THE BOARD OF LEVEE COMMISSIONERS

Of The

ORLEANS LEVEE DISTRICT

SPECIFICATIONS AND CONTRACT DOCUMENTS FOR THE CONSTRUCTION OF

PONTCHARTRAIN BEACH FLOOD PROTECTION IMPROVEMENT PROJECT PHASE II

Lakefront Capital Improvements Program

PROPOSAL NO. 2040-0375

Prepared By
URS COMPANY
CONSULTING ENGINEERS
METAIRIE, LOUISIANA

FINAL

DEC 31 1986

NOT FOR CONSTRUCTION

December 1986

CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

PONTCHARTRAIN BEACH

FLOOD PROTECTION IMPROVEMENT PROJECT

PHASE II

PARISH OF ORLEANS

STATE OF LOUISIANA

PROPOSAL NO. 2040-0375

ORLEANS LEVEE DISTRICT

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URS COMPANY
3500 N. CAUSEWAY
METAIRIE, LA 70002

DECEMBER 31, 1986

TABLE OF CONTENTS

SECTION 1

GENERAL SPECIFICATIONS

Table of Contents
(cont'd)

Table of Contents
(cont'd)

Table of Contents
(cont'd)

ADVERTISEMENT FOR BIDS

Sealed Bids will be received by the Board of Levee Commissioners, Orleans Levee District, 202 Administration Building, New Orleans Lakefront Airport, New Orleans, LA 70126 until 2:00 p.m., local time, January 27, 1987, for OLB Proposal No. 2040-0375.

At 2:00 p.m., local time, the same day, all Bids that have been duly received will be publicly opened and read aloud.

The proposed Work provides for the construction of the Pontchartrain Beach Flood Protection Improvement Project - Phase II in Orleans Parish, Louisiana. The Work includes the construction of the concrete I-wall cap, pile supported reinforced concrete gate monoliths and steel swing gates, earthen access ramps with asphalt pavements, tree relocations, one water line relocation, and other work related to the complete and satisfactory construction of the Phase II flood protection plan. The Work included in this contract will complement the flood protection facilities recently completed under the Phase I contract. The project includes furnishing all labor, equipment, tools and materials necessary to construct the project. All Bids must be in accordance with the Contract Documents on file with the Chief Engineer, Orleans Levee District, 202 Administration Building, New Orleans Lakefront Airport, New Orleans, LA 70126 and at the office of the Engineer:

URS Company
3500 N. Causeway Boulevard, Suite 900
Metairie, Louisiana 70002
Telephone (504) 837-6326

Copies of the Bidding Documents and Contract Documents for use in preparing Bids may be obtained from the Engineer at the address stipulated above upon deposit of $100.00 for each set of documents. Deposits are not refundable.

All Bids must be made on the required Form of Proposal. All spaces for Bid prices must be filled in ink or type written, and the Form of Proposal must be completed and executed when submitted. Bids must be submitted in duplicate. (A copy of all Bid Documents is required.)

Bidders are required to be Louisiana - licensed contractors. See "Instructions to Bidders".

The Work is to commence within 10 days after the date of issuance of the Work Order. Completion of all Work is required within 125 calendar days following the date of contract stated in the Work Order. The above time of completion includes a 15 day allowance for inclement weather.

Bid security in the amount of 5 percent of the total Bid must accompany each Bid.

Bidders shall be aware that the Orleans Levee District has an MBE goal of 12%. See paragraphs B-9 of the Instructions to Bidders and 1.48 and 1.49 of the General Specifications.

The successful Bidder will be required to furnish a Performance/Payment Bond guaranteeing faithful performance and the payment of all bills and obligations arising from the performance of the contract.

Sureties will be required to meet qualifications set forth in the Contract Documents.

Note the information provided in the "Instructions to Bidders" and the information required in the "Questionnaire".

Bidders are invited to a prebid conference on January 20, 1987, at 10:00 a.m., to discuss the project. Other prebid conference details are set forth in the Bidding Documents.

No Bids may be withdrawn after the scheduled closing time for receipt of bids, nor for at least ninety (90) days thereafter.

The Board of Levee Commissioners of the Orleans Levee District reserves the right to accept any, or reject any, and/or all Bids, and to waive informalities, and to base acceptance of Bids on responsibility and past performance of Bidders as well as on price bid.

BOARD OF LEVEE COMMISSIONERS

OF THE

ORLEANS LEVEE DISTRICT

EMILE W. SCHNEIDER, PRESIDENT

Publish: The Times Picayune - January 5, 12, 19, 1987.

Publish: The Daily Journal of Commerce - January 5, 1987.

BIDDER'S CHECK LIST

Check off each space as you complete the instructions.

___ Bid Security of not less than 5% of total bid in the form of a certified check, cashier's check, or bid bond. Bid bond must have attached appropriate and satisfactory power of attorney.

___ Proper affidavit attached to bid if required by specifications, signed, and notarized.

___ Satisfactory evidence of the authority of the person signing on behalf of the individual, firm, partnership, or corporation must be attached. In the case of a corporation, said authority must be in the form of a Corporate Resolution.

___ If bid is $50,000.00 or more, your Louisiana State Contractor's license number must be affixed to the outside of your bid envelope and to the bid form.

___ Two (2) copies of pages i through I-2 of these contract documents shall be submitted as the bid documents. (A copy of all bid documents with all spaces and forms completed in ink will be absolutely necessary as part of this bid requirement. Your bid may not be considered if you fail to comply)

___ Return address must be shown on envelope, and envelope must be properly identified as to Sealed Bid Proposal Number, and Project on which you are bidding.

___ Check terms, delivery, and/or starting and completion times.

QUESTIONNAIRE

Each Bidder shall furnish in the spaces provided below or by attachment to this Questionnaire the information requested regarding materials which they propose to furnish as well as the information requested concerning bonding and insurance. Substitutions will be permitted only if named materials do not meet the requirements of the Contract Documents, the supplier is unable to meet the delivery requirements of the construction schedule, or the supplier is dilatory in complying with the requirements of the Contract Documents. Substitutions shall be subject to concurrence of the Owner and shall be confirmed by Change Order.

Preliminary acceptance of equipment or materials listed below shall not in any way constitute a waiver of the specifications covering such items; final acceptance will be based on full conformity with the Contract Documents.

Failure to furnish all information requested in the Questionnaire will be cause for rejection of the Bid.

1. Borrow material source to be used in ramp embankments; location and certification that material meets specifications? _____

   _____

   _____

   _____

2. Aggregate material source to be used in concrete I-wall cap; location and certification that materials meet the specifications? _____

   _____

   _____

   _____

3. Attach to this Questionnaire a letter of intent from the proposed Contractor's surety for that Surety's providing the required "Bond" upon execution of the contract in the amount of the Contractor's bid in accordance with pages H-3 and H-4 of these documents.

4. Attach to this Questionnaire a letter from the proposed Contractor's insurer as to the Contractor's ability to secure the specified insurance within the time allotted for execution of the contract following Owner's notice of award. Current insurance certificates shall be also attached for informational purposes.

See also pages F-1 and G-1 for additional information to be submitted with the Bid.

INSTRUCTIONS TO BIDDERS

B-1. CROSS REFERENCE TO PRIMARY STATEMENTS. Definitions, requirements, and limitations affecting the bidding are contained in the various contract documents, and are not necessarily repeated in these instructions.

B-2. QUALIFICATION OF BIDDERS. Bidders may be required to submit evidence that they have a practical knowledge of the particular Work bid upon, and that they have the financial resources to complete the proposed Work.

In determining the Bidder's qualifications, the following factors will be considered: Work previously completed by the Bidder and whether the Bidder (a) maintains a permanent place of business, (b) has adequate plant and equipment to do the Work properly and expeditiously, (c) has the financial resources to meet all obligations incidental to the Work, and (d) has appropriate technical experience.

Each Bidder may be required to show that he has handled former work so that no just claims are pending against such work. No Bid will be accepted from a Bidder who is engaged on any work which would impair his ability to perform or finance this Work.

B-3. LOUISIANA LICENSE REQUIREMENTS. Only Bids of Contractors licensed under LSA R.S. - 37:2150 et seq., will be considered. Licensing is supervised by the Louisiana Licensing Board for Contractors, State Capitol Building, Baton Rouge, Louisiana. Contractors desiring to bid shall submit with their Bids evidence that they hold a valid license in the proper classification.

B-4. FAMILIARIZATION WITH THE WORK. Before submitting his Bid, each prospective Bidder shall familiarize himself with the Work, the site where the Work is to be performed, local labor conditions and all laws, regulations and other factors affecting performance of the Work. He shall carefully correlate his observations with the requirements of the Contract Documents and otherwise satisfy himself of the expense and difficulties attending performance of the Work. The submission of the Bid will constitute a representation of compliance by the Bidder. There will be no financial adjustment for lack of such familiarization.

B-4.01. Site Conditions. Each Bidder shall visit the site of the Work and completely inform himself relative to construction hazards and procedures, the availability of land, the character and quantity of surface and subsurface materials, and utilities to be encountered, the arrangement and condition of existing structures and facilities, the procedure necessary for maintenance of uninterrupted operation of existing facilities, the character of construction equipment and facilities needed for performance of the Work, and facilities for transportation, handling, and storage of materials and equipment. All such factors shall be properly investigated and considered in the preparation of the Bid.

B-4.02 Prebid Conference. A prebid conference will be held at the Orleans Levee District offices located at 202 Administration Building, New Orleans Lakefront Airport, New Orleans, LA 70126 at 10:00 a.m., local time, on Tuesday, January 20, 1987. Representatives of Engineer and Owner will be

present to discuss the Project and answer questions. Bidders are encouraged to attend and participate in the conference.

B-4.03 Interpretations. All questions about the meaning or intent of the Contract Documents shall be submitted to the Engineer in writing. Replies will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received documents. Addenda will be issued at least 72 hours (excluding weekends and holidays) prior to the time stated for opening bids. Questions received less than seven (7) calendar days (excluding weekends and holidays) to the time for opening Bids will not be answered.

B-5. TAXES AND PERMITS. Attention is directed to the requirements of the General Conditions regarding payment of taxes and obtaining permits. All taxes that are lawfully assessed against Owner or Contractor in connection with the Work shall be paid by Contractor. The bid prices shall include all such taxes and the costs of all required permits.

B-6. BID SECURITY. The amount of bid security is stated in the Advertisement for Bids. The required security must be in the form of a certified or bank cashier's check or a bid bond. The bid bond must be executed by a surety meeting the requirements set forth in the General Specifications.

The bid security shall be made payable without conditions to the Board of Levee Commissioners of the Orleans Levee District hereinafter referred to as Owner. The bid security may be retained by and shall be forfeited to the Owner as liquidated damages if the Bid is accepted and a contract based thereon is awarded and the Bidder shall fail to enter into a contract in the form prescribed, with legally responsible sureties, within 48 hours (excluding weekends and holidays) after such notice of award is made by Owner.

B-7. RETURN OF BID SECURITY. The bid security of the successful Bidder will be retained until he has executed the Agreement and furnished the required Contract Security, whereupon checks furnished as bid security will be returned; if he fails to execute and deliver the Agreement and furnish the required Contract Security within forty-eight (48) hours (excluding weekends and holidays) of the Notice of Award, Owner may annul the Notice of Award and the bid security of that Bidder will be forfeited. The bid security of any Bidder whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the seventh day after the executed Agreement is delivered by Owner to Contractor and the required Contract Security is furnished but not to exceed 90 days after the Bid opening. Checks furnished as bid security by other Bidders will be returned within seven days of the Bid opening.

