of the Lead-Based Paint Exposure, Removal and Disposal Plan.

1.4.7 Air Monitoring Results. The Contractor shall submit all personal and area air monitoring test results to the Contracting Officer or duly authorized representative or duly authorized representative. All personnel performing sampling shall be properly certified and have medical surveillance as outlined in Paragraph 02920-1.3.6.

Air monitoring results shall be reported to the Contracting Officer or duly authorized representative in duplicate within 24 hours after the completion of a sampling cycle with written results to be submitted within 5 working days. Test results shall indicate each sample's pump serial number, airborne lead concentration, pump start-time, pump stop-time, date, pump flow rate, and exact location of where the sample was taken. The Contractor shall maintain results of air monitoring for 40 years in accordance with OSHA Standards. Test results shall include the names of the persons performing the air monitoring and the analyst who conducted the sample analysis and shall bear the following statement signed by the Industrial Hygienist:

> "I certify that the above samples were taken and the airborne lead concentration analysis were performed in strict compliance with applicable standards and regulations."

1.4.8 Hazard Communication Standards. As required by 29 CFR 1910.1200 and State regulations, employees shall have Hazard Communication Standard information and training pertaining to work site hazards and risks.

1.4.9 Waste Disposal Plan. This plan shall comply with the U.S. Environmental Protection Agency's (EPA) Resource Conservation and Recovery Act (RCRA) regulations. In addition to the RCRA requirements, the plan shall include, but shall not be limited to the following:

(1) Name, location, and telephone number of the reclamation facility used.

(2) Should rented equipment be used to transport waste materials, a copy of the written notification provided to the rental company informing them of the nature of the use of the rental equipment shall be included along with the rental company's acknowledgement and agreement.

(3) Submit proof of receipt prepared, signed, and dated by an agent of any reclamation facility used.

PART 2 - PRODUCTS

2.1 EQUIPMENT AND MATERIALS.

2.1.1 Lead-Based Paint Handling Materials and Equipment. The following materials and equipment shall be used only if the decision is made to remove lead-based paint from surfaces prior to component demolition. This decision shall be approved by the Contracting Officer or duly authorized representative prior to implementation. Materials and equipment used to remove, seal, handle, and dispose of lead-based paint shall conform with all applicable OSHA, EPA, State, and local regulations.

2.1.1.1 Chemical Stripping Removers. Chemical removers shall contain no methylene chloride products.

2.1.1.2 HEPA Vacuums. Vacuums containing high-efficiency filters which can filter out particles of 0.3 microns or greater (from a body of air) at 99.97% efficiency or greater, shall be used during initial and final cleanup. These vacuums shall conform to ANSI Z9.2.

2.1.1.3 High-Phosphate Wash. A detergent containing at least 5% tri-sodium phosphate (TSP) shall be used for final cleanup in abatement activities.

2.1.1.4 Power Equipment. All power equipment shall conform to OSHA Standards 29 CFR 1910.95. Employees and site occupants shall not be exposed to equipment noise levels higher than 84 dBA without being provided approved ear protection.

2.1.1.5 Spraying Equipment. Sprayers used to apply high-phosphate wash shall be of a low-pressure type to prevent lead dust from becoming airborne.

2.1.2 Worker Protective Clothing and Equipment. Worker protective clothing and equipment shall conform to NIOSH recommendations and OSHA Standards during any activity that results in the disturbance of lead-based paint or lead cable.

2.1.2.1 Respiratory Protection. Until air sampling results no longer indicate the need, the Contractor shall provide workers with and require the use of respirators approved by MSHA/NIOSH. A respiratory protection program shall be established in accordance with the OSHA Standard 29 CFR 1910.134 9(b), (d), (e), and (f) and the OSHA lead Standard 29 CFR 1910.1025. A minimally acceptable respiratory protection program shall include the following:

(1) Written standard operating procedures governing the selection and use of respirators must be established.

(2) Respirators must be selected on the basis of hazards to which the worker is exposed.

(3) The user must be instructed and trained in the proper use of respirators and their limitations including fit testing.

(4) Respirators must be regularly cleaned and disinfected.

(5) Respirators used routinely must be stored in a convenient, clean, and sanitary location.

(6) Respirators used routinely must be inspected during cleaning for worn and deteriorated parts.

(7) Respirators should be assigned to workers for their exclusive use.

(8) Appropriate surveillance of work area conditions and degree of worker exposure or stress must be maintained.

(9) There must be regular inspection and evaluation to determine the continued effectiveness of the program.

(10) Employees should not be assigned tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. A physician must determine through a medical examination the respirator user's medical status and review it annually.

(11) NIOSH/MSHA approved respirators must be used. The respirator furnished must provide adequate respiratory protection against lead or other hazards for which it is designed.

2.1.2.2 Respirator Selection. Contractor shall refer to the table below for the proper selection of respirators. Powered air-purifying respirators must be provided if the employee chooses to use this type of respirator.

(1) If exposure monitoring indicates airborne lead levels to be below the PEL, employees are not required to wear respirators unless job functions or conditions change that may alter the amount of airborne lead. If job functions or conditions change, new exposure monitoring samples must then be taken to re-evaluate the need for respirators.

(2) If exposure monitoring indicates airborne exposure to other contaminants, such as solvents, re-evaluation of the respirator cartridge is warranted. Re-evaluation of the respirator program and type is also indicated when a worker demonstrates a continued increase in blood lead levels.

(3) The Contractor shall permit each employee who uses an air purifying respirator to change the cartridge element whenever an increase in breathing resistance is detected and shall maintain an adequate supply of cartridge elements. The Contractor shall also permitevery employee who wears a respirator to wash their face and respirator face piece whenever necessary to prevent skin irritation associated with respirator use.

(4) If for any reason, a worker's breathing becomes difficult while wearing a respirator, that employee should leave the work site to change respirator cartridge(s). Respirator cartridge(s) should be changed daily or whenever the wearer has difficulty breathing or when there is chemical vapor breakthrough.

Airborne concentration of lead or condition of use	Required respirator[1]
From 0.05 mg/m^3 to not in excess of 0.5 mg/m^3 (10X PEL).	Half-mask, air-purifying respirator equipped with high efficiency filters.[2, 3]
Not in excess of 2.5 mg/m^3 (50X PEL).	Full facepiece, air-purifying respirator with high efficiency filters.[3]
Not in excess of 50 mg/m^3 (1000X PEL).	(1) Any powered, air-purifying respirator with high efficiency filters;[3] or (2) Half-mask supplied-air respirator operated in positive-pressure mode.[2]
Not in excess of 100 mg/m^3 (2000X PEL).	Supplied-air respirators with full facepiece, hood, helmet, or suit, operated in positive pressure mode.
Greater than 100 mg/m^3, unknown concentration or fire fighting.	Full facepiece, self-contained breathing apparatus operated in positive-pressure mode.

[1] Respirators specified for high concentrations may be used at lower concentrations of lead.

[2] Full facepiece is required if the lead aerosols cause eye or skin irritation at the use concentrations.

[3] A high efficiency particle filter means 99.97 percent efficient against 0.3 micron size particles.

2.1.2.3 Respirator Use. Respirators shall be worn at all times during lead-based paint abatement. After lead-based paint has been removed and an area has passed visual inspection and final clearance, respirators no longer need be worn in that area. In addition, respirators shall be used at the following times.

(1) During any operation that may result in airborne lead vapor or dust, unless exposure monitoring conducted during that operation (or a similar operation) indicates airborne lead levels below the PEL.

(2) In the lead control area while handling bags or sealed containers and while loading them into the disposal container.

2.1.2.4 Respirator Fitting and Training. The Contractor shall implement and maintain a Respiratory Protection Program in accordance with OSHA Standards 29 CFR 1910.134 and 29 CFR 1926.58. This program shall be described in detail in the Lead-Based Paint Exposure, Removal and Disposal Plan and shall incorporate the elements indicated in the following articles, as a minimum.

(1) Respirator Training. Employees shall be instructed in the selection, wearing, limitations, cleaning, storage, and maintenance of the type(s) of respirator(s) they will be using. Documentation and training

records shall be submitted to the Contracting Officer or duly authorized representative.

(2) Fit Testing. Each employee shall be qualitatively or quantitatively fit tested every 6 months as a minimum with the respirator(s) they are issued to ensure proper protection. The type of fit testing and other fit testing requirements shall be in accordance with OSHA Standard 29 CFR 1926.58, Appendix C. If necessary, the employee shall be given a choice of facepiece sizes or styles and respirator brands in order to ensure an adequate fit. Any facial hair that may interfere with the facepiece seal shall be removed prior to fit testing and actual respirator use. In addition, employees shall perform positive/negative pressure checks on half-mask and full-facepiece air purifying respirators each time they are put on and in accordance with manufacturer's instructions.

2.1.2.5 Respirator Storage. Respirators and filter cartridges shall be stored in a place and manner such that they cannot become contaminated with lead.

2.1.2.6 Protective Clothing and Equipment. All personnel engaged in work that disturbs lead based paint shall wear approved protective clothing and equipment. Not only will clothing and equipment need to be provided for lead dust, but also for protection against solvent and caustic stripping compounds. The Contractor shall be responsible for the following:

(1) Providing and assuring use of appropriate protective clothing and equipment.

(2) Providing a clean changing area (this is an area segregated from the work area by a physical barrier and which prevents additional employee lead exposure).

(3) Providing water for washing hands and face and providing shower facilities. For details of shower facilities available for this project, see Section 02910.

(4) Enforcing the removal of protective clothing at the end of each work day and before eating, drinking, or smoking.

(5) Provide for the cleaning, laundering or disposal of protective clothing and equipment.

(6) Informing the worker about proper use and maintenance of clothing and equipment.

2.1.2.6.1 Protective Coveralls. Protective coveralls and shoe covers constitute basic worker protection gear and should be worn at all times. Disposable coveralls and separate shoe covers are recommended. Disposable items can be either breathable or non-breathable. Non-breathable coveralls should not be used when the possibility of heat stress exists. The possibility of heat stress and its signs and symptoms should be discussed with all workers. The Certified Industrial Hygienist shall determine which type of coveralls to be utilized and provide this information in the Lead-Based Paint, Lead and Mercury Exposure, Removal and Disposal Plan.

2.1.2.6.2 Protective Gloves. Glove material should be appropriate for the specific chemical exposure (e.g., solvents and caustic). Cotton gloves provide some protection against the contamination of hands and cuticles with lead dust.

2.1.2.6.3 Protective Clothing For Cleanup and Disposal. The Contractor is to provide at least the following items for abatement cleanup, and disposal activities. The Certified Industrial Hygienist shall outline these items in the Lead-Based Paint, Lead and Mercury Exposure, Removal and Disposal Plan.

(1) Protective coveralls.

(2) Disposable shoe covers.

(3) Gloves.

(4) Vented goggles and face shields.
(5) Respirators and cartridges.

(5) Hats or other hair protection.

2.1.2.7 Other Materials and Equipment. Other materials and equipment, such as those used to construct the decontamination enclosure systems and isolation barriers shall be new or used, uncontaminated with lead, in serviceable condition, and appropriate to the intended purpose.

PART 3 - EXECUTION

3.1 WORK PROCEDURES.

3.1.1 Controlling Off-Site Dispersal. The Contractor is responsible for keeping lead based paint contamination within the work area. The abatement work crew supervisor is responsible for limiting access to the abatement work area only to the persons included in the following list:

(1) The Contractor and its employees.

(2) State, county, or local enforcement officials or their designees.

(3) The Contracting Officer or duly authorized representative.

(4) A Federal, State or local official, or their designee, engaged in research on lead.

All persons entering a work area during a project that involves breaking or disturbing lead-painted surfaces shall wear disposable shoecovers which shall be removed upon leaving the work area and placed with abatement waste. Any persons entering a mini-enclosure during lead paint component removal activity or during the cleanup process, shall also wear two layers of disposable coveralls and appropriate respiratory protection.

3.2 AIR MONITORING AND ANALYSIS.

3.2.1 Area Monitoring. If lead abatement is determined by the Contracting Officer or duly authorized representative to be necessary, at the start of the project the Contractor shall do initial air monitoring. If the initial monitoring reveals employee exposure to be at or below 30Fg of lead per cubic meter of air, the measurements need not be repeated unless a production, process, control or work practice change occurs. If the initial determination or subsequent monitoring reveals employee exposure at or above 30 Fg but below 50 Fg of lead per cubic meter of air, the employer must repeat

monitoring at least every six months. If the initial monitoring indicates lead levels above the 50 Fg/m^3 level, this monitoring should be repeated quarterly.

3.2.2 Personal Exposure Monitoring. Personal exposure monitoring shall be conducted in conjunction with all tasks that disturb lead-based paint or lead insulated cable. Exposure monitoring results are to be used by employers for determining the need for respirators, selecting the appropriate respiratory device and in determining the need for engineering controls. Exposure monitoring can also assist employers in identifying sources of exposure and the need for modifying abatement practices, including the need for additional engineering controls to reduce exposure. Allair monitoring results are to be submitted to the Contracting Officer or duly authorized representative.

3.3 PROJECT DOCUMENTATION. Maintain and have available for inspection at the jobsite, the following:

3.3.1 Daily Narrative Log. A daily narrative log shall be kept by the Industrial Hygienist. This log shall document the majorevents which occur each day. This log shall provide a comprehensive description of conditions in and around the jobsite. It shall include the names of all persons who visit the jobsite and all persons who enter the or restricted work areas. It shall contain the details of all accidents, emergencies, breakdowns of equipment, and any material, procedural or safety difficulties, including issues and complaints brought to management attention by the Contractor's employees. It shall contain details such as the number of persons on the job, the time they entered the work area and the time they left, and the nature of the work-in-progress. Each day's entries shall be signed and dated by the person who made them.

3.3.2 Daily Air Monitoring Log. A daily air monitoring log which records all required items outlined in Paragraph 3.2.

3.3.3 Work Schedules. Work schedules and progress charts amended on a daily basis.

3.3.4 Work Summary Report. Upon completion of the work in each set of dam gates, prepare a report and submit it to the Contracting Officer or duly authorized representative. The report shall contain:

(1) A summary of all work that was performed.

(2) A brief description of how the work was accomplished.

(3) A description of any problem areas encountered during the work.

(4) A copy of the narrative log maintained at the jobsite throughout the work.

(5) A copy of the air monitoring log maintained at the jobsite throughout the work.

(6) Drawings: All drawings pertaining to the work area, temporary facilities, and other project activities shall be available for inspection.

3.4 QUALITY CONTROL. As a means of assuring that the performance of the work fulfills the requirements of the contract documents, the Contractor

shall establish and implement a program for quality assurance and quality control. The Contractor's on-site supervisor shall conduct an on-site inspection not less than once a day or shift. The Contractor shall maintain a quality assurance program that provides that equipment, materials, and services under these specifications whether manufactured or performing within the Contractor's plant or at any other source shall be controlled at all points necessary to assure conformance to contractual requirements. The program shall provide for the prevention and ready detection of discrepancies and for timely and positive corrective action. If required, the Contractor shall make objective evidence of quality conformance readily available to the Contracting Officer or duly authorized representative.