No Bids may be withdrawn after the scheduled closing time for receipt of bids, nor for at least ninety (90) days thereafter, except bids containing patently obvious mechanical, clerical, or mathematical errors may be withdrawn by the bidder if clear and convincing sworn, written evidence is furnished to the Owner within 48 hours of the bid opening excluding Saturdays, Sundays and Legal Holidays. Under no circumstances can a bidder be allowed to raise his unit price as contained in the initial bid. A bidder who attempts to withdraw a bid under provisions of this section shall be allowed to resubmit a bid on the same contract if it is readvertised.

B-8. CONTRACT TIME. The Contract Time is an essential part of the contract and it will be necessary for each Bidder to satisfy Owner of his ability to complete the Work within the time set forth in the Bid Form. Provisions for delays, liquidated damages, and extensions of time are set forth in the General Specifications.

B-9. SUBCONTRACTORS AND SUPPLIERS. Within seven days after Bids are opened, the apparent low Bidder, and any other Bidder so requested, shall submit a list of all Subcontractors he expects to use in the Work. See paragraphs 1.48 and 1.49 of the General Specifications concerning Minority Business Enterprise participation goals.

B-9.01. Subcontractor Qualification. Particular consideration will be given to the qualifications of each Subcontractor proposed to perform more than 10 per cent of the Work. An experience statement with pertinent information as to similar projects and other evidence of qualification shall be furnished for each named Subcontractor, as requested by Owner. If Owner or Engineer after due investigation has reasonable objection to any proposed Subcontractor, he may before giving the Notice of Award request the apparent low Bidder to submit an acceptable substitute without an increase in his Bid. If the apparent low Bidder declines to make any such substitution, Notice of Award shall not be given to such bidder, but in declining to make substitution he will not thereby sacrifice his bid security. Any Subcontractor so listed and to whom Owner or Engineer does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to the Owner and Engineer.

Contractor shall not be required to employ any Subcontractor against whom he has reasonable objection.

The use of Subcontractors listed by the Bidder and accepted by Owner prior to the Notice of Award will be required in the performance of the Work.

B-9.02. Suppliers. The list of Subcontractors shall also include the suppliers and manufacturers of principal items of materials and equipment the Bidder expects to use in the Work unless such suppliers or manufacturers are named in the Bid.

The Bidder shall list the suppliers and manufacturers of materials and equipment.

B-9.03. Manufacturer's Data. The list of Subcontractors submitted as provided herein shall be accompanied by two prints or copies of data on equipment and materials to be furnished by each supplier or manufacturer. Data so submitted shall illustrate the physical characteristics of the materials to be furnished. The drawings submitted prior to the Notice of Award must contain sufficient detail for Engineer to determine whether the materials will conform to the Contract Documents.

The Contract Documents will take precedence over any nonconforming data submitted.

Any Bid specifically conditioned upon furnishing equipment or materials which are not responsive to the Contract Documents will not be considered.

B-10. BIDS.

B-10.01. Form of Proposal. The Form of Proposal is bound with the Contract Documents as pages E-1 through E-5. Bid Forms must be completed in ink.

Bids by corporations must be executed in the corporate name by the president or vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal shall be affixed and attested by the secretary or an assistant secretary. The state of incorporation shall be shown below the corporate name. Bids by partnerships must be executed in the partnership name and signed by a partner; title and the official address of the partnership must be shown below the signature. Bids by joint ventures shall be signed by each participant in the joint venture or by an authorized agent of each participant.

The names of all persons signing must also be legibly printed below the signature. A Bid by a person who affixes to his signature the word "president", "secretary", "agent", or other designation without disclosing his principal may be held to be the Bid of the individual signing. When requested by Owner, evidence of the authority of the person signing shall be furnished.

All blank spaces in the Bid Form shall be filled. A bid price shall be indicated for each bid item, alternative, and unit price item therein listed. Bids received without all such items completed will be considered nonresponsive.

The Bid shall contain an acknowledgement of receipt of all Addenda, the numbers and dates of which shall be filled in on the Bid Form.

No alterations in Bids, or in the printed forms therefore, by erasures, interpolations, or otherwise will be acceptable unless each such alteration is signed or initialed by the Bidder; if initialed, Owner may require the Bidder to identify any alteration so initialed.

B-10.02. Bid Pricing. The unit prices listed in the Bid form including those items designated as lump sum pay items shall be based on the Work as indicated on the Drawings and as specified in these Specifications. The Contractor is, therefore, responsible for determining the quantities for all work items necessary to complete the Work and shall base his bids accordingly.

The Award shall be made to the lowest responsive and responsible Bidder.

B-10.03. Submission Of Bids. The following supercedes paragraph 1.01 of the General Specifications. Two (2) copies of pages i through I-2 of these contract documents shall be submitted as the bid documents. Bidders shall provide their own duplicate copies.

Each Bid and accompanying data shall be enclosed and sealed in the standard Orleans Levee District envelope provided to the Bidder by the Orleans Levee District and addressed to:

202 Administration Building
New Orleans Lakefront Airport
New Orleans, Louisiana 70126

and identified on the outside with the information required on the standard Orleans Levee District envelope.

If the Bid is sent by mail, the standard sealed envelope shall be enclosed in a separate mailing envelope with the notation "BID ENCLOSED" on the face thereof.

Bids shall be deposited at the designated location prior to the time and date for receipt of Bids indicated in the Advertisement for Bids, or the modified time and date indicated by Addendum. Bids received after the time and date for receipt of Bids will be returned unopened.

Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

Oral, telephone, or telegraph Bids are invalid and will not receive consideration.

No Bidder may submit more than one Bid. Multiple Bids under different names will not be accepted from one firm or association.

B-10.04. Modification and Withdrawal of Bids. No Bids may be withdrawn or modified after the scheduled closing time for receipt of Bids, nor for at least ninety (90) days thereafter, except as provided for in paragraph B-7, above.

B-10.05. Bids to Remain Open. All Bids shall remain open for 90 days after the day of the Bid opening. Owner shall release Bids and return bid securities as specified in this section under "Return of Bid Security".

B-11. AWARD OF CONTRACT. It is the intent of the Owner to issue the notice of award as soon as possible after the receipt of bids, within several days if at all possible. Owner shall award a contract to the Bidder who, in Owner's judgement, is the lowest responsive, responsible Bidder. Owner reserves the right to reject any or all Bids, to award the contract by sections, to waive informalities, and to reject nonconforming, nonresponsive, or conditional Bids.

In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and alternatives and unit prices if requested in the Bid Form. Owner may consider the qualifications and experience of Subcontractors and other persons and organizations, and may reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

The evaluation of data submitted with the Bid, or submitted upon request prior to the Notice of Award, will include consideration of:

Borrow material source; location and certification that material meets specifications.

Aggregate material source to be used in concrete I-wall cap; location and certification that material meets specifications.

Any design changes which would be required to accommodate the proposed materials and equipment.

Experience and performance record of the manufacturer.

B-12. EXECUTION OF THE AGREEMENT. Owner shall furnish all required copies of the Agreement and other Contract Documents bound therewith necessary for execution of the Contract. Within forty-eight (48) hours (excluding weekends and holidays) of the Owner's Notice of Award, Contractor shall execute the Agreement, insert executed copies of the required bonds and power of attorney and other information and certifications required elsewhere in these documents (including the various schedules, etc.) and submit all copies to Owner. The date of contract on the Agreement and Bond forms shall be left blank for filling in by Owner. The certification date on the power of attorney also shall be left blank for filling in by Owner.

Owner shall execute all copies, insert the date of contract on the Agreement, Bonds, and power of attorney.

Contractor shall file one complete copy of the executed Contract Documents with the Recorder of Mortgages in Orleans Parish.

B-13. COPIES OF CONTRACT DOCUMENTS. Copies of the drawings and specifications for use in preparing Bids may be obtained from the Engineer at the advertised rate.

The Contractor to whom a contract is awarded will be furnished 5 copies of the specifications and the drawings, together with all Addenda thereto. Additional copies may be purchased at the advertised rate.

B-14. LOCAL MATERIALS AND FIRMS. By statutory authority, preference is hereby given to materials, suppliers, and provisions produced, manufactured, or grown in Louisiana, quality being equal to articles offered by competitors outside of the State (LSA R.S. - 38:2251), and preference is hereby given to firms doing business in the State of Louisiana (LSA R.S. -38:2253).

B-15. MILESTONE DATES. Bidders are on notice that the Work under this contract is a priority project for the Board of Levee Commissioners of the Orleans Levee District.

Twice per month (bi-weekly), the Owner shall receive progress reports from the Contractor. If, in the opinion of the Chief Engineer, the Contractor fails to perform the work with sufficient workmen and equipment, or with sufficient material to insure its completion in the time specified in the contract, or shall discontinue the prosecution of the work, or become insolvent, or bankrupt, or shall not carry out the work in an acceptable manner, the Chief Engineer shall give notice in writing to the Contractor, or his Surety, of such delay, neglect, or default, specifying same, and if the Contractor, within a period of ten (10) days after such notice shall not proceed in accordance therewith, then the Chief Engineer shall have full power and authority without violating the contract, to take the prosecution of the work out of the hands of the Contractor, to appropriate or use any, and/or all materials and equipment on the grounds as may be suitable and acceptable, and may enter into an agreement for the completion of said contract, according to

the terms and provisions thereof, or use such other methods, as in his opinion shall be required for the completion of said contract, in an acceptable manner, and within the time specified. All costs and charges incurred by the Board of Levee Commissioners of the Orleans Levee District, together with the cost of completing the work under contract, shall be deducted from any monies due, or which may become due from said Contractor. In case the expense incurred by the Board of Levee Commissioners of the Orleans Levee District shall be less than the sum which would have been payable under the contract, had it been completed by said Contractor, the said Contractor shall be entitled to receive the difference; and in case such expense shall exceed the sum which would have been payable under the contract, then the Contractor and his Surety shall be liable to the Board of Levee Commissioners of the Orleans Levee District for the amount of said excess.

FORM OF PROPOSAL

Proposal No. 2040-0375
Pontchartrain Beach
Flood Protection Improvement Project
Phase II

To the Board of Commissioners:

THE UNDERSIGNED BIDDER, having familiarized himself with the Work required by the Contract Documents, the site where the Work is to be performed, local labor conditions and all laws, regulations, and other factors affecting performance of the Work, and having satisfied himself of the expense and difficulties attending performance of the Work,

HEREBY PROPOSES and agrees, if this Bid is accepted, to enter into Agreement in the form attached to perform all Work necessary to construct the flood protection improvements shown on the Drawings including the assumption of all obligations, duties, and responsibilities necessary to the successful completion of the contract and the furnishing of all materials and equipment required to be incorporated in and form a permanent part of the Work; tools, equipment, supplies, transportation, facilities, labor, superintendence, and services required to perform the Work; and Bonds, insurance and submittals; all as indicated or specified in the Contract Documents to be performed or furnished by Contractor for the unit prices or lump sum prices listed below in the Bid Schedule.

The sum total of the Bid given below may be increased or decreased upon final determination by the Owner's Engineer of the value of such other items of work which have been authorized in writing by the Engineer and approved by the Owner.

The undersigned Bidder agrees to furnish the required Bond and to enter into a contract within forty-eight (48) hours (excluding weekends and holidays) after Owner's notice of award and further agrees to complete the Work within 125 calendar days after the commencement of Contract Time as defined in the General Specifications. The undersigned Bidder agrees to pay the Owner liquidated damages in the amount of $300.00 per calendar day if the work is not completed within the above specified time. The above time of completion includes time for a 15 day allowance for inclement weather.

The undersigned Bidder hereby certifies (a) that this Bid is genuine and is not made in the interest of, or in the behalf of, any undisclosed person, firm, or corporation, and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; (b) that he has not directly or indirectly induced or solicited any other Bidder to put in a false or sham Bid; (c) that he has not solicited or induced any person, firm, or corporation to refrain from bidding; and (d) that he has not sought by collusion to obtain for himself any advantage over any other Bidder or over the Owner.

Note: Bids shall include sales taxes and all other applicable taxes and fees.

The undersigned Bidder acknowledges receipt of the following Addenda, which have been considered in preparation of this Bid:

No. _____ Dated _____

No. _____ Dated _____

No. _____ Dated _____

No. _____ Dated _____

No. _____ Dated _____

No. _____ Dated _____

Dated in _____ this _____ day of _____, 19___.

SIGNATURE OF BIDDER:

Louisiana Contractor's License Number _____

If an Individual: _____, doing business

as _____

If a Partnership: _____

by _____, partner

If a Corporation: _____

(a _____ Corporation)

by _____

(SEAL &)

Title _____ (ATTEST)

Business Address of Bidder _____

_____

If Bidder is a joint venture, other party must sign below.

Louisiana Contractor's License Number _____

If an individual: _____

_____

doing business as _____

If a Partnership: _____

by _____, partner

If a Corporation: _____

(a _____Corporation)

by _____

(SEAL &)

_____ (ATTEST)

Title _____

Business Address of Bidder _____

_____

BID SCHEDULE

No	Item	Unit	Unit Price	Approx. Quantity	Amount
1.	Mobilization	L.S.	$ _____	Lump Sum	$ _____
2.	Clearing & Grubbing	L.S.	_____	Lump Sum	_____
3.	Removal of Structures and Obstructions	L.S.	_____	Lump Sum	_____
4.	Removal of Pavement (Non Roadway)	S.Y.	_____	888	_____
5.	Compacted Clay Backfill	C.Y.	_____	200	_____
6.	Piling, Concrete, Precast, Prestressed, 12 inch Sq.	L.F.	_____	2,598	_____
7.	Concrete	C.Y.	_____	1,688	_____
8.	Structural Steel Gates, Miscellaneous Metals and Specialty Items	L.S.	_____	Lump Sum	_____
9.	Excavation	C.Y.	_____	100	_____
10.	Embankment - Compacted	C.Y.	_____	2,045	_____
11.	Asphaltic Concrete Wearing Course (Type 1)	Ton	_____	142	_____
12.	Asphaltic Concrete Base Course (Type 1)	Ton	_____	236	_____
13.	Sand-Shell Base (6")	S.Y.	_____	1,711	_____
14.	Geotextile Fabric	S.Y.	_____	295	_____
15.	Fertilizing, Seeding and Mulching	Acre	_____	2	_____
16.	Tree Relocation	L.S.	_____	Lump Sum	_____
17.	12" diameter Restrained Joint Ductile Iron Pipe, Class 52	L.F.	_____	140	_____
18.	Fittings (Cast Iron)	Lbs.	_____	1,215	_____

BID SCHEDULE (Cont.)

No	Item	Unit	Unit Price	Approx. Quantity	Amount
19.	1-1/2" diameter Polybutylene Water Service	L.F.	_____	55	_____
20.	Delays Due to Unexpected Embankment Settlement	Day/Ea.	_____	9	_____
21.	Reinstall Existing Wood Fence and Gate	L.F.	_____	420	_____
22.	Chain Link Fence	L.F.	_____	215	_____
23.	Wood Fence	L.F.	_____	200	_____
24.	Chain Link Gate (12')	Each	_____	1	_____
25.	Wood Gate (12')	Each	_____	1	_____

TOTAL BID

_____ $_____

(Written Total Bid Dollars) (Figures)

INFORMATION TO BE FURNISHED WITH BID

The information furnished below is necessary for the drafting of a notarial contract; however, it does not constitute a part of the contract documents.

PLEASE PRINT OR TYPE IN BLANK SPACES

1. Bidder is

If bidder is an **individual**, use paragraph (a) and ignore pars. (b) and (c).

(a) _____
(full name)

residing at _____
(street, city, and zone number)

or doing business at _____
(street, city, and zone number)

and is sole owner of, and doing business as,

_____
(trade name)

If bidder is a **partnership**, use paragraph (b) and ignore pars. (a) and (c).

(b) A **commercial co-partnership** composed of the following partners:

_____
(Give names of all partners)

_____

_____

doing business as _____
(trade name)

domiciled at _____
(street, city, and zone number)

in the state of _____ and which contract will be signed by

_____ a member of the co-partnership.
(Name of co-partner)

If bidder is a **corporation**, use paragraph (c) and ignore pars. (a) and (b).

(c) A **corporation** organized under the laws of the State of _____,

domiciled at _____, authorized
(city and state)

to do and doing business in the State of Louisiana, whose address in New Orleans is _____,
(street, city, and zone number)

and which contract will be signed by _____,

_____. Officer who signs contract
(name and title of officer)

for successful bidder must furnish Notary with an extract of minutes of corporation's Board of Directors showing his authority to act for the corporation.

2. The following named surety company in the City of New Orleans, Louisiana, will execute the bond as surety for the bidder:

CONTRACTOR'S EXPERIENCE

Under our present title, as given immediately below,
(or under other titles, if any, also stated)

FIRM NAME	NATURE OF BUSINESS	ORGANIZED

Work, comparable in kind and extent to that covered by the accompanying bid, has been performed by us, as follows:

DESCRIPTION OF WORK AND WHERE PERFORMED	OWNER	DATE OF COMPLETION	CONTRACT PRICE

(Bidder's Signature)

O.L.B. CONTRACT NO.

CONTRACT AND BOND BETWEEN

THE BOARD OF LEVEE COMMISSIONERS

OF THE

ORLEANS LEVEE DISTRICT

and

UNITED STATES OF AMERICA

STATE OF LOUISIANA

PARISH OF ORLEANS

CITY OF NEW ORLEANS

BE IT KNOWN, that on this _____ day of the month of _____ in the year of OUR LORD One Thousand Nine Hundred and Eighty - of the Independence of the United States of America, the Two Hundred and

B E F O R E M E

a Notary Public in and for the Parish of Orleans, State of Louisiana, duly commissioned and qualified, therein residing, and in the presence of the witnesses, hereinafter named and undersigned:

PERSONALLY CAME AND APPEARED:

1st: _____ herein representing and acting for the Board of Levee Commissioners of the Orleans Levee District, an Agency of the State of Louisiana, by virtue of a Resolution of said Board, a duly certified copy of which Resolution is attached hereto and made part hereof.

2nd: _____, hereinafter called the "Contractor", appearing through _____, whose authorization to represent the said Contractor herein, is attached hereto and made part hereof.

Who declared, that for and in consideration of the payment, hereinafter provided for, to be made by said Board of Levee Commissioners of the Orleans Levee District, the said Contractor agrees and is obliged to furnish all labor, equipment, supplies, etc., and to perform all work necessary for the

OLB. CONTRACT NO.

in accordance with the specifications identified herewith, at the following total prices:

total

The Contractor agrees to complete all work contracted for within the period of time stipulated in the signed proposal, which in this instance is 125 calendar days for final completion from the date of the work order. The above time of completion includes a 15 day allowance for inclement weather.

The Contractor agrees that in default of completing all work within the period of time stipulated above, to be bound in the amount of $300.00 LIQUIDATED DAMAGES, not as a penalty, for each calendar day beynd the stipulated time.

Said proposal, specifications and plans are identified herewith, and made part hereof, after being paraphed "NE VARIETUR", by the Notary for identification herewith.

O.L.B. CONTRACT NO.

B O N D

And now to these presents, personally came and intervened

_____

who declared that he has read and taken cognizance of the above and foregoing contract between the Board of Levee Commissioners of the Orleans Levee District and _____, Contractor, and binds said company in solido with the said Contractor unto the Board of Levee Commissioners of the Orleans Levee District, in the sum of:

_____

as security for the faithful and satisfactory performance by the said _____, Contractor, of all clauses and conditions of this contract and for the payment by the Contractor or subcontractor for all work done, labor performed, or material or supplies furnished for the construction, alteration, or repair under this contract, or for transportation and delivery of such materials or supplies to the site of the job by a for hire carrier, or for furnishing materials or supplies for use in machines used in the construction, alteration, or repair under this contract, in accordance with the law, the condition of this obligation being that if the said _____, Contractor, shall well, truly and faithfully and satisfactorily perform all of the obligations assumed by _____, Contractor, under this Contract and payment be made by said Contractor and by all Subcontractors for all work done, labor performed and material furnished under this Contract in accordance with law, then this Bond shall become null and void, otherwise to remain in full force and effect.

The said Surety consents and yield to the jurisdiction of the Civil District Court for the Parish of Orleans, State of Louisiana, and formally waived any plea of jurisdiction on account of residence elsewhere in the event of suit under the Contract and Bonds, and the Surety herein shall be limited to such defense only as the principal of these bonds could make.

O.L.B. CONTRACT NO.

THUS DONE AND PASSED, in my office at the City of New Orleans, on the day, month and year hereinfirst above written, in the presence of

_____ and _____

competent witnesses, who hereunto sign their names with said appearers and me, Notary, after reading of the whole.

THE BOARD OF LEVEE COMMISSIONERS
OF THE ORLEANS LEVEE DISTRICT

WITNESSES:

By_____

_____

_____

By_____

_____
Attorney-in-Fact Bonding

_____
NOTARY PUBLIC

STATE OF LOUISIANA)
)
PARISH OF _____)

AFFIDAVIT ATTESTING THAT PUBLIC CONTRACT WAS NOT, NOR WILL BE SECURED THROUGH EMPLOYMENT OR PAYMENT OF SOLICITOR

KNOW ALL MEN BY THESE PRESENTS, that a public contract is contemplated between The Board of Levee Commissioners of the Orleans Levee District and _____,

represented by _____,
(Name) (Title)

who attests that he is empowered and authorized to execute said documents.

FURTHER, _____,

who being duly sworn, does depose and attest that:

(1) affiant employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the affiant whose services in connection with the construction of the public building or project, or in securing the public contract were in the regular course of their duties for affiant; and

(2) no part of the contract price received by affiant was paid or will be paid to any person, corporation firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by the affiant whose services in connection with the construction of the public

building or project were in the regular course of their duties for affiant.

WITNESSES:

_____ _____

_____

BEFORE ME, the undersigned authority, personally appeared _____, who being duly sworn, deposes and states that the above is true and correct in all respects recited.

SWORN TO AND SUBSCRIBED before me, this _____ day of _____.

_____

NOTARY PUBLIC

Federal Identification No.

SECTION 1

GENERAL SPECIFICATIONS

1.01 FORM OF PROPOSAL

The proposal form is bound with the specifications together with the Bond Form, and all are an integral part of each proposal, and must be returned so attached, sealed in an envelope, marked, "BID", and further identified by the project name, as indicated on advertisement, to the Board's Office, Suite 202, Administration Building, New Orleans Lakefront Airport, New Orleans, Louisiana 70126, prior to the time specified in the advertisement for bids.