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SECTION 03210
STEEL BARS FOR CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SCOPE

Work covered under this section includes fabrication and placement of uncoated and epoxy-coated reinforcing steel for both cast-in-place and precast concrete construction.

1.2 REFERENCES

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

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 315	ACI Detailing Manual: Section Details and Detailing of Concrete Reinforcement
ACI 318/318R	Building Code Requirements for Reinforced Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 370	Mechanical Testing of Steel Products
ASTM A 615/A 615M	Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A 616/A 616M	Rail-Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A 617/A 617M	Axle-Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A 706/A 706M	Low-Alloy Steel Deformed Bars for Concrete Reinforcement
ASTM A 775/A 775M	Epoxy-Coated Reinforcing Steel Bars

AMERICAN WELDING SOCIETY (AWS)

AWS D1.4	Structural Welding Code - Reinforcing Steel

1.3 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01300 - SUBMITTAL PROCEDURES:

DRAWINGS

Fabrication and Placement; GA.

The Contractor shall submit shop drawings which include reinforcement steel placement drawings; reinforcement steel schedules showing quantity, size, shape, dimensions, weight per foot, total weights and bending details; and details of bar supports showing types, sizes, spacing and sequence.

REPORTS

Materials; FIO.
Tests, Inspections, and Verifications; FIO.

Certified test reports of reinforcement steel, showing that the steel complies with the applicable specifications, shall be furnished for each steel shipment and identified with specific lots prior to placement. Three copies of the heat analyses shall be provided for each lot of steel furnished and the Contractor shall certify that the steel conforms to the heat analyses.

CERTIFICATES

Epoxy-Coated Bars; FIO.

Written certification for coating material and coated bars shall be submitted with the delivery of the bars.

SAMPLES

Epoxy-Coated Bars; FIO.

Sample of coating material and 1.5 pounds of patching material shall be submitted with the delivery of the bars.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Steel Bars

Steel bars shall comply with the requirements of ASTM A 615/A 615M, ASTM A 616/A 616M (including Supplementary Requirements), ASTM A 617/A 617M or ASTM A 706/A 706M, deformed, Grade 60, of the sizes and lengths shown on the drawings. All reinforcing steel to be welded shall be ASTM A 706/A 706M.

2.1.1.2 Epoxy-Coated Bars

Epoxy-coated steel bars shall comply with the requirements of ASTM A 775/A 775M, including written certifications for coating material and coated bars, sample of coating material, and 1.5 pound of patching material.

2.1.3 Accessories

2.1.3.1 Bar Supports

Bar supports shall comply with the requirements of ACI 315. Supports for bars in concrete with formed surfaces exposed to view or with surfaces to be painted shall be plastic-coated wire, stainless steel or precast concrete supports. Precast concrete supports shall be wedge-shaped, not larger than 9 by 3-1/2 by 3-1/2 inches, of thickness equal to that indicated for concrete cover and have an embedded hooked tie-wire for anchorage. Bar supports used in precast concrete with formed surfaces exposed to view shall be the same quality, texture and color as the finished surfaces.

2.1.3.2 Wire Ties

Wire ties shall be 16 gage or heavier black annealed wire. Ties for epoxy-coated bars shall be vinyl-coated or epoxy-coated.

2.2 TESTS, INSPECTIONS, AND VERIFICATIONS

The Contractor shall have material tests required by applicable standards and specified herein performed by an approved laboratory and certified to demonstrate that the materials are in conformance with the specifications. Tests shall be performed and certified at the Contractor's expense.

2.2.1 Reinforcement Steel Tests

Mechanical testing of steel shall be in accordance with ASTM A 370 except as otherwise specified or required by the material specifications. Tension tests shall be performed on full cross-section specimens using a gage length that spans the extremities of specimens with welds or sleeves included. Chemical analyses of steel heats shall show the percentages of carbon, phosphorous, manganese, sulphur and silicon present in the steel.

PART 3 EXECUTION

3.1 FABRICATION AND PLACEMENT

Reinforcement steel and accessories shall be fabricated and placed as specified and shown on approved shop drawings. Fabrication and placement details of steel and accessories not specified or shown shall be in accordance with ACI 315 and ACI 318/318R or as directed by the Contracting Officer. Steel shall be fabricated to shapes and dimensions shown, placed where indicated within specified tolerances and adequately supported during concrete placement. At the time of concrete placement all steel shall be free from loose, flaky rust, scale (except tight mill scale), mud, oil, grease or any other coating that might reduce the bond with the concrete.

3.1.1 Hooks and Bends

Steel bars, except for epoxy-coated bars, shall be mill or field-bent. Epoxy-coated bars shall be mill-bent prior to coating. All steel shall be bent cold unless authorized by the Contracting Officer. No steel bars shall be bent after being partially embedded in concrete unless indicated or authorized by the Contracting Officer.

3.1.2 Welding

Welding of steel bars will be permitted only where indicated or authorized by the Contracting Officer. Welding shall be performed in accordance with AWS D1.4 except where otherwise specified or indicated. Only bars conforming to ASTM A 706/A 706M shall be welded.

3.1.3 Placing Tolerances

3.1.3.1 Spacing

The spacing between adjacent bars and the distance between layers of bars may not vary from the indicated position by more than one bar diameter nor more than 1 inch.

3.1.3.2 Concrete Cover

The minimum concrete cover of main reinforcement steel bars shall be as shown on the drawings. The allowable variation for minimum cover shall be as follows:

MINIMUM COVER	VARIATION
6 inch	plus 1/2 inch
4 inch	plus 3/8 inch
3 inch	plus 3/8 inch
2 inch	plus 1/4 inch
1-1/2 inch	plus 1/4 inch
1 inch	plus 1/8 inch
3/4 inch	plus 1/8 inch

3.1.4 Splicing

Splices in steel bars shall be made only as required. Bars may be spliced at alternate or additional locations at no additional cost to the Government subject to approval by the Contracting Officer.

3.1.4.1 Lap Splices

Lap splices shall be used only for bars smaller than size 14. Lapped bars may be placed in contact and securely tied or spaced transversely apart to permit the embedment of the entire surface of each bar in concrete. Lapped bars shall not be spaced farther apart than 1/5 the required length of lap or 6 inches.

3.1.5 Embedment in Existing Concrete

See SECTION 03307 - CAST-IN-PLACE CONCRETE.

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SECTION 03307
CAST-IN-PLACE STRUCTURAL CONCRETE

PART 1 GENERAL

1.1 SCOPE

Work covered under this section includes:

Mixing, placing, finishing and curing of concrete for seats (for precast covers) around the edges of the tainter valve pit, tainter valve stop log slots and miter gate machinery pits; concrete for new, cast-in-place covers over the miter gate control station manholes. The precast covers are not included in this section (see SECTION 03425 - PRECAST CONCRETE).

Mixing, placing, finishing and curing of concrete for restoration of concrete around edges of the new debris openings in the guard wall.

Mixing, placing, finishing and curing of concrete around the new auxiliary lock wall bulkhead recesses.

Epoxy grouting of steel rods and reinforcing bars into existing concrete for the tainter valve pit cover seats, the stop log slot cover seats, the miter gate machinery pit cover seats, and the lock chamber bulkhead recesses; epoxy grouting of anchor bolts into existing concrete for the guard wall bridge column and stair anchor bolts.

Grouting beneath base plates for guard wall bridge columns and stair stringers and beneath handrail base plates in various locations.

1.2 REFERENCES

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

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 308	(1992)	Standard Practice for Curing Concrete
ACI 318/318R	(1992)	Building Code Requirements for Reinforced Concrete
ACI 347	(1989)	Formwork for Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 31	(1996)	Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(1993)	Concrete Aggregate
ASTM C 39	(1996)	Compressive Strength of Cylindrical Concrete Specimens
ASTM C 94	(1996)	Ready-Mixed Concrete
ASTM C 143	(1990a)	Slump of Portland Cement Concrete
ASTM C 150	(1995)	Portland Cement
ASTM C 172	(1990)	Sampling Freshly Mixed Concrete

ASTM C 231 (1997) Air Content of Freshly Mixed Concrete by the Pressure Method

ASTM C 260 (1995) Air-Entraining Admixtures for Concrete

ASTM C 309 (1997) Liquid Membrane - Forming Compounds for Curing Concrete

ASTM C 494 (1992) Chemical Admixtures for Concrete

ASTM C 685 (1995a) Concrete Made by Volumetric Batching and Continuous Mixing

ASTM C 881 (1990) Epoxy-Resin-Base Bonding Systems for Concrete

ASTM C 1107 (1997) Packaged Dry, Hydraulic-Cement Grout (Nonshrink)

ASTM D 75(1987; R 1992) Sampling Aggregates

ARMY CORPS OF ENGINEERS, WATERWAYS EXPERIMENT STATION (COE)

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

1.3 DESIGN AND PERFORMANCE REQUIREMENTS

1.3.1 Construction Tolerances

The surface requirements for the classes of finish shall be as specified in ACI 347.

1.3.1.1 Guard Wall Debris Opening

Class C finish for all surfaces.

1.3.1.2 Lock Wall Slots

Class B, applies to exposed surface of steel plates. See LOCK WALL SLOT ACCEPTANCE TEST.

1.3.1.3 Seats for Valve Pit, Stoplog Recess and Miter Gate Machinery Pit Covers

Class A for vertical and horizontal surface of seat. In addition, vertical surfaces of seat on East and West sides of opening must be straight to within 1/8" in full length and parallel to each other within 1/4" over full length. These tolerances are for guidance, only; meeting them does not relieve contractor of the responsibility to produce seats and covers which can be installed and removed. See Section 03425 PRECAST CONCRETE, paragraph ACCEPTANCE TESTS.

1.3.2 Concrete Mixture Proportions

Concrete mixture proportions shall be the responsibility of the Contractor. Mixture proportions shall include the dry weights of cement; the nominal maximum size of the coarse aggregate; the specific gravities, absorptions, and saturated surface-dry weights of fine and coarse aggregates; the quantities, types, and names of admixtures; and quantity of water per cubic yard of concrete. All materials included in the mixture proportions shall be of the same type and from the same source as will be used on the project. Specified compressive strength f'c shall be 4,000 psi at 28 days. The maximum nominal size coarse aggregate shall be 1 inch, in accordance with ACI 318/318R. The air content shall be between 4.5 and 7.5 percent. The slump shall be between 2 and 4 inches. The maximum water cement ratio shall be 0.45.

1.4 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTAL PROCEDURES:

DATA

Submit manufacturer's literature from suppliers which demonstrates compliance with applicable specifications for all proposed admixtures.

Air-Entraining Admixture; FIO
Accelerating Admixture; FIO
Water-Reducing or Retarding Admixture; FIO
Curing Materials; FIO
Batching and Mixing Equipment; FIO
Concrete Bonding Compound; FIO

Epoxy Adhesive; GA

Submit manufacturer’s literature from suppliers which demonstrates compliance with applicable requirements of epoxy adhesive for setting bolts, rods and reinforcing bars in existing concrete.

STATEMENTS

Formwork; FIO.

Formwork design shall be submitted 30 days prior to the first concrete placement.

REPORTS

Concrete Mixture Proportions; GA.

30 days prior to placement of concrete, the contractor shall submit the mixture proportions that will produce concrete of the quality required. Applicable test reports shall be submitted to verify that the concrete mixture proportions selected will produce concrete of the quality specified.

Concrete Strength Reports; GA.

Contractor shall submit reports of concrete strength acceptance test results as soon as they are available, but not later than 32 days after concrete is placed.

CERTIFICATES

Cement; FIO.

Certificates of compliance attesting that the concrete materials meet the requirements of the specifications shall be submitted in accordance with the Special Clause "CERTIFICATES OF COMPLIANCE". Cementitious material will be accepted on the basis of a manufacturer's certificate of compliance, accompanied by mill test reports that the material(s) meet the requirements of the specification under which it is furnished.

Aggregates; FIO.

Aggregates will be accepted on the basis of certificates of compliance and test reports that show the material(s) meet the quality and grading requirements of the specifications under which it is furnished.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Cement

Cement shall be Portland cement and shall conform to appropriate specifications listed.

2.1.1.1 Portland Cement

ASTM C 150, Type I

2.1.2 Aggregates

Aggregates shall meet the quality and grading requirements of ASTM C 33 Class Designations 4S or better.

2.1.3 Admixtures

Admixtures to be used, when required or approved, shall comply with the appropriate specification listed.

2.1.3.1 Air-Entraining Admixture

ASTM C 260

2.1.3.2 Accelerating Admixture

Accelerators shall meet the requirements of ASTM C 494, Type C or E, except that calcium chloride shall not be used.

2.1.3.3 Water-Reducing or Retarding Admixture

ASTM C 494, Type A, B, or D. High-range water reducing admixture Type F or G may be used only when approved, approval being contingent upon particular placement requirements as described in the Contractor's Quality Control Plan.

2.1.4 Water

Water for mixing and curing shall be fresh, clean, potable, and free from injurious amounts of oil, acid, salt, or alkali, except that unpotable water may be used if it meets the requirements of COE CRD-C 400.

2.1.5 Reinforcing Steel

Steel bars and accessories for reinforcement shall comply with SECTION 03210 - STEEL BARS FOR CONCRETE REINFORCEMENT.

2.1.6 Formwork

The design and engineering of the formwork as well as its construction, shall be the responsibility of the Contractor.

2.1.7 Form Coatings

Forms for exposed surfaces shall be coated with a nonstaining form oil, which shall be applied shortly before concrete is placed.

2.1.8 Curing Materials

2.1.8.1 Membrane-Forming Curing Compound

ASTM C 309, Type 1-D or 2, Class A.

2.1.9 Non-shrink Grout

Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, complying with ASTM C 1107, Class A or C, of consistency suitable for application, and a 30-minute working time.

2.1.10 Epoxy Adhesive for Setting Bolts, Rods and Reinforcing Bars in Concrete

Epoxy adhesive conforming to ASTM C 881, Type IV, Grade 3, Class suitable for use at temperatures prevailing at time of installation. Submit manufacturer's test data demonstrating that adhesive is capable of developing yield strenth of Grade 60 reinforcing bars (#4 to #6) when embedded 12 diameters in 4000psi concrete.

2.1.11 Epoxy Bonding Compound

Epoxy resin-based compound for bonding fresh concrete to existing, hardened concrete, complying with ASTM C881, Type II or Type V. Compound shall provide a minimum 3 hour contact time.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 General

Construction joints shall be prepared to expose coarse aggregate, and the surface shall be clean, damp, and free of laitance. Ramps and walkways, as necessary, shall be constructed to allow safe and expeditious access for concrete and workmen. Snow, ice, standing or flowing water, loose particles, debris, and foreign matter shall have been removed. Spare vibrators shall be available. The entire preparation shall be accepted by the Government prior to placing.