1.02 DEPOSITS

Each proposal must be accompanied by cash, bid bond, or certified check, of five percent (5%) of the amount bid, payable to the Board of Levee Commissioners of the Orleans Levee District, as a guarantee that the Bidder will, if awarded the contract, enter into a Notarial Contract with the Board of Levee Commissioners of the Orleans Levee District. Deposit will be returned to all unsuccessful bidders upon adjudication of the contract, included under these specifications, and to the successful bidder when contract is signed, bond furnished, and work started in accordance with proposal and specifications. Should the successful bidder fail to furnish Bond, as required, or to start work as per his proposal, the deposit of that bidder shall be forfeited to the Board of Levee Commissioners of the Orleans Levee District, as ascertained, admitted and liquidated damages.

1.03 ACCEPTANCE AND REJECTION OF BIDS

The Board of Levee Commissioners of the Orleans Levee District reserves the right to accept any, or reject any, and/or all bids, and to waive informalities, and to base acceptance of bids on responsibility and past performance of Contractors as well as on price bid.

1.04 NOTARIAL CONTRACT

The Board of Levee Commissioners of the Orleans Levee District, as party of the first part, hereinafter referred to as "The Board", or the "Orleans Levee Board", will require that the bidder to whom the award has been made, as party of the second part, hereinafter referred to as "The Contractor", enter into a Notarial Contract within forty-eight (48) hours after receipt of notification from the Board that award of contract has been made to him. The fee of the Notary, who will be selected by the Board, will be paid by the Contractor. See 1.42 for fee schedule. The recording or fees likewise to be paid by the Contractor.

1.05 BOND

The Contractor shall furnish, without expense to the Board, a bond written by a Bonding Company, to be approved by the Board, in the total amount of Contract. This is to guarantee to the Board the proper performance by the Contractor of all and singular obligations assumed by said Contractor under this contract. This bond will be cancelled and sureties released after completion and acceptance by the Board of the work described herein, and after expiration of the period provided by law.

1.06 DEFINITION OF TERMS

Wherever the term, "Chief Engineer," is used in these specifications, drawings, and in the contract, it shall mean the Chief Engineer of the Board of Levee Commissioners of the Orleans Levee District. Wherever the word, "Board," or "Orleans Levee Board," is used it shall mean the Board of Levee Commissioners of the Orleans Levee District.

1.07 GENERAL AND SPECIAL SPECIFICATIONS

Wherever the word, "Specifications", is mentioned in the proposal, contract or elsewhere, it shall be taken as meaning both the General and the Special Specifications.

1.08 SPECIFICATIONS AND DRAWINGS

The specifications and drawings accompanying the proposal are deemed sufficient for the proper execution of the work contemplated under this contract, but should there be an omission or error, or should the said drawings and specifications be insufficient, the Contractor shall not be permitted to profit thereby, nor shall he be penalized, but the Chief Engineer shall, upon discovery of insufficient drawings and specifications, error or omission, correct same, or supply the necessary information or correction.

1.09 INTERPRETATION OF DOCUMENTS

No oral interpretation will be made to any bidder as to the meaning of any of the Contract Documents which in effect would modify any of the provisions of same. Every request for an interpretation of the Documents shall be made in writing and delivered to the Chief Engineer, at least, seventy-two (72) hours before the time fixed for opening of bids. Every interpretaion shall be in the form of an Addendum to the specifications. All Addenda issued shall become part of the Contract Documents.

1.10 EXTRA WORK

If any work, not included in this contract and not specified herein, or called for on the plans, is deemed necessary by the Chief Engineer,

1.10 (Continued)

it shall be performed by the Contractor as Extra Work. No claim for Extras will be allowed unless specifically authorized in writing by the Chief Engineer of this Board. Payment for such Extra Work shall be made on the basis of a price previously agreed on, if this is feasible, otherwise at actual cost to the Contractor for all labor and material used, plus fifteen percent (15%). No compensation will be allowed for overhead, or for the rental of small tools. If any equipment, such as, pile drivers, pumps, excavations, air compressor, and such machinery is used in doing extra work, payment for the rental of such machinery will be made at a price to be agreed on between the Contractor and the Chief Engineer before any work is undertaken.

1.11 INSURANCE

Before the Contract may be signed, the Contractor must have his Insurance Carrier submit to the Board properly completed Insurance Certificates for acceptance and evidencing coverage in the following limits:

(a) Workmen's Compensation and Employer's Liability

Statutory Workmen's Compensation. Employer's Liability coverage, in the limit of $100,000.00 each accident. In the event this Contract involves work on, or adjacent to, navigable streams or bays, Contractor's Certificate shall show coverage in compliance with the provisions of the Federal Longshoreman's and Harbor Workers' Compensation Laws. If any Watercraft and/or Amphibian is used for work under this contract, coverage must be provided for Employer Maritime Liability (including, but not limited to the Jones Act and the Voluntary Compensation Endorsement) for the limits of $100,000.00 One Employee, and a Total Limit of $300,000.00 for Two or More Employees.

(b) Comprehensive General Liability

(1) Coverage shall be on an Occurrence Basis

(2) Bodily Injury Limits shall be not less than $500,000.00 per occurrence

(3) Property Damage limits shall be not less than $100,000.00 per Occurrence and $500,000.00 Aggregate. Property Damage shall include Coverage for Crafts or Trades which are subject to normal policy exclusions of:

(a) Blasting or explosion

(b) Collapse

(c) Damage to underground property (wires, conduits, and the like) and injury to, or destruction of any property resulting therefrom.

1.11 (Continued)

(4) Coverage shall include Completed Operation and Products, along with Contractual Liability.

(c) Comprehensive Automobile Liability

(1) Bodily Injury limits $100,000.00 each Person $500,000.00 each occurrence.

(2) Property Damage Liability limits shall be not less than $100,000.00 each occurrence.

(3) Coverage shall include:

(a) Owned Vehicles
(b) Hired or Leased Vehicles
(c) Non-owned Vehicles

(d) Owners and Engineers Protective (Contingent) Liability

(1) This shall be in the name of, and for protection of, the Owner and the Engineer

(2) Bodily Injury Limits shall be not less than $500,000.00 per occurrence

(3) Property Damage Limits shall be not less than $100,000.00 per occurrence and $500,000.00 Aggregate.

(e) Aviation Liability Insurance (applicable if aircrafts are used in operations)

(1) Bodily Injury Limits shall be not less than $100,000.00 per person and $500,000.00 per accident, excluding passenger hazard.

(2) Passenger hazard Bodily Injury Limits shall be not less than $100,000.00 per aircraft seat.

(3) Property Damage Limits shall be not less than $100,000.00 per accident.

(4) Coverage shall include all leased, hired or other non-owned aircraft.

(f) Marine Insurance (applicable if Watercraft and/or Amphibians are used in operations)

(1) Protection and Indemnity Insurance on all vessels owned and/or chartered with Limit of Liability up to value of vessel or $500,000.00 single limit whichever is greater.

(continued)

(g) Hold-Harmless Agreement

The Contractor shall indemnify, and hold and save harmless the Board from all loss, liability or expense to which the Board may be subjected as a result of the operations, acts or omissions of the Contractor, or any Subcontractor, and the Contractor shall effect and maintain an Insurance Policy with a contractual endorsement to insure the Board's protection, as to its own property and the property of third parties under the foregoing indemnity, and hold harmless agreement with property damage limits of not less than one hundred thousand dollars ($100,000.00), for the properties of the Board, or any other single property owner; and three hundred thousand dollars ($300,000.00) for the properties of the Board and all other property owners.

This insurance shall be placed with reliable insurance carriers satisfactory to the Board, with a Best Rating of B-X or better, who are authorized to do business in the State of Louisiana.

All certificates of insurance shall include thirty (30) days notice of cancellation.

1.12 ENGINEER'S DECISION FINAL

If any of the clauses of these specifications appear to conflict, or to be inconsistent, they will not be read separately, but all of the clauses shall be understood to be cumulative, and the specifications as a whole be read, in order to arrive at the intent of the Contract.

The Chief Engineer shall be the sole judge of the meaning and intent of these specifications, and to whether the specifications have been fully complied with, and the contract satisfactorily performed, and his decision, in case of any misunderstanding or dispute in these particulars, shall be final and binding on both parties.

1.13 ANNULMENT OF CONTRACT

If, in the opinion of the Chief Engineer, the Contractor fails to perform the work with sufficient workmen and equipment, or with sufficient material to insure its completion in the time specified in the contract, or shall discontinue the prosecution of the work, or become insolvent, or bankrupt, or shall not carry out the work in an acceptable manner, the Chief Engineer shall give notice in writing to the Contractor, or his Surety, of such delay, neglect, or default, specifying same, and if the Contractor, within a period of ten (10) days after such notice shall not proceed in accordance therewith, then the Chief Engineer shall have full power and authority without violating the contract, to take the prosecution of the work out of the hands of the Contractor, to appropriate or use any, and/or all materials and equipment on the grounds as may be suitable and acceptable, and may enter into an agreement for the completion of said contract, according to the terms and provisions thereof, or use such other methods, as in his opinion shall be required for the completion of said

1.13 (Continued)

contract, in an acceptable manner, and within the time specified. All costs and charges incurred by the Board of Levee Commissioners of the Orleans Levee District, together with the cost of completing the work under contract, shall be deducted from any monies due, or which may become due said Contractor. In case the expense incurred by the Board of Levee Commissioners of the Orleans Levee District shall be less than the sum which would have been payable under the contract, had it been completed by said Contractor, the said Contractor shall be entitled to receive the difference; and in case such expense shall exceed the sum which would have been payable under the contract, then the Contractor and his Surety shall be liable to the Board of Levee Commissioners of the Orleans Levee District for the amount of said excess.

1.14 ORDINANCES

The Contractor shall comply with all Federal, State, and City laws, as well as Police and Health Ordinances applying to public work.

1.15 SUBCONTRACTORS

No part of the work herein contracted for shall be given, sold or assigned to Subcontractors without the consent of the Chief Engineer of this Board.

1.16 SUPERINTENDENT

The Contractor must, at all times, either be personally present around the work, or be represented by a competent Superintendent, who shall be clothed with full authority to act for him in all cases, and to carry out any instructions relative to the work, which may be given by the Chief Engineer, either personally, or by his authorized representative. The Superintendent shall have had the required experience in this class of work, and he shall be satisfactory to the Chief Engineer of the Board.

1.17 PATENTS

The Contractor shall defend any and all suits instituted for alleged infringement of patents, if any, or all of the material, or apparatus furnished, or used under these specifications and drawings, or for any other materials or apparatus not specifically mentioned therein, and shall pay all damages and cost of suits instituted in any court, provided that the Board of Levee Commissioners of the Orleans Levee District shall give the Contractor notice and opportunity to defend such suit or suits.

1.18 LIGHTS

The Contractor shall keep proper lights each night between the hours of sunset and sunrise upon all equipment connected with the work when necessary, and shall be responsible for all damages resulting from any neglect or failure in this respect.

1.19 INSPECTION

The work will be conducted under the general direction of the Chief Engineer, and will be inspected by Inspectors appointed by him, who will enforce a strict compliance with the terms of the contract.

The Inspector will keep all necessary records of the work that has been done, but the presence of the Inspector shall not relieve the Contractor, or his Agents, from any responsibility for the proper performance of the work.

The Contractor shall not be entitled to payment for any improper work accepted or allowed by the Inspector.

1.20 PROSECUTION OF WORK

The work shall be prosecuted as directed by the Chief Engineer, and shall be conducted in such manner and with sufficient materials, equipment and labor, as will insure the completion of the work within the time specified in the written proposal of the Contractor.

1.21 MOVEMENT OF PLANT

At no time shall the plant of the Contractor, or any part thereof, be removed from the site of the work, without the consent in writing from the Chief Engineer.