3.1.2 Embedded Items

Reinforcement shall be secured in place; joints, anchors, and other embedded items shall have been positioned. Internal ties shall be arranged so that when the forms are removed all metal will be not less than 2 inches from concrete surfaces permanently exposed to view or exposed to water on the finished structures. Embedded items shall be free of oil and other foreign matters such as loose coatings or rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically directed or authorized by the Contracting Officer. All equipment needed to place, consolidate, protect, and cure the concrete shall be at the placement site and in good operating condition.

3.1.3 Formwork Installation

Forms shall be properly aligned, adequately supported, and mortar-tight. The form surfaces shall be smooth and free from irregularities, dents, sags, or holes when used for permanently exposed faces. All exposed joints and edges shall be chamfered, unless otherwise indicated.

3.1.5 Production of Concrete

3.1.5.1 Ready-Mixed Concrete

Ready-mixed concrete shall conform to ASTM C 94 except as otherwise specified.

3.1.5.2 Concrete Made by Volumetric Batching and Continuous Mixing

Concrete made by volumetric batching and continuous mixing shall conform to ASTM C 685.

3.1.5.3 Batching and Mixing Equipment

The contractor shall have the option of using an on-site batching and mixing facility. The facility shall provide sufficient capacity to prevent cold joints. The method of measuring materials, batching operation, and mixer shall be submitted for review. On-site plant shall conform to the requirements of either ASTM C 94 or ASTM C 685.

3.2 CONVEYING AND PLACING CONCRETE

3.2.1 General

Concrete placement shall not be permitted when weather conditions prevent proper placement and consolidation without approval of the Contracting Officer. When concrete is mixed and/or transported by a truck mixer, the concrete shall be delivered to the site of the work and discharge shall be completed within 1-1/2 hours or 45 minutes when the placing temperature is 85 degrees F or greater unless a retarding admixture is used. Concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods which prevent segregation or loss of ingredients. Concrete shall be in place and consolidated within 15 minutes after discharge from the mixer. Concrete shall be deposited as close as possible to its final position in the forms and be so regulated that it may be effectively consolidated in horizontal layers 18 inches or less in thickness with a minimum of lateral movement. The placement shall be carried on at such a rate that the formation of cold joints will be prevented.

3.2.2 Consolidation

Each layer of concrete shall be consolidated by internal vibrating equipment. Internal vibration shall be systematically accomplished by inserting the vibrator through the fresh concrete in the layer below at a uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator and overlay the adjacent, just vibrated area by a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the layer below, if such a layer exists. It shall be held stationary until the concrete is consolidated and then withdrawn slowly at the rate of about 3 inches per second.

3.2.3 Cold-Weather Requirements

No concrete placement shall be made when the ambient temperature is below 35 degrees F or if the ambient temperature is below 40 degrees F and falling. Suitable covering and other means as approved by the Contracting Officer shall be provided for maintaining the concrete at a temperature of at least 50 degrees F for not less than 72 hours after placing and at a temperature above freezing for the remainder of the curing period. Salt, chemicals, or other foreign materials shall not be mixed with the concrete to prevent freezing. Any concrete damaged by freezing shall be removed and replaced at the expense of the contractor.

3.2.4 Hot-Weather Requirements

When the rate of evaporation of surface moisture, as determined by use of Figure

1 of ACI 308, is expected to exceed 0.2 pound per square foot per hour, provisions for windbreaks, shading, fog spraying, or covering with a light-colored material shall be made in advance of placement, and such protective measures shall be taken as quickly as finishing operations will allow.

3.3 FORM REMOVAL

Forms shall not be removed before the expiration of 24 hours after concrete placement except where otherwise specifically authorized. Supporting forms and shoring shall not be removed until the concrete has cured for at least 5 days. When conditions on the work are such as to justify the requirement, forms will be required to remain in place for longer periods.

3.4 FINISHING

3.4.1 General

No finishing or repair will be done when either the concrete or the ambient temperature is below 50 degrees F.

3.4.2 Finishing Formed Surfaces

All fins and loose materials shall be removed, and surface defects including tie holes shall be filled. All honeycomb areas and other defects shall be repaired. All unsound concrete shall be removed from areas to be repaired. Surface defects greater than 1/2 inch in diameter and holes left by removal of tie rods in all surfaces not to receive additional concrete shall be reamed or chipped and filled with dry-pack mortar. The prepared area shall be brush-coated with an approved epoxy resin or latex bonding compound or with a neat cement grout after dampening and filled with mortar or concrete. The cement used in mortar or concrete for repairs to all surfaces permanently exposed to view shall be a blend of portland cement and white cement so that the final color when cured will be the same as adjacent concrete.

3.4.3 Finishing Unformed Surfaces

All unformed surfaces that are not to be covered by additional concrete or backfill shall be float finished to elevations shown, unless otherwise specified. Surfaces to receive additional concrete or backfill shall be brought to the elevations shown and left as a true and regular surface. Exterior surfaces shall be sloped for drainage unless otherwise shown. Joints shall be carefully made with a jointing tool. Unformed surfaces shall be finished to a tolerance of 3/8 inch, unless otherwise specified, for a float finish, as determined by a 10 foot straightedge placed on surfaces shown on the plans to be level or having a constant slope. Finishing shall not be performed while there is excess moisture or bleeding water on the surface. No water or cement shall be added to the surface during finishing.

3.4.3.1 Float Finish

Surfaces to be float finished shall be screeded and darbied or bullfloated to eliminate the ridges and to fill in the voids left by the screed. In addition, the darby or bullfloat shall fill all surface voids and only slightly embed the coarse aggregate below the surface of the fresh concrete. When the water sheen disappears and the concrete will support a person's weight without deep imprint, floating should be completed. Floating should embed large aggregates just beneath the surface, remove slight imperfections, humps, and voids to produce a plane surface, compact the concrete, and consolidate mortar at the surface.

3.4.3.3 Broom Finish

A broom finish shall be applied to horizontal surfaces, unless otherwise

specified. The concrete shall be screeded and floated to required finish plane with no coarse aggregate visible. After surface moisture disappears, the surface shall be broomed or brushed with a broom or fiber bristle brush in a direction transverse to that of the main traffic or as directed.

3.5 CURING AND PROTECTION

Beginning immediately after placement and continuing for at least 7 days, all concrete shall be cured and protected from premature drying, extremes in temperature, rapid temperature change, freezing, mechanical damage, and exposure to rain or flowing water. All materials and equipment needed for adequate curing and protection shall be available and at the site of the placement prior to the start of concrete placement. Preservation of moisture for concrete surfaces not in contact with forms shall be accomplished by one of the following methods:

a. Continuous sprinkling or ponding.
b. Application of absorptive mats or fabrics kept continuously wet.
c. Application of sand kept continuously wet.
d. Application of membrane-forming curing compound conforming to ASTM C 309, Type 1-D, on surfaces permanently exposed to view and Type 2 on other surfaces shall be accomplished in accordance with manufacturer's instructions.

The preservation of moisture for concrete surfaces placed against wooden forms shall be accomplished by keeping the forms continuously wet for 7 days. If forms are removed prior to end of the required curing period, other curing methods shall be used for the balance of the curing period. During the period of protection removal, the temperature of the air in contact with the concrete shall not be allowed to drop more than 15 degrees C(25 degrees F) within a 24 hour period.

3.6 TESTS AND INSPECTIONS

3.6.1 General

The individuals who sample and test concrete as required in this specification shall have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing Technicians, Grade I.

3.6.2 Inspection Details and Frequency of Testing

3.6.2.1 Preparations for Placing

Foundation or construction joints, forms, and embedded items shall be inspected in sufficient time prior to each concrete placement by the Contractor to certify that it is ready to receive concrete.

3.6.2.2 Air Content

Air content shall be checked at least once during each concrete placement, unless a single ready mix load is used for placements in multiple locations, in which case air content shall be checked at least once for the load. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 231.

3.6.2.3 Slump

Slump shall be checked once during each concrete placement, unless a single ready mix load is used for placements in multiple locations, in which case slump shall be checked at least once for the load. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 143.

3.6.2.4 Consolidation and Protection

The Contractor shall ensure that the concrete is properly consolidated, finished, protected, and cured.

3.6.3 Action Required

3.6.3.1 Placing

The placing foreman shall not permit placing to begin until he has verified that an adequate number of acceptable vibrators, which are in working order and have competent operators, are available. Placing shall not be continued if any pile is inadequately consolidated.

3.6.3.2 Air Content

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment shall be made to the dosage of the air-entrainment admixture.

3.6.3.3 Slump

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment should be made in the batch weights of water and fine aggregate. The adjustments are to be made so that the water-cement ratio does not exceed that specified in paragraph 1.3.3, Concrete Mixture Proportions.

3.6.4 Reports

The results of all tests and inspections conducted at the project site shall be reported in writing daily. See SECTION 01440 - CONTRACTOR QUALITY CONTROL.

3.6.5 Concrete Strength Tests

The Contractor shall engage an independent concrete testing laboratory to sample concrete and perform concrete strength tests to determine compliance with the specifications. Concrete shall be sampled in accordance with ASTM C 172. Compression test specimens shall be made, cured, and transported in accordance with ASTM C 31. Compression test specimens shall be tested in accordance with ASTM C 39. One sample for strength tests shall be taken for each concrete placement at a single location. When a single ready mix load provides concrete for placement in more than one location, one sample for strength tests shall be taken for the ready mix load.

A minimum of three specimens shall be made from each sample; one shall be tested at 7 days for information and two shall be tested at 28 days for acceptance. Strength test reports shall be submitted in accordance with Paragraph 1.3.

3.6.5.1 Strength

Acceptance test results will be the average strengths of two specimens tested at 28 days. The strength of the concrete will be considered satisfactory so long as the average of three consecutive acceptance test results equal or exceed the specified compressive strength, f'c, and no individual acceptance test result falls belowf'c by more than 500 psi. If less than three acceptance test results are available for a class of concrete, the strength of the concrete will be considered satisfactory so long as no test result falls below f’c by more than 500 psi.

3.6.5.2 Corrective Action

If test results indicate concrete strength is unacceptable, Contractor shall remove unacceptable concrete and place new concrete at no cost to the Government. Any material which must be removed to allow removal of unacceptable concrete shall be removed and replaced at no cost to the Government. Any material or equipment which, in the opinion of the Contracting Officer, is damaged during concrete removal operations shall also be replaced by the Contractor at no cost to the Government.

3.7 GROUTING

3.7.1 Base Plates

Clean base plate; clean and roughen concrete; saturate concrete; remove excess water; mix and place grout per manufacturer’s written instructions; method of grouting shall prevent entrapped air, providing complete contact of grout with bottom of base plate; cut back edge of grout at 45 degrees from bottom of base plate just before final set; moist cure per manufacturer’s written instructions.

3.7.2 Bolts, Rods and Reinforcing Bars

Installation personnel shall have prior experience with the product used, or contractor shall have manufacturer’s representative present during grouting operations. Do not begin grouting operation if ambient temperature or grout temperature is outside manufacturer’s written requirements.

Clean item to be embedded of all scale, rust, oil, grease or any other material which reduces bond with epoxy grout. Drill hole using carbide-tipped percussion bit of diameter recommended by grout manufacturer. Diameter of hole shall not exceed 1/4" larger than diameter of grouted item. Minimum depth ofembedment shall be 12 diameters of embedded item unless shown otherwise. Clean hole of all loose material and standing water. Mix and install grout and embedded item per manufacturer’s written instructions.

Contracting Officer may, at his discretion, test any suspect embedded item. Test force will be equal to published yield stress times nominal cross-section of embedded item. If concrete failure occurs before test force is reached, item will be assumed to have passed test unless embedment is less than specified or shown. Cost of testing shall be borne by the Government. If embedded item fails test, contractor shall repair area around test item, install new embedded item and retest. All costs associated with repair, new installation and retesting shall be borne by the Contractor.

3.8 BONDING TO HARDENED CONCRETE

Where fresh concrete is to be cast against existing, hardened concrete, high-pressure wash then coat existing concrete with epoxy resin-based bonding compound. Existing concrete shall be clean and free of dirt, grease, oil, laitance and other deleterious substances. Apply bonding compound in accordance with manufacturer’s recommendations. Fresh concrete shall be cast while bonding compound is still tacky. If bonding compound loses tackiness before fresh concrete is cast, existing surface shall be cleaned and bonding compound reapplied.

-- End of Section --

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SECTION 03425
PRECAST CONCRETE

PART 1 GENERAL

1.1 SCOPE

Work covered under this section includes fabrication, installation and acceptance testing of the following precast concrete items:

Tainter valve pit covers
Tainter valve stop log slot covers
Miter gate machinery pit covers
Bulkhead to be inserted in the downstream tainter valve stop log slot on the river wall

Requirements for embedded steel plates, shapes and welded studs are included in SECTION 05120 - STRUCTURAL STEEL.

1.2 REFERENCES

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

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 211.1	(1991) Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 214	(1977; R 1989) Evaluation of Strength Test Results of Concrete

AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)

ASTM C 31	(1991) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(1993) Concrete Aggregates
ASTM C 39	(1994) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 150	(1994b) Portland Cement
ASTM C 172	(1990) Sampling Freshly Mixed Concrete
ASTM C 231	(1991b) Air Content of Freshly Mixed Concrete By The Pressure Method
ASTM C 260	(1994) Air-Entraining Admixtures for Concrete
ASTM C 494	(1992) Chemical Admixtures for Concrete
ASTM C 618	(1994a) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture In Portland Cement Concrete

PRECAST PRESTRESSED CONCRETE INSTITUTE (PCI)

PCI Mnl-116 (1985) Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products

1.3 SYSTEM DESCRIPTION

1.3.1 Performance Requirements

Perform the following testing to ensure the materials and method used meet the requirements of these specifications and will produce precast concrete members which are suitable for their intended use.

1.3.1.1 Concrete Strength

Concrete shall be sampled and cylinders made in accordance with ASTM C 172 and ASTM C 31.

a. Concrete Test Cylinders. A minimum of three concrete test cylinders shall be made for each concrete batch to verify the attainment of the specified strength.

b. Cylinder Making. Cylinders shall be made as near as possible to the location where they will be cured and shall not be disturbed in any way from 1/2 hour after casting until they are either 24 hours old or ready to be tested. Concrete in cylinders may be consolidated byrodding or by vibration as specified in ASTM C 31.

c. Cylinder Curing

(1) Test cylinders shall be cured with similar methods as the members they represent. In lieu of actual curing with the members, cylinders may be cured in curing chambers correlated in temperature and humidity with the beds. In such a case, the correlation shall be constantly verified by use of recording thermometers in the curing chambers and comparison with the temperature records of beds and by use of the same methods of moisture retention for curing chambers and casting beds.

(2) For beds cured by steam or radiant heat, cylinders shall be placed at random points along the bed. If there is any indication of variable heat, cylinders shall be placed in the coolest area.

(3) Test cylinders to indicate compliance with specified 28-day strength shall remain in the bed with the member until the member is removed. At that time, the cylinders shall be removed from their molds and placed in storage in a moist condition at 73.4 degrees plus or minus 3 degrees F.

d. Testing of Cylinders

(1) Testing of cylinders to determine compressive strength shall be performed in accordance with ASTM C 39. The strength of concrete at any given age shall be determined as the average of two cylinders, except a single cylinder test can be used to determine stress transfer strength or predictive strengths at less than 28 days.

(2) Testing machines shall be calibrated in accordance with ASTM C 39.

1.3.1.2 Air Content

The air content tests shall be conducted in accordance with ASTM C 231. At least one air content test shall be conducted on the concrete from which each member is cast.

1.4 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTAL PROCEDURES:

DATA

Concrete Mixture Proportions; GA.

30 days prior to placement of casting, the contractor shall submit the mixture proportions that will produce concrete of the quality required. Applicable test reports shall be submitted to verify that the concrete mixture proportions selected will produce concrete of the quality specified.

DRAWINGS

Shop Drawings; GA.

The Contractor shall prepare and submit for approval complete shop drawings that show the precast unit manufacturer's recommended details and materials for the work required by paragraphs DELIVERY, STORAGE, AND HANDLING and ERECTION. The shop drawings shall include: marking of the units for the placing drawings; formwork; reinforcing steel details; method of curing; and, pickup points and lifting devices.

REPORTS

Materials

Concrete; FIO.

The results of concrete strength testing by the contractor shall be submitted not more than 5 days after the tests are completed.

CERTIFICATES

Cement; FIO.
Pozzolan; FIO.
Air-Entraining Admixture; FIO.
Water-Reducing Admixture; FIO.
Accelerating Admixture; FIO.
Aggregates; FIO.

Cement, Pozzolan, Air-Entraining Admixture, Water-Reducing Admixture, Accelerating Admixture, and Aggregates shall be certified for compliance with all specification requirements.

Air Content; FIO.

Each precast member delivered to the jobsite shall be accompanied by a

certificate certifying that the air content in the concrete in that member is in compliance with the specifications. The certification must be based on an air content test conducted in conformance with ASTM C 231 on at least one of the batches of concrete from which the member was cast.

RECORDS

Construction Records; FIO.

Construction records of the manufacturing, handling, and erection of the precast prestressed concrete members shall be submitted.

1.5 DELIVERY, STORAGE, AND HANDLING

1.5.1 Transportation

1.5.1.1 Transporting Members

In transporting members by truck, railroad car, or barge, provision shall be made for supporting the items to prevent damage due to deflection or vibration. Adequate padding material shall be provided between tie chains or cables to preclude chipping of concrete.

1.5.1.2 Lateral Deflection or Vibration

Any noticeable indication of deflection or vibration during transportation shall be corrected by rigid bracing or support.

1.5.2 Storage

1.5.2.1 Storage Areas

Storage areas for precast members shall be stabilized, and suitable foundations shall be provided, so differential settlement or twisting of members will not occur.

1.5.2.2 Stacked members

Stacked members shall be separated and supported by battens placed across the full width of each item.

1.5.3 Handling of Members

The location of pickup points for handling of the members and details of the pickup devices shall be shown in shop drawings. Members shall be handled only by means of approved devices at designated locations. Members shall be maintained in an upright position at all times and picked up and supported as shown in approved shop drawings.

PART 2 PRODUCTS

2.1 MATERIALS

Materials shall comply with the following:

2.1.1 Cement

Cement shall comply with the following:

2.1.1.1 Portland Cement

Portland cement shall conform to ASTM C 150, Type I, II or III.

2.1.2 Pozzolan

Pozzolan shall conform to ASTM C 618 Class F or C.

2.1.3 Other Materials

2.1.3.1 Aggregates

Aggregates shall meet the requirements of ASTM C 33.

2.1.3.2 Admixtures

In no event shall admixtures containing chlorides or nitrates be used in the concrete.

a. Air-entraining admixture shall be certified to comply with ASTM C 260.

b. Water-reducing admixture shall be certified to comply with ASTM C 494 Type A.

c. Accelerating admixture shall be certified to comply with ASTM C 494 Type C.

2.1.4 Steel Reinforcement

Steel bars and accessories for reinforcement shall comply with SECTION 03210 - STEEL BARS FOR CONCRETE REINFORCEMENT.

2.2 CONCRETE MIXTURE PROPORTIONS

2.2.1 Concrete

Concrete shall be composed of cementitious material, water, fine and coarse aggregate, and admixtures. The cementitious material shall beportland cement and pozzolan where appropriate. The admixtures shall be an air-entraining agent and may include a water-reducing admixture when its formulation and use are approved by the Contracting Officer.

2.2.2 Proportions

The concrete mixture proportions shall meet the following requirements:

Tainter Valve Pit Covers, Stoplog Slot Covers, Miter Gate Machinery Pit Covers:
Maximum Water-cement ratio (w/c) = 0.45
Specified Strength = 4000 psi at 28 days

Tainter Valve Bulkhead:
Maximum Water-cement ratio (w/c) = 0.40
Specified Strength = 6000 psi at 28 days

Air Content = 5 to 7 percent as determined in accordance with ASTM C 231. Proportions shall be selected so that the maximum permitted w/c ratio is not exceeded and so as to produce an average strength exceeding the design strength f'c by the amount indicated below. Where the production facility has a standard deviation record determined in accordance with ACI 214, based on 30 consecutive strength tests of similar mixture proportions to that proposed,

obtained within 1 year of the time when concrete placing is expected, it shall be used in selecting average strength. The average strength used as the basis for selecting proportions shall exceed the specified strength f'c by at least:

400 psi if standard deviation is less than 300 psi
550 psi if standard deviation is 300 to 400 psi
700 psi if standard deviation is 400 to 500 psi
900 psi if standard deviation is 500 to 600 psi

If the standard deviation exceeds 600 psi or if a standard deviation record is not available, proportions shall be selected to produce an average strength at least 1,200 psi greater than the specified strength.

Mixtures shall be proportioned in accordance with ACI 211.1. The trial mixtures shall be formulated using the same materials as those to be used in the units supplied under this specification, and the selected proportions shall be submitted for approval with the results of cylinder strengths at 28 days.

2.3 EVALUATION AND ACCEPTANCE

2.3.1 Concrete

A test result shall be the average of the strengths of the three test cylinders made in accordance with paragraph SYSTEM DESCRIPTION, subparagraph PERFORMANCE REQUIREMENTS, subparagraph CONCRETE STRENGTH, subparagraph "a", CONCRETE TEST CYLINDERS. The strength level of the concrete will be considered satisfactory if the average of each set of three strength tests equals or exceeds the specified strength f'c and no individual test falls below the specified value by more than 500 pounds per square inch. Members manufactured with concrete that does not meet the strength requirements shall be rejected.

2.3.1.1 Air Content

All members cast with concrete having a measured air content less than 5 percent shall be rejected. Members cast with concrete having an air content up to 9 percent may be incorporated into the work if the strength requirements are met.

2.3.2 Tolerances

The precast members shall be manufactured within the following tolerances. Members failing to meet the dimensional tolerances shall be rejected. Meeting the tolerances does not relieve contractor of requirements of paragraph 3.10, ACCEPTANCE TESTS.

2.3.2.1 Tainter Valve Pit, Stoplog Slot and Miter Gate Machinery Pit Covers

Length: +0", -1/4"
Width: +0", -1/4"
Deviation from straight: 1/8" in full length

2.3.2.2 Tainter Valve Bulkhead

Height: 1/2"
Width: 1/4"
Depth: 1/8"
Deviation from plane: 1/4"

2.3.2.3 Anchors and Inserts

The actual position of anchors and inserts shall not vary by more than plus or minus 1 inch from positions shown in the contract drawings.

2.3.3 Defects

2.3.3.1 Minor Defects

Minor defects are those which involve less than 36 square inches of concrete and do not expose reinforcing steel. These defects will be repaired as specified hereinafter. Cracks which are visible but are 0.01 inch wide or less will be accepted.

2.3.3.2 Major Defects

Major defects are those which involve more than 36 square inches of concrete or expose reinforcing steel. If one or more major defects appear in a member, it shall be rejected. Cracks of a width of more than 0.01 inch shall be cause for rejection of the member.

PART 3 EXECUTION

3.1 FABRICATION

Fabrication of precast members shall follow the applicable provisions of the PCI Mnl-116, except as specified herein.

3.2 BEDS AND FORMS

3.2.1 Casting Beds

All casting beds shall have concrete support on unyielding foundations.

3.2.2 Forms

Forms, both fixed and movable, shall be of steel. All forms and beds shall be thoroughly cleaned after each use.

3.2.3 Bulkheads

Bulkheads, spacers, templates, and similar equipment having influence on the accuracy of dimensions and alignment shall be regularly inspected and maintained after each casting.

3.2.4 Alignment

Accurate alignment of forms shall be maintained during the casting operation to assure compliances with tolerances specified in Paragraph 2.3.2.

Leakage of the paste in form joints is not acceptable, and measures shall be taken to prevent such leakage. Corner chamfers, 1/2" x 1/2", shall be provided on the tainter valve bulkhead.

3.2.5 Form Ties

For exposed members, form ties, if used, shall be of the threaded or snap-off type so no parts will be left at the surface of the finished concrete.

3.3 STEEL REINFORCEMENT

Steel bars shall be placed in accordance with SECTION 03210 - STEEL BARS FOR CONCRETE REINFORCEMENT.

3.4 CONCRETE PLACEMENT

Concrete placement shall be in accordance with SECTION 03307 - CAST-IN-PLACE STRUCTURAL CONCRETE, except that once placement is started in a member, it shall be carried on in a continuous operation until the member is completed. Members shall be cast in a horizontal position; casting in tiers will not be permitted. Adequate vibration shall be provided with internal and form vibrators so the cast members shall be free of rock pockets or surface blemishes resulting from inadequate vibration. Cold joints shall not be permitted. If delays occur that result in hardening of the concrete so it will not receive a vibrator and again become plastic, the concrete shall be removed and the forms shall be washed out and refilled, otherwise partially cast members will be rejected.

3.5 CURING AND PROTECTION

Concrete for the manufacturing of the precast-prestressed concrete members shall be cured and protected in accordance with SECTION 03307 - CAST-IN-PLACE STRUCTURAL CONCRETE or by other methods further specified here.

3.5.1 Curing with Steam at Atmospheric Pressure

Steam curing shall be under a suitable enclosure to retain the live steam to minimize moisture and heat losses. The enclosure shall allow free circulation of the steam around the sides and top of the beams. Steam jets shall be so positioned so they do not discharge directly on the concrete, forms, or test cylinders. The cycle of steam application shall conform to the following:

3.5.1.1 Curing After Placing and Vibrating

After placing and vibrating, the concrete shall be allowed to attain its initial set before the steam is applied. During the period between placement of the concrete and application of steam, provisions shall be made to prevent surface drying by means of a coating of membrane curing compound, moist covers, or equally effective methods. Application of the steam shall be delayed not less than 2 hours and not more than 10 hours after the time of concrete placement. If the ambient temperature is below 50 degrees F, enough heat shall be applied to maintain the concrete at its placing temperature.

3.5.1.2 Temperature Increase

The ambient temperature within the casting enclosure shall be increased at a rate not to exceed 40 degrees F per hour. Temperature increase shall be as uniform as possible.

3.5.1.3 Temperature Range

The temperature shall be increased until the ambient temperature in the casting enclosure is between 140 and 160 degrees F.

3.5.1.4 Temperature Decrease

In discontinuing the steam curing, the ambient air temperature shall

decrease at a rate not to exceed 40 degrees F per hour. Temperature decrease shall be as uniform as possible.

3.5.1.5 Recording Thermometers

Recording thermometers showing the time-temperature relationship through the curing period shall be provided. At least one recording thermometer per casting enclosure shall be used. The desired curing time-temperature relationship shall be placed on the recording chart of the recording thermometer to aid the personnel controlling the temperature during curing. Recording charts shall be made available upon request and shall be clearly visible during the curing process.

3.5.2 Curing with Radiant Heat and Moisture

3.5.2.1 Radiant Heat

Radiant heat may be applied to beds by means of pipes circulating steam, hot oil, or hot water or by electric blankets or heating elements on forms. Pipes, blankets, or elements shall not be in contact with concrete, form surface, or test cylinders.

3.5.2.2 Moisture Loss

During the cycle of radiant heat curing, effective means shall be provided to prevent rapid loss of moisture in any part of the member. Moisture may be applied by a covering of moist burlap or cotton matting. Moisture may be retained by covering the member with a plastic sheet in combination with an insulating cover or by applying a liquid seal coat or membrane curing compound.

3.5.2.3 Temperature Limits

Temperature limits and use of recording thermometer shall be as specified for curing with steam at atmospheric pressure.

3.5.2.4 Termination of Curing

Termination of curing shall be as specified in Section 03307 - CAST-IN-PLACE STRUCTURAL CONCRETE unless the concrete has been cured by one of the two methods stated above.

3.6 REPAIRS

All honeycombed areas, chipped corners, air pockets over 1/4 inch in diameter, and other minor defects shall be repaired. Form offsets of fins over 1/8 inch shall be ground smooth. All unsound concrete shall be removed from defective areas prior to repairing. All surfaces permanently exposed to view shall be repaired by a blend of portland cement and white cement properly proportioned so that the final color when cured will be the same as adjacent concrete.

3.7 FINISHING

3.7.1 Unformed surfaces

Valve pit, stoplog slot, miter gate machinery pit covers: Broom finish
Tainter valve bulkhead: Steel trowel finish

3.8 ERECTION

Erection shall comply with the following.

3.8.1 Storage Provisions

All provisions for storage and handling given in pararaph DELIVERY, STORAGE, AND HANDLING shall be observed at the erection site.

3.8.2 Seating of Precast Concrete Members

The precast concrete members shall be set into place in a manner which assures full bearing. If the bearing called for in the contract drawing is not obtained, then the members shall be removed and the situation corrected.

3.8.3 Erection Plan

The erection plan shall be in sufficient detail so that adequacy of equipment, techniques, and accessories can be determined and comments offered. Acceptance of the Contractor's erection plan shall not relieve the Contractor of his responsibility for erecting precast members into position as required by the plans and specifications.

3.9 CONSTRUCTION RECORDS

Complete construction records shall be kept of the manufacturing, handling, and erection of the precast-prestressed concrete members. Records shall be kept for, but not limited to, the following items:

a. Specifications of material used in the manufacture of the members.

b. Time-temperature history of the concrete members from casting through steam or radiant heat curing.

c. Records of the inspection of the members each time they are moved.

d. Records of any defects in the member and any corrective measures taken.