1.22 ORDER OF WORK

The Chief Engineer shall have the right to designate the place at which work shall begin, and the Contractor will be required in advance of the moving of the work, to obtain the approval of the Chief Engineer as to the plan of operations he contemplates following.

1.23 LIENS AGAINST CONTRACTORS

Whenever required, the Contractor shall show evidence satisfactory to the Chief Engineer, that all bills for labor, materials, supplies, salaries, and equipment have been paid by the Contractor, and that there are no liens or claims against the Contractor, by furnishing a lien certificate from the Recorder of Mortgages for work or materials furnished in the performance of this work.

1.24 PARTIAL PAYMENTS

Partial payments will be made on monthly estimates of work done and accepted by the Chief Engineer as being completed, according to plans and specifications, reserving ten percent (10%) of the amount earned in each estimate.

The ten percent (10%) retainer on each payment will not be released by the Board until the expiration of the time prescribed by law.

The Contractor shall use Orleans Levee Board forms for "Periodical Estimate for Partial Contract Payment", in submitting request for partial payments. These forms are to be submitted to the Board in original and three copies for a total of (4). Forms may be obtained at the office of the Orleans Levee Board as required.

The Contractor must submit his Lien & Privilege Certificate with his final request for payment, in order to receive his ten percent (10%) Retainer. This Lien & Privilege Certificate is obtained from the Mortgage Office forty-five (45) days after Certificate of Acceptance has been recorded.

1.25 TIME TO FILE CLAIMS

The monthly estimate of work accomplished shall cover all monies due the Contractor, but if the Contractor, at any time, shall feel that he has claim for work not allowed in the estimate, then, he shall file this claim within thirty (30) days after receipt of the monthly estimate of work to which the claim applies.

Any claim filed later than thirty (30) days after receipt of the monthly estimate to which it applies shall not be considered; and the filing of any claim within the aforesaid time is a condition precedent to the consideration of the claim.

1.26 BOARD OF ARBITRATORS

Upon the final settlement of this contract all disputed matters, which have occurred in the course of said contract, and which have not been disposed of, as provided for in Paragraph 1.12, shall be submitted to a Board of Arbitrators; one member shall be selected by the Board, one member by the Contractor, and the third member shall be selected by the former two members, who shall grant a prompt hearing and decision on all disputed matters. Said decisions shall be final and binding on both parties. The cost for the services of the third member, if any, to be borne jointly between the Contractor and the Board.

1.27 CLEANING UP

At the completion of contract, and before final acceptance, the Contractor shall move his equipment, including the discarded equipment, if any, the temporary structures used by him during construction, all debris and rubbish, and leave the site in clean condition, to the satisfaction of the Chief Engineer.

1.28 ACCEPTANCE

Upon completion of the work shown on the plans and described in these specifications, the work performed shall be inspected as a whole, and if found satisfactory by the Chief Engineer, a Certificate of Acceptance, with the final estimate shall be issued, but no acceptance of the work, for final payment shall be made unless and until said Certificate of Acceptance is issued by the Chief Engineer.

1.29 CERTIFICATE OF ACCEPTANCE

Upon acceptance of the Contract, the Board will file the Acceptance with the Recorder of Mortgages, as the Contractor's retainage will be held for forty-five (45) days after date of filing, as required by law.

1.30 OFFICE OF CONTRACTOR

The Contractor shall maintain on the site of the work a field office, and he shall agree that all communications, orders, or instructions delivered to his field office from the office of the Board shall be received and shall have the same legal force and effect as if delivered to him in person.

1.31 WITHDRAWAL OF BIDS

No bids may be withdrawn after the scheduled closing time for receipt of bids, nor for at least THIRTY (30) DAYS thereafter.

1.32 TAXES

The prices stated in the proposal shall include all taxes applicable to the Board of Levee Commissioners of the Orleans Levee District.

1.33 AWARD OF CONTRACT

Unless otherwise specifically stated in the Special Specifications the contract will be awarded on bid prices in the proposal. If time is bid by the Contractor all bids will be corrected in accordance with the Liquidated Damage Paragraph of the proposal, otherwise no correction is necessary if the Board establishes the time of the Contract.

1.34 CONTRACT BE LET AS WHOLE

Unless otherwise specifically stated in the Special Specifications, the contract will be let as whole. No bid will be considered in which all items have not been priced by the bidder.

1.35 ADDENDUM

All bidders are requested to direct all questions about the specifications promptly to the Chief Engineer. This will facilitate making Addendum as required.

1.36 APPROXIMATE QUANTITIES

Unless otherwise specifically specified in the Special Specifications, all quantities mentioned in the proposal are approximate and for bidding purposes only.

1.37 REFERENCE TO MATERIALS BY NAME

Specific reference in the specifications to any product or material by name, or make, shall be interpreted as established a standard of quality and shall not be construed as limiting competition; and the Contractor, in such cases, may at his option, use any product or material, which in the judgement of the Chief Engineer is equal to that named. Prior to the submission of proposal, any proposed substitution of material must be submitted to the Chief Engineer in writing for approval.

1.38 DIFFICULTIES

Attention of bidders is called to the conditions and difficulties that may be encountered in his work, and bidders are warned to visit and inspect the site of work, and acquaint themselves thoroughly with conditions, especially weather, etc., as the Board assumes no responsibility whatever for information furnished the Contractor, and does not guarantee its correctness, but the Contractor shall assume full responsibility for his equipment, as no claim will be entertained in the case of loss due to any cause whatsoever.

1.39 LIQUIDATED DAMAGES

The Contractor specifically agrees in his proposal to the amount of time in which this contract is to be completed, calculated from the date of issuance of Work Order to the date of its completion and acceptance by the Chief Engineer. Anytime that is consumed for the completion over and above the stipulated amount of time, agreed to in the proposal by the Contractor, shall be charged against the Contractor as Liquidated Daamges, not as a Penalty. The contractor's failure to complete the work on time shall be a default, notice of which is waived by the Contractor.

1.40 CONTRACT TIME

The Contract time shall consist of the calendar days elapsed, beginning with the date of issuance of Work Order and ending with the completion of the work and acceptance by the Chief Engineer. If in the opinion of the Chief Engineer the Contractor's work should be delayed because of rain, a strike, or an act of God, such as a hurricane, fire, etc., he shall be granted an extension of time. If the Contractor has worked on any part of the project for at lease four (4) hours on any one day, he will have no claim for extra time on that day.

Any request for extension of Contract time shall be submitted in writing by the Contractor to the Chief Engineer and shall state the reason for request.

1.41 LICENSES

In accordance with State Act No. 233, effective August 1, 1956, and amended to date, on projects amounting to more than $50,000.00 only bids of Contractors and/or Subcontractors licensed under Act No. 233 of 1956 and amended to date will be considered.

It is the responsibility of the bidder to determine the proper job classification and to possess the proper license, all in accordance with LRS 37:2151 et seq.

Contractors desiring to bid shall submit to Architects or Engineers evidence that they hold license of proper classification and in full force and effect.

1.42 ATTORNEY AND NOTARY FEE SCHEDULE:

		FEE		COSTS*		TOTAL
UNDER	$ 3,000	$ 125.00	+	$ 75.00	=	$ 200.00
"	$ 6,000	$ 180.00	+	$ 75.00	=	$ 255.00
"	$ 10,000	$ 230.00	+	$ 75.00	=	$ 305.00
"	$ 15,000	$ 275.00	+	$ 75.00	=	$ 350.00
"	$ 25,000	$ 375.00	+	$ 75.00	=	$ 450.00
"	$ 50,000	$ 500.00	+	$ 75.00	=	$ 575.00
"	$ 100,000	$ 650.00	+	$ 75.00	=	$ 725.00
"	$ 250,000	$ 900.00	+	$ 75.00	=	$ 975.00
"	$ 500,000	$ 1,100.00	+	$ 75.00	=	$ 1,175.00
"	$ 1,000,000	$ 1,800.00	+	$ 75.00	=	$ 1,875.00
"	$ 5,000,000	$ 3,800.00	+	$ 75.00	=	$ 3,875.00
"	$ 15,000,000	$ 5,900.00	+	$ 75.00	=	$ 5,975.00
OVER	$ 15,000,000	$ 6,500.00	+	$ 75.00	=	$ 6,575.00

*Includes costs of recording contract plus notarizing and recordation of Affidavit of Acceptance.

1.43 LABOR RATES AND PRACTICES

(a) WAGE RATES

Minimum wages to be paid the various classes of laborers and mechanics employed on this work, shall be based upon the wages determined by the Secretary of the U. S. Department of Labor to be the prevailing wage for the corresponding classes of laborers and mechanics employed on the projects of similar character in the New Orleans area. The scale of wages to be paid shall be posted by the contractor in a conspicuous place at the site of work.

(b) CONTRACT WORK HOURS

No laborer or mechanic shall be required or permitted to be employed in this work in excess of eight (8) hours in any Calendar Day, or in excess of forty (40) hours in any work week, unless such laborer or mechanic receives compensation at a rate not less than one and one-half (1-1/2) times his basic rate of pay for all hours worked in excess of eight (8) hours in any Calendar Day, or in excess of forty (40) hours in such work, week, whichever is the greatest number of overtime hours.

(c) PAYMENT OF EMPLOYEES

All employees engaged in this work shall be paid in full, (less deductions made mandatory by law), not less often than once each week, without subsequent deductions, rebate on any account the full amount due at time of payment computed in accordance with the provisions of (a) and (b) above, irrespective of any contractual relationship which may be alleged to exist between the Contractor and/or Subcontractor, and such laborers and mechanics.

1.44 AUDIT AND INSPECTION

The Owner's authorized representatives and/or the Louisiana State Legislative Auditor shall be entitled and permitted to inspect all work, material, records of personnel, invoices of materials, other data and all other records that pertain to the execution of this contract.

1.45 SIGNING OF PROPOSAL DOCUMENTS

Any proposal documents not signed by the Contractor will not be accepted by the Board. If the proposal is made by a partnership, it shall contain the names of each partner and shall be signed in the firm name, followed by the signature of the person authorized to sign. If the proposal is made by a corporation, it shall be signed by the name of the corporation, followed by the signature of the officer authorized to sign, and the printed designation of the office he holds in the corporation. Contractor is reminded that he must fill out the bidder information form and the bidder experience form, otherwise the proposal may be considered informal and could be rejected. Contract form, bond form and affidavit form are not to be filled in by bidder.

1.46 PAYMENT OF PREVAILING WAGES

(a) It is hereby declared to be the public policy of the State of Louisiana that projects of maintenance, construction or other public works contracts to be performed on state owned properties or to be state-financed in whole or in part, but to be performed by private contractors, should be a model of fair treatment by employers of employees and should represent a source of employment for our citizens at fair and reasonable wages; that successful competitive bidders or contractors otherwise selected by the state or its agencies should not pay their employees on these state projects wages below the standards prevailing for similar work in the area, thus further depressing the local economy rather than stimulating it; that the quality and proficiency of the work on public contracts are adversely affected by payment of wages below the standards prevailing for the same or similar work in the area; that the payment of prevailing wage scales by contractors on such public works projects is a matter affecting the health, safety and welfare of residents of the State of Louisiana; and that no bidder who does not comply with the requirements of this section shall be considered a responsible bidder within the meaning of Louisiana law.