3.10 ACCEPTANCE TESTS

Contractor and Contracting Officer shall decide on a mutually agreeable time for the acceptance tests described below. At Contracting Officer’s option, he may observe the tests.

3.10.1 Tainter Valve Pit, Stoplog Slot and Miter Gate Machinery Pit Covers

Contractor shall demonstrate proper fit of the cover segments by installing cover segments and making the gap and offset measurements described below.

Gap between adjacent cover segments and between end segments and edge of opening shall not exceed 1/2" at any point.

Gap between ends of segments and edge of opening shall not exceed 1/2" at any point.

Vertical offset between segments and between segments and edge of opening shall not exceed 1/4" at any point.

If any of the limiting dimensions above are exceeded, a sufficient

number of cover segments shall be rejected and new covers fabricated and installed to meet the requirements of this paragraph. Additional fabrication, installation and acceptance testing shall be performed at no additional cost to the Government.

After all cover segments have been accepted, each segment shall be numbered as shown on the drawings. The number shall be painted on the channel edge member near the centerline of each side.

3.10.2 Tainter Valve Bulkhead

Contractor shall verify the elevation of the bottom of the existing stoplog slot by means of probing with a jetting pipe or by other method acceptable to the Contracting Officer. With bulkhead installed, Contractor shall determine elevation of the top of the bulkhead and use this elevation to calculate the elevation of the bottom of the bulkhead. The bottom of the bulkhead shall be within 1/2" of the bottom of the slot.

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SECTION 05120
STRUCTURAL STEEL

PART 1 GENERAL

1.1 SCOPE

Work covered under this section includes fabrication and erection of structural shapes and plates, steel grating, handrail, wall armor, concrete edge protection, studs, rods, bolts and anchor bolts. Requirements for galvanizing, structural welding and stud welding are included. Painting (prime and top coats) is covered in SECTION 09940 - PAINTING HYDRAULIC STRUCTURES. Welding of reinforcing steel is covered in SECTION 03210 - STEEL BARS FOR CONCRETE REINFORCEMENT.

The table below lists the principal items covered by this section.

Project Feature	Steel Items
Guard Wall Debris Screen	Angles, bent plates, machined corner caps, welded studs for embedment in concrete
Guard Wall Bridge	Steel shapes, plates, grating, handrail
Intake Port Covers	Plates, angles, expansion anchors
Guard Wall Debris Screen	Structural tubes for screen; angles, plates for guide brackets, expansion anchors
Miter Gate Machinery Pit Covers	
Seats	Angles, welded studs, anchor bolts for embedment in cast-in-place concrete; steel shapes and plates for the cover support beam
Precast Covers	Shapes, plates, bars, welded studs for fabrication of precast concrete covers; handrail
Tainter Valve Pit and Stop Log Slot Covers	
Seats	Angles, welded studs for embedment in cast-in-place concrete
Precast Covers	Shapes, plates, bars, welded studs for fabrication of precast concrete covers
Tainter Valve Bulkhead	Plates, bars, welded studs for lifting sockets
Lock Chamber Bulkhead Extension	Plates, bolts

Lock Chamber Bulkhead Recess Inserts	Shapes, plates, threaded rods, grating, lock wall armor

1.2 GENERAL REQUIREMENTS

Structural steel fabrication and erection shall be performed by an organization experienced in structural steel work of equivalent magnitude. The Contractor shall be responsible for correctness of detailing, fabrication, and for the correct fitting of structural members. Connections, for any part of the structure not shown on the contract drawings, shall be considered simple shear connections and shall be designed and detailed in accordance with pertinent provisions of AISC ASD and AISC S329. Substitution of sections or modification of connection details will not be accepted unless approved by the Contracting Officer. AISC ASD shall govern the work. Welding shall be in accordance with AWS D1.1. High-strength bolting shall be in accordance with AISC S329.

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 INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC ASD (1989) Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design

AISC S303 (1992) Code of Standard Practice for Steel Buildings and Bridges

AISC S329 (1986) Allowable Stress Design Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36 (1994) Carbon Structural Steel

ASTM A 53 (1995a) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

ASTM A 123 (1989a) Zinc (Hot-Dip Galvanized) Coatings on Iron

ASTM A 276 (1997) Stainless Steel Bars and Shapes

ASTM A 307 (1994) Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength

ASTM A 325 (1994) Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength

ASTM A 493 (1995) Stainless Steel Wire and Wire Rods for Cold Heading and Cold Forging

ASTM A 500 (1993) Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

ASTM A 563 (1994) Carbon and Alloy Steel Nuts

ASTM F 436 (1993) Hardened Steel Washers

ASTM A 780 (1993a) Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

ASTM F 844 (1990) Washers, Steel, Plain (Flat), Unhardened for General Use

AMERICAN WELDING SOCIETY (AWS)

AWS A2.4 (1993) Standard Symbols for Welding, Brazing and Nondestructive Examination

AWS D1.1 (1994) Structural Welding Code - Steel

1.4 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01300 - SUBMITTAL PROCEDURES:

DRAWINGS

Detail Drawings; GA.

Shop fabrication details, including members (with their connections) not shown on the contract drawings. Welds shall be indicated by standard welding symbols in accordance with AWS A2.4. Include Bill of Material for all materials used.

Erection Drawings; GA.

Erection plan of the structural steel framing required. Erection plan shall conform to the requirements of AISC S303, shall be submitted prior to erection, and shall describe all necessary temporary supports, including the sequence of installation and removal.

CERTIFICATES

Mill Test Reports; FIO.

Certified copies of mill test reports for structural steel, structural bolts, nuts, washers, welded studs and other related structural steel items.

RECORDS

Welder Qualifications; FIO.

Certified copies of welder qualifications test records showing qualification in accordance with AWS D1.1.

1.5 STORAGE

Material shall be stored out of contact with the ground in such manner and location as will minimize deterioration. Material which becomes distorted or corroded shall be replaced before erection.

PART 2 PRODUCTS

2.1 STRUCTURAL STEEL

2.1.1 Carbon Grade Steel

Carbon grade steel shall conform to ASTM A 36.

2.2 STRUCTURAL TUBING

Structural tubing shall conform to ASTM A 500, Grade B.

2.3 STEEL PIPE

Steel pipe shall conform to ASTM A 53, Type E or Type S, Grade B.

2.4 ANCHOR BOLTS/THREADED ROD

Anchor bolts and threaded rod shall conform to ASTM A36.

2.5 HIGH STRENGTH BOLTS AND NUTS

High strength bolts shall conform to ASTM A 325, Type 1 with carbon steel nuts conforming to ASTM A 563, Grade C or DH.

2.6 CARBON STEEL BOLTS

Carbon steel bolts shall conform to ASTM A 307, Grade A with carbon steel nuts conforming to ASTM A 563, Grade A.

2.7 WASHERS

Plain washers shall conform to ASTM F 844. Hardened washers, when required, shall conform to ASTM F 436.

2.8 WELDED STUDS

Welded studs shall be of the headed-stud type, conforming to the requirements of AWS D1.1, Type A or Type B.

2.9 LOCK WALL ARMOR

Lock wall armor tees and preformed corner protection plates shall be fabricated from steel conforming to ASTM A 36, except that minimum yield strength shall be 33,000 psi, maximum tensile strength shall be waived, and the maximum allowable manganese content shall be 1.40 percent. Tees may be commercially rolled sections or may be fabricated from steel plates provided they have a nominal weight of not less than 28.2 pounds per foot and conform essentially to details shown.

2.10 CONCRETE EXPANSION ANCHORS

Expansion anchors for connecting to existing concrete shall be the wedge type of the diameter and embedment indicated on the drawings, conforming to ASTM A 276 or ASTM A 493.

2.11 PAINT

See SECTION 09940 – PAINTING: HYDRAULIC STRUCTURES.

PART 3 EXECUTION

3.1 FABRICATION

Fabrication shall be in accordance with the applicable provisions of AISC ASD and AISC S303, unless shown or specified otherwise. Additional tolerances for steel edge members of precast concrete covers are specified in SECTION 03425 - PRECAST CONCRETE. Fabrication and assembly shall be done in the shop to the greatest extent possible.

3.1.1 Fabricator Qualification

The fabricating plant shall be certified under the AISC quality certification program for Category I structural steelwork.

3.1.2 Welded Studs

Prepare steel surfaces as recommended by stud manufacturer. Use automatic end welding according to AWS D1.1 and manufacturer's printed instructions.

3.1.3 Bolted Connections

Shop install and tighten high-strength bolts in accordance with AISC S329. Bolts shall be snug tightened, unless connection is indicated as slip-critical, direct-tension, or tensioned shear/bearing connections.

3.1.4 Welded Connections

Comply with AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.

3.1.4.1 Visual Examination

Completed 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.

3.1.5 Painting

Structural steelwork, except surfaces of steel to be encased in concrete, surfaces to be field welded, contact surfaces of friction-type high-strength bolted connections and surfaces to be galvanized shall be prepared for painting and primed with the specified paint in accordance with Section 09940 PAINTING.

3.1.6 Galvanizing

Zinc coatings shall be applied in a manner and of a thickness and quality conforming to ASTM A 123. Where zinc coatings are destroyed by cutting, welding or other causes, the affected areas shall be regalvanized. Coatings 2 ounces or heavier shall be regalvanized with a suitable low-melting zinc base alloy similar to the recommendations of the American Hot-Dip Galvanizers Association, to the thickness and quality specified for the original zinc coating. Coatings less than 2 ounces shall be repaired in accordance with ASTM A 780.

The following items shall be galvanized:

Grating for guard wall bridge and stairs
Tainter valve pit cover edge members (channels)
Stoplog slot cover edge members (channels)
Miter gate machinery pit cover edge members (channels)
Tainter valve pit cover seat members (angles)
Stoplog slot cover seat members (angles)
Miter gate machinery pit cover seat members (angles)
All bolts

3.1.7 Nondestructive Testing

When doubt exists as to the soundness of any material part, such part may be subjected to any form of nondestructive testing determined by the Contracting Officer. This may include ultrasonic, magnaflux, dye penetrant, x-ray, gamma ray or any other test that will thoroughly investigate the part in question. The cost of such investigation will be borne by the Government. Any defects will be cause for rejection, and rejected parts shall be replaced and retested at the Contractor's expense.

3.2 ERECTION

Erection of structural steel shall be in accordance with the applicable provisions of AISC ASD and AISC S303. Prior to erection, verify elevations of concrete bearing surfaces and locations of anchorages for compliance with requirements. Replace any members which have been distorted. Plumb, level and align structural steel and associated items before tightening bolts and making field welds. Provide temporary shores, guys, braces or other supports during erection to maintain alignment and resist loads until entire structure is erected and all connections have been completed.

3.2.1 Anchor bolts

Anchor bolts/threaded rods shall conform to ASTM A36. Grouting of anchor bolts/threaded rods shall be in accordance with SECTION 03307 - CAST-IN-PLACE CONCRETE. Concrete expansion anchors for connection of steel to existing concrete are specified in Part 2 of this Section.

3.2.2 Base Plates

Base plates shall be grouted to provide full bearing after the supported members have been plumbed and properly positioned, but prior to placing superimposed loads. Separate setting plates under column base plates will not be permitted. Base plates shall be grouted in accordance with SECTION 03307 - CAST-IN-PLACE CONCRETE.

3.2.3 Lock Wall Armor

Installation shall conform to details shown. Tees and preformed plates shall be erected true to line and grade. The continuous edges of exposed faces shall not have a vertical or horizontal distortion from a straight line greater than 0.025 inch per foot of length. Distortion for any single section shall not exceed 1/4 inches. Where there is a warp in the installed tees or preformed plates greater than 1/16 inch, an extra anchor shall be installed at the proper location to draw the section into position. Bolt heads on exposed faces shall be countersunk and fitted so that they are flush with the finished surfaces. Joints between abutting sections shall be square and the butting ends shall be sawed or otherwise made smooth and regular.

3.2.4 Field Bolted Connections

Misaligned bolt holes shall be reamed, not burned to allow bolt installation. Install and tighten high-strength bolts in accordance with AISC S329. Bolts shall be snug tightened, unless connection is indicated as slip-critical, direct-tension, or tensioned shear/bearing connections.

3.2.5 Field Welded Connections

Field welding shall conform to the requirements of AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.

3.2.5.1 Visual Examination

Completed 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.

3.2.5.2 Inspection and Testing (Nondestructive Testing)

The Contracting Officer reserves the right to inspect and nondestructively test any welds suspected of being unsound. The cost of such investigation will be borne by the Government. Any defects will be cause for rejection and rework. Cost of rework shall be borne by the Contractor.

3.2.6 Field Coating

After erection, the field bolt heads and nuts, field welds, and any abrasions in the shop coat shall be cleaned and primed in accordance with SECTION 09940 – PAINTING: HYDRAULIC STRUCTURES. Any abrasions, burns or other damage to galvanized coatings shall be repaired in accordance with ASTM A 780.

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SECTION 05915
BULKHEAD RECESS AND BULKHEAD EXTENSION ACCEPTANCE TEST

PART 3 EXECUTION

3.1 ACCEPTANCE TEST. At completion of construction of the bulkhead lock wall recesses and the bulkhead extension, Contractor shall demonstrate that proper recess alignment and bulkhead extension fabrication have been provided by installing a single bulkhead segment with the bulkhead extension attached.

a) Remove silt and debris from poiree dam sill.

b) Remove elastomer seal strip from the bottom of bulkhead segment.

c) Match drill holes in bulkhead segment/bulkhead extension for attachment of extension to bulkhead, as indicated on the contract drawings.

d) Attach bulkhead extension to bottom of bulkhead segment.

e) Adjust rigging and/or counterweight bulkhead segment to account for additional weight of extension on one side of bulkhead segment.

f) Provide means to lift bulkhead segment/extension and lower into recess until the assembly rests on the poiree dam sill. Pick up beam will not be provided.

g) Provide diver to:

- Verify that elastomer seal strips on bottom of bulkhead extension are seated on the poiree dam sill over the entire length of the bulkhead.

- Verify that the bearing strips beneath the downstream chord of the bulkhead truss are seated on the top step of the poiree dam sill.

- Verify that the vertical bulb seals at each end of the bulkhead are in contact with the L7x4 which is welded to the inside of the recess.

h) Remove bulkhead from recess.

i) Disassemble extension from bulkhead.

j) Reinstall elastomer seal strip to bottom of bulkhead segment.

k) Touch up paint on bulkhead segment and extension and store at the site according to the Contracting Officer. Bulkhead shall be marked with paint for identification purposes.

If bulkhead segments cannot be installed or removed, required rework, approved by the Contracting Officer, shall be performed by the Contractor at the Contractor’s expense. Acceptance test shall be rerun. Approval of rework by the Contracting Officer does not relieve Contractor of the responsibility to pass the acceptance test.