(b) Specifications for every contract in excess of twenty-five thousand dollars, where at least 90% of the total funds involved are state or federal funds, to which the State of Louisiana or any state agency, department or board and a private contractor are parties, for construction, alteration and/or repair, including painting and decorating of public buildings or public works of the State of Louisiana or any of its agencies, departments or boards and which require or involve the employment of workmen, mechanics and/or laborers, shall contain a provision stating the minimum wages to be paid various classes of workmen, be determined by the commissioner of labor of the State of Louisiana to be prevailing in the area for corresponding classes of workmen, laborers and mechanics employed on projects of a character similar to the contract shall have such specifications as a part of it whether required by law to be advertised or not.

(c) Every contract based upon such specification shall contain a stipulation that the contractor or his sub-contractor shall pay, at the time and at the place established by existing law or custom all workmen, mechanics and laborers who have performed work under the contract, and without subsequent deduction or rebate on any account, the full amount accrued at the time of payment, less any authorized deductions for wage assignments, garnishments, taxes, insurance premiums or other similar lawful deductions computed at wage rates not less than those stated in the specifications, regardless of any contractual relationship or agreement to the contrary which may be alleged to exist between the contractor or sub-contractor and such workmen, laborers, or mechanics.

(d) The minimum scale of wages to be paid shall be posted by the contractor in a prominent and easily accessible place at the site of the work.

(e) Every contract subject to the provisions of this section shall contain the stipulation that there may be withheld from the contractor so much of accrued payments as may be necessary to pay to workmen, laborers and mechanics employed

by the contractor or any sub-contractor on the work the difference between the rates of wages required by the contract to be paid to such laborers, workmen and mechanics and the rate of wages received by such workmen, laborers, and mechanics.

(f) Every contract within the scope of this section shall contain the further provision that in the event it is found by the commissioner of labor or the department, agency or board letting the contract that any laborer or mechanic employed by the contractor or any sub-contractor directly on the site of the work covered by the contract has been or is being paid a rate of wages less than the rate of wages required by the contract and this law, that the State of Louisiana or its department, agency or board letting the contract may, by written notice sent by registered or certified mail to the contractor, require him to pay to the said workman, laborer or mechanic the amount by which he has been underpaid plus as a penalty, twice that amount; provided, however, that the surety for such contractor shall not be liable for said penalty. If within ten days after receipt by the contractor of such written notice, the contractor shall demonstrate to the commissioner of labor that his failure to pay the prevailing wage as specified in the contract was due to clerical error or inadvertence, the commissioner of labor shall forgive the penalty herein authorized, provided the deficiency in wages is actually paid or tendered to the said workman, laborer or mechanic by the contractor within said ten day period. Within twenty days after receipt by the contractor of such written notice to pay said workman, laborer or mechanic, such underpayment and penalties the contractor may appeal, devolutively, said order by summary process and may rule the commissioner of labor to show cause in the Nineteenth Judicial District Court for the Parish of East Baton Rouge why such order should not be recalled and revoked. An appeal shall lie from the ruling of the Nineteenth Judicial District Court in said matter to the appellate courts as provided by existing laws and shall be devolutive only. The only ground for reversal of the order to pay said wages and penalties by any court shall be that the order was not based upon any substantial evidence. No appeal of said order shall have effect of suspending same.

(g) The state, or its department, agency or board, in charge of the particular contract, if no appeal is taken by the contractor from the order to pay, or during the pendency of any such appeal is authorized and directed to pay directly to workmen, laborers and mechanics from any accrued payments withheld under the terms of the contract any wages found to be due workmen, laborers and mechanics pursuant to this section. If no appeal from the order to pay is taken by the contractor within the twenty day period specified in the preceding section, the state, or its departments, agency or board in charge of the particular contract shall, at the expiration of the delay for taking an appeal, pay to the workmen, laborers and mechanics from any accrued payments withheld the penalties found to be due. However, if an appeal has been timely taken, said funds withheld as penalties shall be held in escrow pending said appeal to be paid to the said workmen, laborers and mechanics or the contractor in accordance with the final judgment of the court.

(h) The commissioner of labor is authorized and directed to distribute a list to all departments of the State of Louisiana giving the name of persons or firms found by him to have violated their obligations to employees and sub-contractors under this section and who have not, within the ten day period specified in Subsection F of this section, demonstrated to the commissioner of labor that said violation was due to clerical error or inadvertence and who have not paid or tendered the wages found to be due to said workmen within said ten day period, as provided in said Subsection F hereof. No contractor shall be placed on said list who shall demonstrate to the commissioner of labor that the contractual obligation to pay the prevailing wage was violated by a bonafide independent sub-contractor who under the terms of his written sub-contract was required to pay said prevailing wage, and that said violation was without knowledge or complicity on the part of the contractor, but this provision shall not relieve the contractor of his liability for wages or penalties due workmen by himself or a sub-contractor as elsewhere provided in this section. No contract shall be awarded to the persons or firms appearing on this list or to any firm, corporation, partnership or association in which said persons or firms have an interest, until oneyear has elapsed from the date of publication of the list containing the names of such persons or firms. Any person or firm aggrieved by the action of the commissioner in so listing his or its name may appeal therefrom suspensively by summary process and may rule the commissioner of labor to show cause in the Nineteenth Judicial District Court for the Parish of East Baton Rouge why such listing of him should not be recalled or revoked. The Nineteenth Judicial District Court shall hear said appeal by preference, in term time or vacation, and shall rule thereon within ten judicial days after said appeal is filed in said court. An appeal shall lie from the ruling of the Nineteenth Judicial District Court in said matter to the appellate courts as provided by existing laws but shall be devolutive only. The only ground for revoking or recalling said listing by any court shall be that said listing was not based upon any substantial evidence that the person so listed had failed to pay workmen, employees, or sub-contractors as required by this section. Even though a violation of this act has occured, the Governor in his discretion may at any time direct the commissioner to remove any name from said list, which shall remove the disabilities which accompany the list; provided that in such case the governor's action shall have no effect upon the right of a workman, laborer, or mechanic to recover the wages and penalties which may be due to him.

(i) The commissioner of labor of the State of Louisiana shall determine the "prevailing wages" within the meaning of this section for all workmen, laborers and mechanics in the locality of the public work to be done and shall publish and post the same from time to time. He shall make a determination of prevailing wage within thirty days before the specifications are advertised or publicized and the contract must be signed within ninety days thereafter or he must make another determination to be utilized in the contract.

Any state department, board or agency directly concerned with any project upon which determination is made and that is not satisfied that the determination is fair and reasonable, and in accordance with the requirements of this section, for review of the commissioner's determination. The Governor shall decide the

matter within the ten days of receipt of the appeal. The determination shall remain effective pending any such appeal.

(j) In determining the said prevailing wage, the commissioner of labor shall consider: (1) wage scales fixed by union-management collective bargaining agreements in the area, (2) the prevailing wage determination made for the area by the Secretary of Labor of the United States under the provisions of Title 40, U. S. Code, Section 276a, the Davis-Bacon Act, (3) the wages actually paid various classes of workmen, laborers and mechanics employed on projects of work of similar character to the contract work in the same or similar area within the state, and (4) any other pertinent data or facts that he may deem relevant and proper to such determination.

(k) "Prevailing wage" includes any and all fringe benefits, such as payments for health and welfare, pensions, vacations, life insurance, apprenticeship programs or supplemental unemployment benefit programs that may be a part of union contracts for workmen, laborers and mechanics under collective bargaining agreements for the various trades within the area, or that may be paid by employers without a collective bargaining agreement. The commissioner shall list separately the hourly wage to be actually paid and the fringe benefits to be provided, and shall specify that in the case of employees working without provision for the payment of fringe benefits, the cost of those included as a part of the "prevailing wage" required to be paid shall be paid to the employees as part of the hourly wage paid.

(l) The commissioner of labor is empowered to adopt and promulgate such reasonable rules and regulations and to conduct such investigations as he deems necessary to ensure the enforcement of this section. Among other powers inherent in him under this section the commissioner may inspect all of the books and records of the contractor or sub-contractor but only to determine if the "prevailing wage" provisions contained herein have been complied with; and that such information obtained by the commissioner shall be strictly confidential.

(m) None of the provisions of this section shall apply to any governing authority of any municipality, parish or other local political subdivision or agency, or to any contract let by any state department or agency to be financed by at least ninety percent, of funds belonging to such local political subdivision or agency, unless the governing body thereof, by appropriate ordinance or resolution, require payment of prevailing wage determined by the commissioner of labor, or by itself or its agents, in all or any public works contracts let by the said local authority in the same manner with the same compliance and enforcement and procedures, powers and penalties as provided in this section. Acts 1968, No. 65, §§ 1-13.

1.47 ARITHMETIC DISCREPANCIES IN BID PRICE:

The following methods will be used to resolve any arithmetic discrepancies found on bid forms as submitted by bidders:

1) Obviously misplaced decimal points will be corrected.

2) In the event of a discrepancy between the unit price and the extended price, the unit price will govern.

3) Apparent errors in the extension of unit price will be corrected.

4) Apparent errors in the addition of lump sum and extended unit prices will be corrected.

1.48 SUBCONTRACTORS:

Prior to receiving a work order, the successful bidder must submit to the Chief Engineer a list of all proposed subcontractors for the project. The list shall show the name and address of each firm, the type of work to be performed, the estimated dollar value of the work and the minority status (if any) of the firm. See paragraph 1. 49 for definition of a minority firm.

1.49 MINORITY BUSINESS PARTICIPATION:

It is the established policy of the Orleans Levee Board to encourage to the fullest extent the use of local minority contractors for subcontract work whenever practical. A list of certified minority owned construction firms in each specialized field of construction may be obtained from the Office of Minority Business Development, City of New Orleans. For purposes of these specifications, minority owned firms are defined as follows:

"Minority" shall mean a person who is a citizen or lawful permanent resident of the United States and who is:

(a) Black: having origins in any of the black racial groups of Africa.

(b) Hispanic: of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish or Portuguese culture or origin regardless of race.

(c) Asian American: having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.

(d) American Indian or Alaskan Native: having origins in any of the original peoples of North America.

(e) Female.

"Minority business enterprise" or "minority-owned business" means a small business organized for profit performing a commercially useful function which is owned and controlled by one or more minority individuals or minority business enterprises certified by the Office of Minority Business Development, City of New Orleans. Owned and controlled means a business in which one or more minorities or minority business enterprises certified by the Office of Minority Business Development, City of New Orleans own at least fifty-one percent or in the case of a corporation at least fifty-one percent of the voting stock and control at least fifty-one percent of the management and daily business operations of the business.

EXHIBIT A

DUTIES, RESPONSIBILITIES AND LIMITATIONS OF AUTHORITY
OF RESIDENT PROJECT REPRESENTATIVE

A. General

Resident Project Representative is ENGINEER's Agent, will act as directed by and under the supervision of ENGINEER, and will confer with ENGINEER regarding his actions. Resident Project Representative's dealings in matters pertaining to the on-site Work shall in general be only with ENGINEER and CONTRACTOR, and dealings with subcontractors shall only be through or with the full knowledge of CONTRACTOR. Written communication with OWNER will be only through or as directed by ENGINEER.

B. Duties and Responsibilities

Resident Project Representative will:

1. Schedules: Review the progress schedule, schedule of Shop Drawing submissions and schedule of values prepared by CONTRACTOR and consult with ENGINEER concerning their acceptability.

2. Conferences: Attend preconstruction conferences. Arrange a schedule of progress meetings and other job conferences as required in consultation with ENGINEER and notify those expected to attend in advance. Attend meetings and maintain and circulate copies of minutes thereof.