Repair of any damage to bulkhead segment, extension or recesses occurring during acceptance test shall be approved by the Contracting Officer and shall

be performed by the Contractor at the Contractor’s expense.

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SECTION 09940
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; Z87.1a) Occupational and Educational Eye and Face Protection

ANSI Z358.1 (1990) Emergency Eyewash Shower Equipment

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 153 (1984; R 1989) Specific Gravity of Pigments

ASTM D 281 (1984; R 1989) Oil Absorption of Pigments by Spatula Rub-Out

ASTM D 520 (1984; R 1989) Zinc Dust Pigment

ASTM D 561 (1982; R 1989) Carbon Black Pigment for Paint

ASTM D 841 (1990) Nitration Grade Toluene

ASTM D 1045 (1986; R 1990) Sampling and Testing Plasticizers Used in Plastics

ASTM D 1152 (1989) Methanol (Methyl Alcohol)

ASTM D 1153 (1990) Methyl Isobutyl Ketone

ASTM D 1186 (1987) Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base

ASTM D 1200 (1988) Viscosity by Ford Viscosity Cup

ASTM D 1210 (1979; R 1988) Fineness of Dispersion of Pigment-Vehicle Systems

ASTM D 2917 (1991) Methyl Isoamyl Ketone

ASTM D 3721 (1983; R 1991) Synthetic Red Iron Oxide Pigment

ASTM D 4417 (1984) Field Measurement of Surface Profile of Blast Cleaned Steel

ASTM E 1347 (1990) Color and Color-Difference Measurement by Tristimulus (Filter) Colorimetry

CODE OF FEDERAL REGULATIONS (CFR)

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 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 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

40 CFR 355 Emergency Planning and Notification

49 CFR 171, Subchapter C Hazardous Materials Regulations

ENGINEERING MANUAL (EM)

EM 385-1-1 U.S. Army Corps of Engineers Safety and Health Requirements Manual

FEDERAL SPECIFICATIONS (FS)

FS TT-P-38 (Rev E) Paint, Aluminum (Ready-Mixed)

MACBETH DIVISION (MD)

MD-40219 (Matte Edition) Munsell Book of Color: Matte Finish Collection

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (1993) National Electrical Code

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH Pub No. 84-100 (1984; Supplement 1985, 1987, 1988, & 1990) NIOSH Manual of Analytical Methods

STEEL STRUCTURES PAINTING COUNCIL SPECIFICATIONS (SSPC)

SSPC Paint 25	(1991) Red Iron Oxide, Zinc Oxide, Raw Linseed Oil and Alkyd Primer (without Lead and Chromate Pigments)
SSPC SP 1	(1982) Solvent Cleaning
SSPC SP 3	(1989) Power Tool Cleaning
SSPC SP 5	(1991) White Metal Blast Cleaning
SSPC SP 7	(1991) Brush-Off Blast Cleaning

1.2 WORK PERFORMANCE

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.

1.3 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01300 - SUBMITTAL PROCEDURES:

STATEMENTS

Qualifications and Experience; GA.

The Contractor shall provide certification pursuant to Paragraph 1.4 for all job sites. Submittal of the qualifications and experience of any additional qualified and competent persons the CIH, IH, CSP employs to provide on-site safety and health will also be provided. Acceptance of this submission must be obtained prior to the submission of other required safety and health submittal items.

Accident Prevention Plan; GA.

The requirements included in Section 01 of EM 385-1-1 shall be followed by the Contractor when preparing the Accident Prevention Plan. The plan shall be prepared for all sites and shall include, but is not limited to, each of the topic areas listed in Table 1-1 therein and the requirements of Paragraph 1.6; each topic shall be developed in a concise manner to include management and operational aspects.

Confined Space Procedures; GA.

The Contractor shall develop detailed written standard operating procedures for confined spaces for all job sites in accordance with 29 CFR 1910.146 and as further described in this paragraph.

a. The contractor shall supply 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 ofair flow patterns.

Respiratory Protection Program; GA.

The Contractor shall develop a comprehensive written respiratory protection program for all job sites in accordance with 29 CFR 1910.134, 29 CFR 1926.62, and Section 05.E of EM 385-1-1.

Airborne Sampling Plan; GA.

The contractor shall develop an Airborne Sampling Plan for all job sites detailing the NIOSH Pub No. 84-100, 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. In addition, the contractor shall provide the Contracting Officerwith a copy of the test results from the laboratory within 5 working days of the sampling date and shall provide results from direct-reading instrumentation on the same day the samples are collected.

Ventilation Assessment; GA.

The contractor shall develop a plan to provide ventilation assessment for all job sites as required by Paragraph 3.2, subparagraph 1.6.5.1.

Medical Surveillance Plan; GA.

The Contractor shall develop a plan to provide medical surveillance to the workforce for all job sites as required in Paragraph 1.7 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. Medical records shall be maintained as required by 29 CFR 1910.20.

Waste Classification, Handling, and Disposal Plan; GA.

The Contractor is responsible for assuring the proper disposal of all hazardous and nonhazardous waste generated during the project. Therefore, the contractor shall develop a Waste Classification, Handling, and Disposal Plan for all job sites in accordance with the requirements of 40 CFR 261 and 40 CFR 262. In addition, the following provisions shall be included:

a. In the case of waste generated from abrasive blasting lead-containing paints with recyclable steel or iron abrasives, the spent abrasive shall be disposed of as a hazardous waste or shall be stabilized with proprietary 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 during blasting operations.

b. Hazardous waste shall be placed in 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.

c. Nonhazardous waste shall be stored in closed containers separate from hazardous waste storage areas.

d. All hazardous waste shall be transported by a licensed transporter in accordance with 40 CFR 263 and 49 CFR 171, Subchapter C.

e. All nonhazardous waste shall be transported in accordance with local regulations regarding waste transportation.

f. In addition to the number of manifest copies required by 40 CFR262.22, one copy of each manifest will be supplied to the Contracting Officer prior to transportation.

Water Quality Plan; GA.

For all job sites where lead is present, the Contractor shall develop a plan to ensure that no lead is released into bodies of water or storm sewers. Therefore, NPDES permits per EPA regulation 40 CFR 122 are not required for the project. 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. 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.

SAMPLES

Special Paint Formulas; GA.

Samples of special paint formulas, listed in Paragraph 2.2, shall be submitted. For all vinyl-type paints submitted for laboratory testing, separate 1/2-pint samples of ingredient raw materials shall be furnished. The ingredient samples shall be clearly identified by commercial name, trade designation, manufacturer, batch or lot number, and such other data as may be required. For all epoxy type paints submitted for laboratory testing, a list

of ingredient raw materials identifying commercial name, trade designation, manufacturer, batch or lot number, and such other data as may be required shall be furnished.

Specification and Proprietary Paints; GA.

Federal, Military, and Steel Structures Painting Council specification paints are those formulated to meet Federal, military, and industry specifications. When the required quantity of any type is 50 gallons or less, the Contractor can submit:

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, and fineness of grind.

c. A proprietary paint - When the required quantity of a particular type or color of a paint is 10 gallons or less, a proprietary, namebrand, shelf item paint of the same type and with similar properties to the material specified may be proposed without sampling. Proprietary paints are any which do not follow the formulas in Paragraph 2.2 or the complete specification requirements of Federal, Military, and Steel Structures Painting Council specifications. To receive consideration, a statement from the supplier that the paint is appropriate as to type, color, and gloss and is a premium grade of paint shall be furnished.

Thinners; GA.

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

RECORDS

Inspections and Operations; GA.

The Contractor shall document and submit records of inspections and operations performed. Submittals shall be made on a timely basis and shall include but are not limited to:

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.

1.4 QUALIFICATIONS

Qualifications and experience shall comply with the following.

1.4.1 Certified Professional

The Contractor shall provide a person who is qualified and competent as defined in Section 01 of EM 385-1-1, will develop the required safety and health submittal, and will be responsible for on-site safety and health 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 3 years of demonstrated experience in similar related work and are under the direct supervision of the CIH, IH, or CSP. For lead containing job sites, 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.

1.4.2 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.

1.5 SAMPLING AND TESTING

The Contractor shall allow at least 30 days for sampling and testing. Sampling may be at the job site or source of supply. The Contractor shall notify the Contracting Officer when the paint is 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 $200 dollars for each sample retested.

1.6 SAFETY AND HEALTH PROVISIONS

These paragraphs supplement 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.

1.6.1 Abrasive Blasting

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

1.6.1.1 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.

1.6.1.2 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 at least 20 dBA reduction in noise level.

1.6.2 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.

1.6.3 Cleaning with Solvents

1.6.3.1 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).

1.6.3.2 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.

1.6.4 Pretreatment of Metals and Concrete with Acids

1.6.4.1 Personal Protective Equipment

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

1.6.4.2 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).

1.6.5 Paint Application

1.6.5.1 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.

1.6.5.2 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 ductwork shall be electrically bonded and the bonded assembly shall be grounded.

1.6.5.3 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.

1.6.5.4 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.

1.6.6 Health Protection

1.6.6.1 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 faceseal 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.

1.6.6.2 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 lifelines, body harnesses, or other means of personnel removal shall be used during confined-space work.

1.7 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. The evaluation shall include:

a. Audiometric testing and evaluation of employees who will work in the noise environments.

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 (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.

1.8 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 1.7 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.

1.9 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-766e, Vinyl-Type White (or Gray) Paint

INGREDIENTS	PERCENT BY WEIGHT
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

	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, antisettling 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 will approximate Munsell color 2.5PB 5/2 identified in MD-40219.

2.2.2 Formula VZ-108d, Vinyl-Type Zinc-Rich Primer

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

	100.0		
			(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 adjustments 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 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.

2.3 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 Carbon Black

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

2.3.1.2 Zinc Dust

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

2.3.1.3 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 colors approximating Munsell colors 7.5R 4/8 (light color) and 7.5R 3/6 (dark color) identified in MD-40219, and shall show no evidence of incompatibility or reaction between pigment and other components after 6 months storage.

2.3.1.4 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.; Unitane OR-650, Kermira, Inc.

2.3.1.5 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. Bentone 14, produced by Rheox, Inc., has these properties.

2.3.1.6 Suspending Agent F

Suspending Agent F shall be a light cream colored finely divided powder having a specific gravity of approximately 1.70. It shall be an organic derivative of a special montmorillonite. 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 chlorideacetate 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 toVinylite 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 Isobutyl Ketone

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

2.3.3.3 Toluene

Toluene shall conform to ASTM D 841.

2.3.4 Silane B

Silane B for Formula VZ-108d shall be -beta-(aminoethyl)-gamma-aminopropyltrimethoxy silane. Silane A-1120, produced by the Union Carbide Corporation, and Silane Z-6020, produced by Dow Chemical Company, are products of this type.

2.4 TESTING

2.4.1 Chromatographic Analysis

Solvents in vinyl and epoxy 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 or 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 formulation is 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 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 flashpoint 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 Normal Exposure

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 to the brush-off 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. Regardless of the overall cleaning method used, welds and adjoining surfaces within a few inches 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 to minimize breakdown of mill scale and consequent rusting.

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 1.5 to 2.5 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. 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 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.

3.2 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 one of the thickness gages listed below. 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. Authorized thickness gages:

a. Mikrotest, Elektro-Physik, Inc.
b. Inspector Gage, Elcometer Instruments, Ltd.
c. Positest, Defelsko Corporation
d. Minitector, Elcometer Instruments, Ltd.
e. Positector 2000, Defelsko Corporation

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 shallbe: 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 degreesF 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 (Degree F)	
Below 50	MEK
50 - 70	MIBK
Above 70	MIAK

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 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 in a single, halflapped pass, followed after drying to at least a near tackfree 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 40percent thinning may be necessary for satisfactory application.

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. 2

The first coat shall be brush or spray applied in the shop or field as indicated at a maximum spreading rate of 600 square feet per gallon and touched up in the field as necessary to maintain its integrity at all times. The second or third coats of the system shall be applied in the field at a maximum spreading rate of 450 square feet per gallon. Prior to applying field coats, all field welds, other bare metal, and damaged areas of the shop-primed surfaces shall be cleaned and primed as previously specified except that application shall be by brush.

3.3.4 System No. 5-E-Z

Paint shall be spray applied to an average minimum dry film thickness of 7.0 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 primer shall be approximately 2.5 mils. The specified film thickness shall be attained in any event, and any extra coats needed to attain the specified thickness shall be applied at no additional cost to the Government. Attaining the specified film thickness by applying 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.

3.3.5 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 PAINTING SCHEDULES

SYSTEM NO. 2

Items or surfaces to be coated:
- Guard wall bridge (except floor grating and stair treads)
- Handrail
- Tainter valve pit cover lifting sockets
- Stoplog slot cover lifting sockets
- Miter gate machinery pit cover lifting sockets
- Miter gate machinery pit cover wide flange support beam
- Edge protection angles around pits at top of lock wall

SURFACE PREPARATION	1st COAT	2nd COAT	3rd COAT
Power tool or brush-off blast cleaning	SSPC Paint 25 Type I	FS TT-P-38 (Aluminum)	FS TT-P-38 (Aluminum)

SYSTEM NO. 5-E-Z

Items or surfaces to be coated:
- All immersed or partially immersed steel surfaces, including:
  - Bulkhead recess insert (face in contact with concrete requires primer only)
  - Bulkhead extension (all surfaces, inside and outside)
  - Wall armor
  - Wall edge protection

SURFACE PREPARATION	1st COAT	2nd COAT	3rd COAT	4th COAT
White metal blast cleaning	Vinyl zinc-rich VZ-108d (double spray coat)	Gray Vinyl V-766e (double spray coat)	White Vinyl V-766e (double spray coat)	Gray Vinyl V-766e (double spray coat)

The following items, for temporary use, are to be primed using SSPC Paint 25, Type I. The surface shall be prepared by power tool or brush-off blast cleaning.

- Intake port covers
- Debris screen structural tubes and guide angles

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SECTION 13036
COFFERDAM

PART 1 GENERAL

1.1 SCOPE

A cofferdam is required for in-the-dry construction of the lock chamber bulkhead recesses in the intermediate and river walls of the auxiliary lock.

1.2 GENERAL REQUIREMENTS

1.2.1 Design

Design of the cofferdam is the responsibility of the Contractor. The Contractor shall engage a registered engineer to be in responsible charge of the design and to seal the design.

1.2.2 Installation and Dewatering

The Contractor shall provide all labor, equipment and materials to install and dewater the cofferdam. The design of the dewatering system shall be submitted before work is begun and revised in accordance with site conditions. Dewatering design and the capacity of the equipment shall be in accordance with sound engineering practice. The Contractor shall operate and maintain the cofferdam and dewatering system to maintain a water-free environment for the construction activities, which are to be performedin-the-dry. The cofferdam must rest entirely on the concrete sill structure; it must not rest on sand, soil or any other material likely to flow into cofferdam when water is removed. The cofferdam shall be built to the same height as the top of the lock wall.