3. Liasion:

   a. Serve as ENGINEER's liasion with CONTRACTOR, working principally through CONTRACTOR's superintendent and assist him in understanding the intent of the Contract Documents. Assist ENGINEER in serving as OWNER liaison with CONTRACTOR when CONTRACTOR's operations affect OWNER's on-site operations.

   b. As requested by ENGINEER, assist in obtaining from OWNER additional details or information, when required at the job site for proper execution of the Work.

4. Shop Drawings and Samples:

   a. Receive and record date of receipt of Shop Drawings and samples, receive samples which are furnished at the site by CONTRACTOR, and notify ENGINEER of their availability for examination.

   b. Advise ENGINEER and CONTRACTOR or its superintendent immediately of the commencement of any Work requiring a Shop Drawing or sample submission if the submission has not been approved by ENGINEER.

5. Review of Work, Rejection of Defective Work, Inspections and Tests:

   a. Conduct on-site observations of the Work in progress to assist ENGINEER in determining if the WORK is proceed in accordance with the Contract Documents and that completed Work will conform to the Contract Documents.

   b. Report to ENGINEER whenever he believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract Documents, or does not meet the requirements of any inspections, tests or approval required to be made or has been damaged prior to final payment; and advise ENGINEER when he believes Work should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

   c. Verify that tests, equipment and systems startups and operating and maintenance instructions are conducted required by the Contract Documents and in presence of the required personnel and that CONTRACTOR maintain adequate records thereof; observe, record and report to ENGINEER appropriate details relative to the test procedure and startups.

   d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project. Record the outcome of these inspections and report to ENGINEER.

6. Interpretation of Contract Documents: Transmit to CONTRACTOR ENGINEER's clarifications and interpretations of the Contract Documents.

7. Modifications: Consider and evaluate CONTRACTOR's suggestions for modifications in Drawings or Specifications and report them with recommendations to ENGINEER.

8. Records:

   a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and samples submissions, reproductions of original Contract Documents including all addenda, change orders, field orders, additional Drawings issued subsequent to the execution of the Contract. ENGINEER's clarifications and interpretations of the Contract Documents, progress reports, and other Project related documents.

   b. Keep a diary or log book, recording hours on the job site, weather conditions, data relative to questions of extras or deductions, list of visiting officials and representatives of manufacturers, fabricators, suppliers and distributors, daily activities, decisions, obsevations in general and specific observations in more detail as in the case of observing test procedures. Send copies to ENGINEER.

c. Record names, addresses and telephone numbers of all CONTRACTORS, subcontractors and major suppliers of materials and equipment.

9. Reports:

a. Furnish ENGINEER periodic reports as required of progress of the WORK and CONTRACTOR's compliance with the approved progress schedule and schedule of Shop Drawing submissions.

b. Consult with ENGINEER in advance of scheduled major tests, inspections or start of important phases of the work.

c. Report immediately to ENGINEER upon the occurrence of any accident.

10. Payment Requisitions: Review applications for payment with CONTRACTOR for compliance with the established procedure for their submission and forward them with recommendations to ENGINEER, noting particularly their relation to the schedule of values, Work completed and materials and equipment delivered at the site but not incorporated in the Work.

11. Certificates, Maintenance and Operation Manuals: During the course of the Work, verifying that certificates, maintenance and operation manuals and other data required to be assembled and furnished by CONTRACTOR are applicable to the items actually installed; and deliver this material to ENGINEER for his review and forwarding to OWNER prior to final acceptance of the Work.

12. Completion:

a. Before ENGINEER issues a Certificate of Substantial Completion, submit to CONTRACTOR a list of observed items requiring completion or correction.

b. Conduct final inspection in the company of ENGINEER, OWNER and CONTRACTOR and prpeare a final list of items to be completed or corrected.

c. Verify that all items on final list have been completed or corrected and make recommendations to ENGINEER concerning acceptance.

C. Limitations of Authority

Except upon written instructions of ENGINEER, Resident Project Representative:

1. Shall not authorize any deviation from the Contract or approve any substitute materials or equipment.

2. Shall not exceed limitations on ENGINEER's authority as set forth in the Contract Documents.

3. Shall not undertake any of the responsibilities of CONTRACTOR, subcontractors or CONTRACTOR's superintendent, or expedite the Work.

4. Shall not advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract Documents.

5. Shall not advise on or issue directions as to safety precautions and programs in connection with the Work.

6. Shall not authorize OWNER to occupy the Project in whole or in part.

7. Shall not participate in specialized field or laboratory tests.

SUPPLEMENTARY CONDITIONS

SC-1. SCOPE. These Supplementary Conditions amend or supplement the General Specifications and other provisions of the Contract Documents. All provisions not so amended or modified remain in full force and effect.

SC-2. DEFINITIONS.

D-1 BIDDER:

Any individual, firm or corporation submitting a proposal for the work contemplated, acting directly or through a properly authorized representative.

D-2 ENGINEER:

The Engineer is URS Company, located at 3500 North Causeway Blvd., Suite 900 - Executive Towers Building, Metairie, Louisiana, and is the agent of the Owner to the extent provided in the Contract Documents.

D-3 ORDER OF PRECEDENCE

a. Agreement
b. Addenda/Change Orders/Written Amendment
c. Contractor's Bid
d. Special Project Requirements
e. Supplementary Conditions
f. Advertisement for Bids
g. Instructions to Bidders
h. General Specifications
i. Technical Specifications
j. Drawings

With reference to the Drawings, the order of precedence is as follows: Figures govern over scaled dimensions; detail drawings over general drawings; addenda/change order drawings govern over contract drawings; contract drawings govern over standard drawings and shop drawings.

D-4 OWNER:

The Board of Levee Commissioners of the Orleans Levee District.

D-5 PERFORMANCE BOND:

The approved form of security furnished by the Contractor and his Surety as a guarantee of the proper performance of the work and payment for all materials or other obligations contracted by him in the prosecution thereof.

D-6 SURETY:

The corporate body, licensed to do business in the State where the work is located, which is bound with and for the Contractor, and which is primarily liable and responsible for the payment of all obligations pertaining to and for the acceptable performance of the work required by the Contractor.

D-7 TESTING LABORATORY:

A testing laboratory designated by and paid for by the Owner to perform tests of materials entering the work.

SC-3. SETTLEMENT OF INSURANCE CLAIMS. Losses insured under policies that include Owner as a named insured shall be adjusted with Owner and made payable to Owner as trustee for the insureds, as their interests may appear.

SC-4. LABOR PRACTICES.

SC-4.01 Contract Work Hours: Refer to paragraph 1.43, b, page I-12 of the General Specifications. Delete the references to overtime at 1.5 times the basic rate for work in excess of eight (8) hours in any Calendar Day. However, the overtime requirements for work in excess of 40 hours in any work week remain in effect. Also, note that for the purposes of computing overtime, overtime shall be computed in accordance with the minimum wage rates as (1.5 times the Basic Hourly Rate) plus Fringe Benefits.

SC-4.02 Overtime Work. Normal work hours will be from 7:00 a.m. to 6:00 p.m., Monday through Saturday. No work shall be done beyond those times nor on Sundays and legal holidays without permission of the Owner. However, emergency work may be done without prior permission. Permission will be granted by the Owner to work beyond normal working hours and on Sundays and holidays only if it is required to meet the project contract time.

Night work may be undertaken as a regular procedure only with permission of the Owner, however, such permission may be revoked at any time by Owner if Contractor fails to maintain adequate equipment and supervision for the proper prosecution and control of the work at night. If permission is granted for night work, under no circumstances shall pile driving operators extend beyond 9:00 p.m. nor commence prior to 7:00 a.m.

If the Engineer determines that work on nights, Sundays and holidays is required in order to meet the deadline, the Contractor will be required to work in accordance with any such direction.

Should the Contractor request and receive permission to work beyond the above normal working hours and days, or if the Engineer requires such work as specified above, the Owner's cost of resident project representation services required beyond normal working hours and days will be reimbursed by the Contractor to the Owner.

Also, each Bidder shall be aware that they must establish a regular schedule consistent with the allowed times and days of work with generally equal daily

work periods. A proposed daily work schedule compatible with the CPM schedule and contract time required elsewhere in these specifications must be submitted along with other required information at the time of contract award. Any time the Contractor elects to deviate from this schedule, the Owner shall be provided one week advance notice to enable the Owner to adjust administrative matters and procedures.

SC-4.03 Work Beyond the Contract Period. Should the Contractor's work extend beyond the contract period, the Owner's cost of any Resident Project Representative services required beyond the contract period stated herein these contract documents or as modified by contract change order/time extension shall be reimbursed by the Contractor to the Owner.

SC-5. REQUIRED PATENT FEES AND ROYALTIES. As provided in General Specifications, Contractor shall pay all license fees and royalties. These costs shall be included in the Contract Price.

SC-6. CORRECTION PERIOD WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS: CORRECTIONS, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-6.01 Warranty and Guarantee:

Contractor warrants and guarantees to the Owner and Engineer that all materials and equipment will be new unless otherwise specified and that all Work will be of good quality and free from faults or defects and in accordance with the requirements of the Contract Documents. All unsatisfactory Work, all faulty or defective Work, and all Work not conforming to the requirements of the Contract Documents at the time of acceptance thereof or of such inspections, tests or approvals, shall be considered defective. Prompt notice of all defects shall be given to Contractor. All defective Work, whether or not in place, may be rejected, corrected or accepted.

SC-6.02 Tests and Inspections:

If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested, or approved by some public body, Contractor shall assume full responsibility therefor, pay all costs in connection therewith and furnish Engineer the required certificates of inspection, testing or approval. All other inspections, tests and approvals required by the Contract Documents shall be performed by organizations acceptable to Owner and the costs thereof shall be borne by Owner unless otherwise specified.

Contractor shall give Engineer timely notice of readiness of the Work for all inspections, tests or approvals. If any such Work required so to be inspected, tested or approved is covered without written approval of Engineer, it must, if requested by Engineer, be uncovered for observations, and such uncovering shall be at Contractor's expense unless Contractor has given Engineer timely notice of his intention to cover such Work and Engineer has not acted with reasonable promptness in response to such notice.

Neither observations by Engineer nor inspections, tests or approvals by persons other than Contractor shall relieve Contractor from his obligations to perform the Work in accordance with the requirements of the Contract Documents.

SC-6.03 Access to Work:

Engineer and his representatives and other representatives of Owner will at reasonable times have access to the Work. Contractor shall provide proper and safe facilities for such access and observation of the Work and also for any inspection or testing thereof by others.

SC-6.04 Uncovering Work:

If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for his observation and replaced at Contractor's expense.

If any Work has been covered which Engineer has not specifically requested to observe prior to its being covered, or if Engineer considers it necessary or advisable that covered Work be inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose or otherwise make available for observation, inspection or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, Contractor shall bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services, and an appropriate deductive Change Order shall be issued. If, however, such Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction if he makes a claim.

SC-6.05 Owner May Stop the Work:

If the Work is defective, or Contractor fails to supply sufficient skilled workmen or suitable materials or equipment, or if Contractor fails to make prompt payments to Subcontractors or for labor, materials or equipment, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor or any other party.

SC-6.06 Correction or Removal of Defective Work:

If required by Engineer prior to approval of final payment, Contractor shall promptly, without cost to Owner and as specified by Engineer, either correct any defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by Engineer, remove it from the site and replace it with nondefective Work. If Contractor does not correct such defective Work or remove and replace such rejected Work within a reasonable time, all as specified in a written notice from Engineer, Owner may have the deficiency corrected or the rejected Work removed and replaced. All direct or indirect costs of such correction or removal and replacement, including compensation for additional professional services, shall be paid by Contractor, and an appropriate deductive Change Order shall be issued. Contractor shall also bear the expenses of making good all Work of others destroyed or damaged by his correction, removal or replacement of his defective Work.