1.2.3 Protection

While the cofferdam is installed, the Contractor shall provide protection to prevent the damage to the cofferdam.

1.2.4 Removal and Disposal

After completion of in-the-dry construction activities, the Contractor shall rewater the cofferdam, remove it from government property and dispose of it in accordance with all local, state and federal requirements. Any brackets or attachments to the lock walls or floor shall be removed and the lock walls and floor returned to their original condition. Restoration of the lock walls and floor to their original condition includes, but is not limited to, filling holes in concrete with an epoxy grout, removing welds from metal surfaces and grinding and repainting the metal surfaces.

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01300 - SUBMITTAL PROCEDURES:

Drawings

Design Drawings; GA.

The Contractor shall submit drawings showing the proposed design for the cofferdam a minimum of 30 days prior to start of construction of the cofferdam. Drawings shall be sealed by a registered engineer.

Dewatering System; FIO.

The Contractor shall submit drawings and data describing the layout, equipment and capacity of the dewatering system a minimum of 30 days prior to start of construction.

-- End of Section--

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SECTION 16050 - ELECTRICAL WORK

PART 1 GENERAL

1.1 SCOPE. The work covered by this section consists of furnishing all plant, labor, material and equipment, and performing all operations necessary to furnish, install and test the electrical work associated with the Auxiliary lock closure and trash opening bridge spans at Lock and Dam No. 24, Clarksville, Mo. And Lock and Dam No. 25, Winfield, Mo., as shown on the drawings and as specified herein. Major items of construction are as listed below:

(1) Installation of conduit ductbank in areas as shown.

(2) Installation of conduit and junction boxes on new bridge span.

(3) Re-conductoring of light standard at Lock and Dam No. 25.

(4) Removal of existing circuits.

(5) Installation of new circuits and grounding.

1.2 QUALITY CONTROL. The Contractor shall establish and maintain quality control for all operations to assure compliance with contract requirements and maintain records of its quality control for all construction operations, and for all products including, but not limited to:

(1) Shop drawings, products list, and related documentation. Verify these comply with Contract Documents before submitting for approval.

(2) Delivery, handling, inspection, and storage of equipment.

(a) Deliver products to job site in dry and undamaged condition in manufacturer's containers or packaging.

(b) Provide personnel and equipment to handle products by methods to prevent soiling or damage.

(c) Promptly inspect shipments to assure products comply with Contract Documents, quantities are correct, and products are undamaged.

(d) Store products in dry, weatherproof enclosures, per manufacturer's instructions, with seals and labels intact; arrange storage to provide access for periodic inspections to assure products are undamaged and maintained under required conditions; during and after installation, protect products from damage from traffic, the weather, and construction operations.

(3) Inspection, field tests, and check-out.

(a) Inspect work in-progress regularly for product damage and Contract Document compliance.

(b) Perform specified and otherwise required field tests.

(c) Check completed work for proper operation.

1.2.1 Reporting. Furnish a copy of all quality control records as well as the records of corrective action taken to the Government daily.

1.3 APPLICABLE PUBLICATIONS. The latest issues of following publications listed below, but referred to thereafter by basic designation only, form a part of the specifications to the extent indicated by the reference thereto:

1.3.1 American National Standards Institute (ANSI).

ANSI B1.1 (1989)	Unified Inch Screw Threads (UN and UNR Thread Form)
ANSI C2 (1997)	National Electrical Safety Code
ANSI C80.1 (1994)	Rigid Steel Conduit - Zinc Coated

1.3.2 American Society for Testing and Materials (ASTM).

ASTM B8 (1995)	Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft

1.3.3 Institute of Electrical and Electronics Engineers (IEEE).

IEEE 383 (1974)	Type Test of Class IE Electric Cables, Field Splices, and Connections for Nuclear Power Generating Stations (R 1992)

1.3.4 National Electrical Manufacturers Association (NEMA).

NEMA WC 7 (1988)	Cross-Linked-Thermosetting-Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
NEMA WC 8 (1988)	Ethylene-Propylene-Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy (R 1992)

1.3.5 National Fire Protection Association (NFPA).

NFPA 70 (1996)	National Electrical Code

1.3.6 Underwriters' Laboratories (UL).

UL 44 (1997)	Thermoset-Insulated Wires and Cables
UL 360 (1996)	Liquid-Tight Flexible Steel Conduit
UL 514B (1997)	Fittings for Conduit and Outlet Boxes

1.4 DELIVERY AND STORAGE. Equipment specified in this section shall be scheduled for shipment to arrive on the job site no more than 90 days prior to its scheduled installation date. Upon delivery at the work site, the Contractor shall store all electrical equipment as specified below. The conditions under which any equipment or materials are to be stored shall be in

accordance with the equipment manufacturer's recommendations and with the best standard practices to ensure that all equipment and materials will be in new condition at the time of installation. The Contractor shall become familiar with the location of all other equipment, materials, and conditions that may affect the electrical work sequence in order to minimize any interference with other installations and to reduce the possibility of equipment damage from construction activities. The exact storage location of all electrical and electronic items shall be subject to the approval of the Contracting Officer.

1.4.1 Unheated Storage. The following equipment shall be stored in Contractor-provided weather protected storage facilities:

(1) Insulated wire and cables

(2) Conductor accessories

(3) Conduit fittings

(4) Grounding fittings

(5) Junction boxes

(6) Grounding accessories.

1.4.2 Outdoor Storage. The following equipment shall be stored in Contractor-furnished facilities either outdoor or as described in Paragraph 16050-1.4.1.

(1) Cable reels with completely sealed ends.

(2) Bare copper ground cable.

(3) Conduit.

1.5 OSHA COMPLIANCE. Equipment and installation shall conform to the applicable safety and health standards promulgated pursuant to the Federal Occupational Safety and Health Act of 1970 which are in effect 30 days prior to the date of quotation or bid.

1.6 CODE COMPLIANCE. All work, specified herein or shown on the drawings, shall conform to the applicable rules of NFPA Code No. 70, National Electrical Code, and ANSI C2, National Electrical Safety Code.

1.7 STANDARD PRODUCTS. Unless otherwise approved by the Contracting Officer, the materials and equipment to be furnished under this specification shall be standard products of manufacturers regularly engaged in the production of such equipment and shall be the manufacturer's latest standard design.

1.8 GENERAL ARRANGEMENTS. The general arrangements and approximate locations of the electrical equipment, conduit and wiring connections shall be as indicated on the drawings. The Contractor may, however, subject to the approval of the Contracting Officer, modify the layout indicated on the drawings or specified herein, to more readily conform to the space available and to the equipment proposed for use. Should the approved electrical equipment furnished be of a different size than indicated on drawings, the Contractor at its own expense shall make the necessary adjustments to the

branch circuit wiring (8 AWG and below), to accommodate the equipment actually installed.

1.9 COORDINATION WITH UTILITY

1.9.1 Construction Power. During Construction, the Contractor shall coordinate with the local utility to provide temporary construction power to each site as required. The Contractor shall negotiate a cost and a rate for this power. The Contractor may at his discretion use generator sets to provide construction power or to supplement the utility. The Contractor shall be responsible for coordinating the installation of the temporary power so as not to interfere with construction activities. All costs for temporary power shall be born by the Contractor. The Local Utility for each site is AmerenUE, Lincoln County (Lock 25) and Pike County (Lock 24) both handled out of the Wentzville Office, (573) 639-8311.

1.10 SUBMITTALS. Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted to the Contracting Officer in accordance with SECTION 01300 SUBMITTAL PROCEDURES:

1.10.1 Data. GA. Within thirty (30) days of Notice to Proceed, the Contractor, shall submit catalog numbers, cuts, drawings and other information for major items of electrical equipment including, but not limited to the following:

(1) Conduit and cable

(2) Grounding Equipment

(3) Junction Boxes

1.10.2 Reports. GA. Certified reports of the original qualifying tests specified in Paragraph 16050-3.5 shall be submitted.

PART 2 PRODUCTS

2.1 GENERAL. Materials and equipment submitted for approval shall be the standard cataloged products of concerns regularly engaged in the manufacture of the products and shall be the latest standard design that conforms to the specification requirements without modifications. Equipment for the same, similar, or allied service shall be of the same manufacture and type and, when of the same rating, shall be interchangeable. The Contractor shall submit to the Contracting Officer, for approval, a list of equipment proposed for use in the project. The list shall give sufficient information concerning the items to show compliance with the specifications. The standard product of any reputable manufacturer regularly engaged in the commercial production of the type and quality of material or equipment referred to will not be excluded on the basis of minor differences, provided all essential requirements of the specifications relative to materials, capacity and performance are met.

2.1.1 Materials. All materials, components, and equipment shall conform to the requirements of these specifications and shall be of high quality, free from defects and imperfections, of recent manufacture, and shall be suitable for the intended use and operating voltage. Particular care shall be taken to provide materials and equipment with long life, liberal factors of safety, and suitable operating characteristics for installation in areas with abundant and persistent moisture at the site. All materials, components, and equipment

shall be products of recognized reputable manufacturers. The products of manufacturers other than those specified herein will be accepted when it is proved to the satisfaction of the Contracting Officer that such products are adequate and suitable for the intended use. Upon request, the Contractor shall furnish to the Contracting Officer for approval, the names of all such other manufacturers, together with complete pertinent information regarding all such products which are proposed to be incorporated in the work. Samples of materials and equipment shall be submitted for approval when so directed.

2.2 CORROSION PREVENTION AND FINISH PAINTING

2.2.1 General. All equipment furnished under these specifications shall be designed to prevent deterioration from corrosion. The general requirements to be followed are specified below, and additional special treatments or requirements considered necessary for any individual item is specified under the respective item.

2.2.2 Fastenings and Fittings. Where practicable, all screws, bolts, nuts, pins, studs, springs, washers, and such other miscellaneous fastenings and fittings shall be of an approved corrosion resisting material or shall be treated in an approved manner to render them resistant to corrosion.

2.2.3 Corrosion-Resisting Materials. Corrosion-resisting steel, copper, brass, bronze, and copper-nickel, and nickel-copper alloys are acceptable corrosion-resisting materials. However, contact between dissimilar metals shall be avoided wherever practicable, except where one of the dissimilar metals is steel, or in the case of wiring and connections.

2.2.4 Corrosion-Resisting Treatments. Galvanizing, sherardizing, and zinc, cadmium, and copper plating, when properly done, and of a sufficiently heavy coat, are approved corrosion-resisting treatments. Other corrosion-resisting treatments may be used if approved by the Contracting Officer.

2.3 CONNECTIONS. All bolts, studs, machine screws, nuts, and tapped holes shall be in accordance with ANSI B1.1 Threads for sizes 1/4inch to 1-inch, inclusive, shall be NC or UNC series. Manufacturer's standard thread and construction may be used on small items which, in the opinion of the Contracting Officer, are integrally replaceable, except that threads for external connections to these items shall meet the above requirements.

2.4 CONDUIT AND FITTINGS

2.4.1 Galvanized Rigid Steel Conduit. Galvanized rigid steel conduit (GRS) shall meet requirements of ANSI C80.1, and shall be zinc coated inside and out by the hot dip galvanizing process. All conduit shall be rigid steel conduit unless otherwise specified or shown on the drawings. Intermediate metal conduit (IMC) and electrical metallic tubing (EMT), recognized by NEC Articles 345 and 348, will not be acceptable for this project. Minimum size of GRS conduit shall be 3/4-inch.

2.4.2 Steel Conduit Fittings. Steel conduit fittings shall meet the applicable requirements of UL 514B.

2.4.3 Conduit Outlet Bodies. Conduit outlet bodies shall meet the requirements of UL 514B.

2.4.4 Deflection/Expansion Fittings. Deflection/expansion fittings for rigid steel conduit shall be of watertight (NEMA 4) construction with means to ensure electrical continuity of the conduit run and to prevent damage to

cables. Fittings shall provide ¾-inch of movement from the normal in all directions and 30 degrees of angular deflection from the normal in any direction.

2.4.5 Insulating Bushings. Insulated grounding bushings with tin-plated copper grounding path shall be used on all feeder raceways and conduits entering enclosures. Bushings shall be hot dip mechanically galvanized with stainless steel screws. Bushings shall have integrally molded noncombustible insulated surfaces rated 150 degrees C.

2.4.6 Junction and Pull Boxes. All metal boxes shall be stainless steel, NEMA 4X. All boxes shall be provided with brass or stainless steel cover screws and suitable synthetic rubber gaskets, and shall be bossed, drilled and tapped, as required. Prior to pulling conductors, installed boxes that are exposed to the weather shall have covers in place to prevent rusting. Boxes shall have stainless steel continuous hinge and be field located in the approximate locations as shown on the drawings. All junction boxes shall be sized in accordance with the National Electrical Code.

2.5 INSULATED WIRE AND CABLE

2.5.1 Wire Table. Wire and cable shall be furnished in accordance with the drawings, and as necessary for proper operation of all equipment as specified herein or in other sections. Unless specified otherwise all wire and cable shall conform to the detailed requirements specified herein.

2.5.2 Rated Circuit Voltages. All wire and cable shall have minimum rated circuit voltages in accordance with Table 3-1 of NEMA WC 7 or NEMA WC 8.

2.5.3 Conductors.

2.5.3.1 Material. Conductors shall conform to all the applicable requirements of Section 2 of NEMA WC 7 or Part 2 of NEMA WC 8 as applicable and shall be annealed copper. Copper conductors may be bare, or tin- or lead-alloy-coated, if required by the type of insulation used.

2.5.3.2 Size. Unless otherwise specified or shown on the drawings, minimum wire size shall not be smaller than the existing conductors.

2.5.3.3 Stranding. Conductor stranding classes cited herein shall be as defined in Appendix L of NEMA WC 7 or NEMA WC 8, as applicable. All conductors shall have Class B or C stranding.

2.5.3.4 Separator Tape. Where conductor shielding, strand filling, or other special conductor treatment is not required, a separator tape between conductor and insulation is permitted.

2.5.4 Insulation.

2.5.4.1 Insulation Material. Insulation shall be cross-linked thermosetting polyethylene (XLPE) type, meeting the requirements of Section3 or Paragraph 7.7 of NEMA WC 7 as applicable, or an ethylene-propylene rubber (EPR) type meeting the requirements of Part 3 of NEMA WC 8.

2.5.4.2 Insulation Thickness. The insulation thickness for each conductor shall be based on its rated circuit voltage.

(1) Power Cables. The insulation thickness for single-conductor cables shall be as required by Table 3-1, Section 3 of NEMA WC 7 or Table 3-1, Part 3, of NEMA WC 8, as applicable. Column "A" thickness of Table 3-1 of NEMA

WC 7 will be permitted only for single-conductor cross-linked thermosetting polyethylene insulated cables without a jacket. NEMA WC 8 ethylene-propylene rubber-insulated conductors shall have a jacket. Column "B" thickness shall apply to single-conductor cables that require a jacket and to individual conductors of multiple-conductor cables with an overall jacket.

(2) Multiple-Conductor Control Cables. The insulation thickness of multiple-conductor cables used for control and related purposes shall be as required by Table 7-32 of NEMA WC 7 or Table 7.5.1 of NEMA WC 8 as applicable.

2.5.5 Jackets. All cables shall have jackets meeting the requirements of Section 4 of NEMA WC 7, or Part 4 of NEMA WC 8, as applicable, and as specified herein. Individual conductors of multiple-conductor cables shall be required to have jackets only if they are necessary for the conductor to meet other specifications herein. Jackets of single-conductor cables and of individual conductors of multiple-conductor cables, except for shielded cables, shall be in direct contact and adhere or be vulcanized to the conductor insulation. Multiple-conductor cables and shielded single-conductor cables shall be provided with a common overall jacket, which shall be tightly and concentrically formed around the core. Repaired jacket defects found and corrected during manufacturing are permitted if the cable, including jacket, afterward fully meets these specifications and the requirements of the applicable standards.

2.5.5.1 Jacket Material. The jacket shall be one of the materials listed below. Variations from the materials required below will be permitted only if approved for each specific use, upon submittal of sufficient data to prove that they exceed all specified requirements for the particular application.

(1) General Use.

a. Heavy-duty black neoprene (NEMA WC 8).

b. Heavy-duty chlorosulfonated polyethylene (NEMA WC 8).

c. Heavy-duty cross-linked (thermoset) chlorinated polyethylene (NEMA WC 8).

2.5.5.2 Jacket Thickness. The minimum thickness of the jackets at any point shall be not less than 80 percent of the respective nominal thicknesses specified below.

(1) Multiple-Conductor Cables. Thickness of the jackets of the individual conductors of multiple-conductor cables shall be as required by Section 4, Table 4-6 of NEMA WC 7 or Part 4, Table 4-4 of NEMA WC 8, and shall be in addition to the conductor insulation thickness required by Column B of Table 3-1 of the applicable NEMA publication for the insulation used. Thickness of the outer jackets or sheaths of the assembled multiple-conductor cables shall be as required by Section 4, Table 4-7, of NEMA WC 7 or part 4, Table 4-5, of NEMA WC 8.

2.5.5.2.1 (2) Single-Conductor Cables. Single-conductor cables, if non-shielded, shall have a jacket thickness as specified in Section 4, Table 4-4 of NEMA WC 7 or Part 4, Table 4-2 of NEMA WC 8. If shielded, the jacket thickness shall be in accordance with the requirements of Section 4, Table 4-5 of NEMA WC 7 or Part 4, Table 4-3 of NEMA WC 8.

2.5.6 Identification.

2.5.6.1 Color-coding. Insulation of individual conductors of multiple-conductor cables shall be color-coded in accordance with Paragraph 5.3 of NEMA WC 8, except that colored braids will not be permitted. Only one color-code method shall be used for each cable construction type. Power cable color-coding shall be black for Phase A, red for Phase B, blue for Phase C, white for grounded neutral, and green for an insulated grounding conductor, if included. Other individual conductors may be color-coded as indicated on the contract drawings but such color-coding may be accomplished by applying colored plastic tapes or sleeving at terminations.

2.5.7 Cabling. Individual conductors of multiple-conductor cables shall be assembled with flame-and moisture-resistant fillers, binders, and a lay conforming to Part 5 of NEMA WC 8, except that flat twin cables will not be permitted. Fillers shall be used in the interstices of multiple-conductor round cables with a common covering where necessary to give the completed cable a substantially circular cross section. Fillers shall be non-hygroscopic material, compatible with the cable insulation, jacket, and other components of the cable. The rubber-filled or other approved type of binding tape shall consist of a material that is compatible with the other components of the cable and shall be lapped at least 10 percent of its width.

2.5.8 Dimensional Tolerance. The outside diameters of single-conductor cables and of multiple-conductor cables shall not vary more than 5 percent and 10 percent, respectively, from the manufacturer's published catalog data.

2.5.9 Materials for Cable Splices - 600 Volts or Less

2.5.9.1 Connectors. Connectors shall be copper compression type, single indent for 250 MCM and smaller and double indent for 300 MCM and larger. Connectors shall be made of high conductivity seamless electrolytic wrought copper and electron-tin plated.

2.5.9.2 Rubber Tape. Rubber tape shall be self-fusing, 30 mil, EPR based.

2.5.9.3 Plastic Tape. Plastic tape shall be 8.5 mil, cold and weather-resistant tape.

2.6 CABLE IDENTIFICATION

2.6.1 General. All cables, conduit, and equipment shall be properly identified by tags as specified below.

2.6.2 Cable Tags (600V and Below). Single conductor phase cables 1/0 AWG and larger, and all multiple conductor cables shall be tagged at each junction box (without terminal blocks), pullbox, handhole, and at entry to and exit from conduit, using cable tags as specified in Paragraph 160502.5.6.

2.6.3 Conductor Tags (600V and Below). Tags shall be wraparound, polyester film, self-laminating markers, and shall be preprinted with the circuit number. No tags shall be handwritten. Tags shall be furnished and installed as specified below.

2.6.3.1 1/0 AWG and Larger. Single conductor phase cables 1/0 AWG and larger and all multiple conductor cables shall be tagged at all termination points. The tags shall indicate circuit number and phase.

2.6.3.2 2 AWG and Smaller. Single conductor phase cables 2 AWG and smaller shall be tagged at all termination points and in each junction box and

pull box. Phase identification for power cables shall be color-coded in accordance with Paragraph 16050-2.5.6.1.

2.7 GROUNDING

2.7.1 General. The Contractor shall furnish and install all ground cable conductors, connectors, clamps, fittings, and accessories required to make provisions for extending or replacing the existing lock grounding system as described hereinafter.

2.7.2 Equipment Grounding. Metal conduits, junction boxes, lighting fixtures and all other electrical equipment installed under this contract shall have provisions for bonding them to the existing lock grounding system. Size taps in accordance with the National Electrical Code Section 250-95.

2.7.3 Ground Cable. All bare wire for grounding use shall be concentrically-stranded, meeting requirements of ASTM B 8. Ground cable shall not be smaller than No. 6 AWG.

2.7.4 Connections.

2.7.4.1 Cable to Equipment. Connections to equipment and ground inserts shall be made by means of copper compression connectors. Connectors shall be NEMA 2-hole for ground cables 2/0 AWG and larger.

2.7.4.2 Cable to Conduits. Connections to conduits shall be made by means of grounding bushings or by means of clamp-type connectors designed for the purpose.

2.7.4.3 Cable to Cable. Cable to cable taps and splice connections shall be made by means of split-bolt connectors listed for use on copper conductors only.

PART 3 EXECUTION

3.1 GENERAL. The general arrangements and approximate locations of the electrical equipment, conduit and wiring connections shall be as indicated on the drawings. The Contractor may, however, subject to the approval of the Contracting Officer, modify the layout indicated on the drawings or specified herein, to more readily conform to the space available and to the equipment proposed for use. Should the approved electrical equipment furnished be of a different size than indicated on drawings, the Contractor at its own expense shall make the necessary adjustments to the wiring to accommodate the equipment locations actually installed.

3.2 WORKMANSHIP. Workmanship shall be in accordance with the best modern standard practice in the manufacture of high grade equipment of the type specified. Work shall be performed by mechanics, electricians, etc. regularly engaged in the type of work as specified herein.

3.3 CONDUIT INSTALLATION

3.3.1 General. Conduit sizes, and approximate locations shall be as shown on the drawings or as required by the National Electrical Code. The exact location of conduit shall be determined by the Contractor subject to field conditions and the approval of the Contracting Officer. Bends and offsets shall be held to a minimum. Where a conduit crosses a construction or expansion joint in the concrete, an approved expansion fitting shall be

installed. Field routing of conduit shall be accomplished to avoid interference with piping and other mechanical and structural equipment.

3.3.2 Corrosion Mitigation. Wherever RGS conduit passes through concrete-air, concrete-earth, or air-earth interfaces, heat-shrink sleeving with adhesive shall be applied 12-inches on each side of the interface. Taping or painting will not be permitted.

3.3.3 Bends. Field bends may be used if of the proper radius and carefully made with suitable tools so that the conduit is not deformed. Conduit that has been crushed or deformed in any way shall not be used. The radius of any field bend shall not be less than that required by Section 346-10 of NFPA 70 , The National Electrical Code.

3.3.4 Drainage. Provisions shall be made for draining conduits by sloping them toward manholes and pullboxes.

3.3.5 Threaded Joints. Ends of metal conduit shall be cut square and reamed to remove rough edges and burrs. Joints shall be made watertight by applying an application of 95% pure zinc, zinc rich cold galvanizing primer that will provide electrical continuity for the entire conduit system or run. Metal conduits shall provide electrical continuity for the conduit system or run. Threadless fittings or running thread couplings shall not be used.

3.3.6 Supports. All conduits shall be rigidly supported in an approved manner and as a minimum, firstly, in accordance with the drawings, and secondly, where the drawings are silent, in accordance with the National Electrical Code. Clamps for exposed conduit shall be of the one-hole, malleable iron type.

3.3.7 Raceway Bonding. Conduit terminating in enclosures shall be bonded to the enclosure using two locknuts, one inside and one outside. The locknuts shall be drawn up wrenchtight. Conduits shall enter the enclosures in the appropriate size knockout.

3.4 WIRE AND CABLE INSTALLATION

3.4.1 General. All mechanical work, including the installation of cable supports, brackets, hangers, and junction boxes, shall be completed as nearly as possible before installation of any cable. In general, all wire and cable shall be installed in accordance with the drawings. However, where these listings are silent or appear to be subject to interpretation the Contractor shall install all wire and cable in GRS conduit (provided by the Contractor) sized in accordance with the National Electrical Code. Any deviations from this shall be approved by the Contracting Officer in writing. The Contractor shall provide supports, racks, clamps, fittings, etc., as specified, indicated on the drawings or as required for the proper racking and supporting of all cables. The Contractor shall be completely responsible for providing a wire and cable installation that is in accordance with these specifications and the National Electrical Code, and is in the opinion of the Contracting Officer acceptable workmanship. Discrepancies, alternate installation means, differing site conditions, etc., shall be brought to the attention of the Contracting Officer immediately. Conduits and other raceways shall be installed as a complete system, without gaps, and shall provide physical protection for the entire length of the cables installed. All cables shall be arranged in a neat and orderly manner and shall not cross one another unless unavoidable. Cable and conductor bends shall have the maximum possible radius and in no case shall bends have a radius less than that recommended by the manufacturer.

Cables shall be installed with sufficient slack to prevent damage resulting from expansion or contraction or from differential settlement of conduits.

3.4.2 Pulling in Wires and Cables. Before pulling in wires and cables, it shall be shown to the satisfaction of the Contracting Officer that all raceways into which wire or cable is to be drawn are clean and dry. Proper means shall be provided to prevent damage to the cables during the process of pulling. The Contracting Officer shall inspect all cables after pulling and before terminating to ensure cables have not been damaged in this process. If in the opinion of the Contracting Officer a cable has been significantly damaged the Contractor shall remove that cable and pull in an identical replacement at no extra cost to the Government.

3.4.3 Splicing - 600 Volts and Less.

3.4.3.1 General. Cable splices shall be made only in approved junction boxes. If the Contracting Officer deems a splice necessary, the Contractor, at no additional cost, shall install a junction box sized in accordance with the NEC for splicing the circuit.

3.4.3.2 Installation. Splices shall be made as follows:

(1) The conductor insulation shall be removed and trimmed squarely, so that the insulation touches the connector when the conductors are butted together inside the connector.

(2) After the connector has been crimped, rubber insulating tape, tightly drawn (width reduced at least one-third) shall be applied over the conductor splice to a thickness of 1-1/2 times the thickness of the original insulation. The full thickness of the tape shall extend beyond the end of the insulation.

(3) Two half-lapped layers of plastic weather-resisting tape extending one inch beyond the rubber tape at each end shall be applied over the rubber tape. A smooth wrapping shall be made, but the tape shall not be stretched more than necessary.

3.4.4 Testing. Wire and cable shall be given dielectric tests after installation with all taps, splices and terminals in place, but before connecting the terminals to any equipment.

3.4.4.1 Megger Tests. All wires and cables shall be tested using a motor driven megger unless otherwise noted in these specifications. Megger voltages and duration of test shall be as follows:

Operating Voltage	Megger Voltage	Test Duration
151 to 600	1,000	1 Minute
150 and under	500	1 Minute

3.5 TESTING

3.5.1 Cable Data. Manufacture of the wire and cable shall not be started until all materials to be used in the fabrication of the finished wire or cable have been approved by the Contracting Officer. Cable data submitted shall include dimensioned sketches showing cable construction, and sufficient additional data to show that these specifications will be satisfied.

3.5.2 Inspection and Tests. Inspection and tests of wire and cable furnished under these specifications shall be made by and at the plant of the manufacturer, and shall be witnessed by the Contracting Officer or an authorized representative, unless waived in writing. The Government may perform further tests before or after installation. Testing in general shall comply with Section 6 of NEMA WC 7 or Part 6 of NEMA WC 8. Specific tests required for particular materials, components, and completed cables shall be as specified in the sections of the above standards applicable to those materials, components, and cable types. Tests shall also be performed in accordance with the additional requirements specified below.

3.5.2.1 Flame Tests. All multiple-conductor and single-conductor cable assemblies shall pass IEEE Std 383 flame tests, paragraph 2.5, using the ribbon gas burner. Single-conductor cables and individual conductors of multiple-conductor cables shall pass the flame test of NEMA WC 7, paragraph 7.7.3.1.3. If such tests, however, have previously been made on identical cables, these tests need not be repeated. Instead, certified reports of the original qualifying tests shall be submitted. In this case the reports furnished under paragraph, "REPORTS", shall verify that all of each cable's materials, construction, and dimensions are the same as those in the qualifying tests.

3.5.2.2 Independent Tests. The Government may at any time make visual inspections, continuity or resistance checks, insulation resistance readings, power factor tests, or dc high-potential tests at field test values. A cable's failure to pass these tests and inspections, or failure to produce readings consistent with acceptable values for the application, will be grounds for rejection of the cable, and replacement at no additional cost to the Government.

3.5.2.3 Reports. Results of tests made shall be furnished. No wire or cable shall be shipped until authorized. Lot number and reel or coil number of wire and cable tested shall be indicated on the test reports.

3.6 WARRANTY. The manufacturer's standard warranty, as offered to the public, shall apply under this contract. The Contractor shall require any subcontractors, manufacturers, or suppliers to furnish their warranties directly to the Government. The Contractor shall warranty all workmanship for a period of one year. Warranty time shall begin upon final acceptance of the equipment or material by the Contracting Officer and shall not be included in the calendar days for completion.

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