SC-6.07 One Year Correction Period:

If, after the approval of final payment and prior to the expiration of one year after the date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, any Work is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, either correct such defective Work, or, if it has been rejected by Owner, remove it from the site and replace it with nondefective Work. If Contractor does not promptly comply with the terms of such instructions, Owner may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by Contractor.

SC-6.08 Acceptance of Defective Work:

If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to approval of final payment, also Engineer) prefers to accept it, he may do so. In such case, if acceptance occurs prior to approval of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price; or, if the acceptance occurs after approval of final payment, an appropriate amount shall be paid by Contractor to Owner.

SC-6.09 Neglected Work by Contractor:

If Contractor should fail to prosecute the Work in accordance with the Contract Documents, including any requirements of the progress schedule, Owner, after seven days' written notice to Contractor may, without prejudice to any other remedy he may have, make good such deficiencies and the cost thereof (including compensation for additional professional services) shall be charged against Contractor if Engineer approves such action, in which case a Change Order shall be issued incorporating the necessary revisions in the Contract Documents including an appropriate reduction in the Contract Price. If the payments then or thereafter due Contractor are not sufficient to cover such amount, Contractor shall pay the difference to Owner.

SC-6.10 Correction Period:

Nothing above concerning the correction period shall establish a period of limitation with respect to any other obligation which the Contractor has under the Contract Documents. The establishment of time periods relates only to the specific obligations of the Contractor to correct the Work, and has no relationship to the time within which his obligations under the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish his liability with his respect to his obligations other than to specifically correct the work.

SC-7. PAYMENT OF LIQUIDATED DAMAGES. When Contractor is in default for nonperformance within the stipulated Contract Time (as set forth in the Liquidated Damages paragraph of the Agreement), Owner shall deduct the liquidated damages amount from Contractor's payment request.

SC-8. DOCUMENTATION TO ACCOMPANY APPLICATIONS FOR PAYMENT. Contractor's Applications for Payment shall be accompanied by the documentation specified herein.

SC-8.01. Materials and Equipment. If payment is requested for materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Progress Payment shall be accompanied by such data, satisfactory to Owner, as will establish Owner's title to the material and equipment and protect his interest therein, including applicable insurance.

Payments for such materials and equipment shall be based only upon the actual cost of the materials and equipment to Contractor and shall not include any overhead or profit to Contractor.

SC-8.02. Schedules and Data. Each Application for Progress Payment shall be accompanied by Contractor's updated schedule of operations, or progress report, with such shop drawings schedules, procurement schedules, value of material on hand included in application, and other data specified in Division 1 or reasonably required by Engineer.

SC-8.03. Documentation for Final Payment. Contractor's Application for Final Payment shall be accompanied by consent of the Surety to final payment and a clear lien and privilege certificate issued by the Clerk of Court and Ex-Officio Recorder of Mortgages for Orleans Parish.

SC-9. SUBSTANTIAL COMPLETION. When Contractor considers the Work ready for full occupancy or utilization by Owner, Contractor shall declare in writing to Owner and Engineer that the Work is substantially complete and request that Engineer issue a Notice of Substantial Completion therefore. Upon the date the Owner agrees to issue the certificate of substantial completion, such date shall govern in regard to assessment of any liquidated damages, as described elsewhere in these specifications.

SPECIFICATIONS. The Specifications which govern the materials and equipment to be furnished and the work to be performed under this contract are listed in the Table of Contents.

SC-11. RESIDENT PROJECT REPRESENTATION. Refer to paragraph 1.19 of the General Specifications. Change the word "Inspector" to "Resident Project Representative" wherever it appears. Also, delete the first sentence of the paragraph and replace it with, "The Work will be conducted under the general direction of the Engineer, who will be represented in the field by Resident Project Representative(s) appointed by the Engineer, who will enforce strict compliance with the terms of the contract in accordance with Exhibit A to the General Specifications." See SC-4 "LABOR PRACTICES" concerning the Contractor's reimbursement to the Owner for certain resident project representative services.

SC-12. RESPONSIBILITY FOR PAYMENT. Except for items specifically identified as provided by Owner, Contractor shall pay for all labor, materials, and other costs incurred under this contract.

SC-13. SOIL (Geotechnical) REPORT. Soil borings have been made on the site of the Work. The locations of soil boring are indicated on the drawings.

Copies of the report are available for review in the office of the Engineer and it is the Bidder's responsibility to review this report if he has any questions about subsurface conditions. Copies of the boring logs are enclosed as Section N of these specifications.

Soil boring information represents subsurface characteristics to the extent indicated, and only for the point location of the test hole. Each Bidder shall make his own interpretation of the character and condition of the materials which will be encountered between test hole locations. Each prospective Bidder may, at his own expense, make additional surveys and investigations as he may deem necessary to determine conditions which will affect performance of the Work.

SC-14. EXISTING UNDERGROUND AND OTHER INSTALLATIONS. Existing underground installations are indicated on the drawings only to the extent such information was made available to or discovered by Engineer in preparing the drawings. There is no guarantee as to the accuracy or completeness of such information, and all responsibility for the accuracy and completeness thereof is expressly disclaimed.

The Contractor shall be responsible for the preservation of all public and private property, monuments, highway signs, telephone lines, other utilities, etc., along and adjacent to the Work; shall use every precaution necessary to prevent damage to pipes, conduits, and other underground structures; and shall protect carefully from disturbance or damage all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed. The street and highway signs and markers that are to be affected by the Work, shall be carefully removed when the work begins and stored in a manner to keep them clean and dry. The Contractor must obtain all necessary information in regard to existing utilities, and shall give notice in writing to the owners or the proper authorities in charge of streets, gas, water, pipes, electric, sewers and other underground structures, including conduits, railways, poles and pole lines, man-holes, catch basins, fixtures, appurtenances, and all other property that may be affected by the Contractor's operations, at least forty-eight (48) hours before his operations will affect such property. The Contractor shall not hinder or interfere with any person in the protection of such work or with the operation of utilities, at any time. When property or the operation of railways, telephone lines, telegraph lines, or other public utilities are endangered, the Contractor shall at his own expense, maintain flagmen or watchmen and any other necessary precautions to avoid interruption of service or damage to life or property, and shall promptly repair, restore, or make good injury or damage caused by his operations in an acceptable manner.

SC-15. DELAYS AND DAMAGES. Contractor shall accept the risk of any delays caused by the rate of progress of the Work to be performed under other contracts. In the event Contractor is delayed in the prosecution and completion of the Work because of such conditions, Contractor shall have no claim against Owner for damages or contract adjustment other than an extension of Contract Time and the waiving of liquidated damages during the period occasioned by the delay.

Time limitations required by Owner shall be for the benefit of Owner and contractors under other Sections of this contract or other contracts who have

entered into such contracts with Owner in reliance on the time limitations set forth in these Contract Documents. Any claim by Contractor for damages due to delay by another contractor shall be asserted against that contractor.

SC-16. PREVAILING WAGE RATES. Delete paragraph 1.43(a) of the General Specifications which refers to prevailing wage rates as established by the U.S. Department of Labor. Refer to paragraph 1.46 of the General Specifications concerning prevailing wage rates as established by the Louisiana State Office of Labor which shall apply to this project. The applicable wage rate decision is included herein in the following pages K-8a through K-8f.

SC-17. INTERPRETATION OF DOCUMENTS. Refer to paragraph 1.09 of the General Specifications concerning interpretation of the Documents. Delete the words "Chief Engineer" and substitute the word "Engineer" and change the time of delivery of written interpretation requests from 72 hours to seven (7) days (excluding weekends and holidays) before the time fixed for opening of bids. Any addenda issued in response to such requests shall be issued by the Engineer 72 hours (excluding weekends and holidays) in advance of the time fixed for opening of bids.

SC-18. INSURANCE COVERAGE. Refer to paragraph 1.11(g) of the General Specifications concerning the Hold-Harmless Agreement clause of the insurance coverage requirements. Delete the last portion of the last sentence of the paragraph which reads, "and three hundred thousand dollars ($300,000.00) for the properties of the Board and all other property owners.", and replace it with, "and five hundred thousand dollars ($500,000.00) for the properties of the Board and all other property owners."

Also, paragraphs 1.11(b) "Comprehensive General Liability" and 1.11(g) "Hold-Harmless Agreement" of the General Specifications are revised to include the Engineer as being held harmless.

Also include the following paragraph in paragraph 1.11 "Insurance" of the General Specifications. The Contractor shall defend, indemnify, and hold harmless the Owner and the Engineer (URS) and their respective officers, agents and employees, from and against all damages, claims, losses, demands, suits, judgements, and costs, including reasonable attorneys fees and expenses, arising out of or resulting from the performance of the work, providing that such damages, claims, losses, demands, judgements, costs or expenses:

1. Is attributable to bodily injury, sickness and disease or death or injury to or destruction of tanglible property (other than the work itself) including the loss of use resulting there from or from purely economic costs; and

2. Is caused in part, or in whole by any negligent act or admission on the part of the Contractor, any one directly or indirectly employed by any one of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

Office of Labor

Louisiana Department of Labor
Dudley J. Patin, Jr., Secretary of Labor
Johnny L. Hodges, Assistant Secretary

Apprenticeship Laws
Minor Labor Laws
Prevailing Wage Laws
Job Training Coordinating Council
Private Employment Agency Laws

December 18, 1986

Mr. Bruce H. Adams, P.E.
URS Engineers
3500 North Causeway Blvd.
Metairie, Louisiana 70002

RE: Project No. 2040-0375
DEI Project No. 1008
URS Project No. 46021.00
Pontchartrain Beach Flood
Protection Phase II
Orleans Levee Board
Orleans Parish
Heavy Construction
LDL NO. 13675-A

Dear Mr. Adams:

In order to fully implement the provisions of R.S.38:2301 it is necessary that this office be informed of the Successful Bidder on all contracts let under the jurisdiction of this Statute.

When a prime or general contractor has been awarded this captioned project contract, please complete and return the enclosed "CONTRACT BID AWARD NOTICE" to the address thereon.

Your cooperation in this matter is requested.

Sincerely,

Johnny L. Hodges
ASSISTANT SECRETARY OF LABOR
OFFICE OF LABOR

MP/pl
Enclosures

CONTRACT BID AWARD NOTICE

In compliance with Louisiana Title 38:2301, the following information is submitted.

PROJECT NO: Orleans Levee Board Project No. 2040-0375, DEI No. 1008

PREVAILING WAGE RATE LDL NO.: 13675-A ISSUED: 12-18-86 EXPIRED: 3-18-87

CITY/PARISH LOCATION: Orleans Parish

SUCCESSFUL BIDDER: _____
(NAME)

_____
(ADDRESS)

_____
(CITY/STATE)

TELEPHONE NO: _____

AMOUNT OF BID: _____ DATE CONTRACT SIGNED: _____

If we can be of further assistance, please advise.

AGENCY OR ARCHITECTURE FIRM

Mr. Bruce H. Adams, P.E.
(NAME)

URS Engineers
3500 N. Causeway Blvd.
(ADDRESS)

Metairie, Louisiana 70002
(CITY/STATE)

(504) 837-6326
(TELEPHONE NO.)

IMPORTANT
THIS FORM MUST BE RETURNED
ON DATE OF BID AWARD

When project contract award has been made, please fill out and return this notice to:

DEPARTMENT OF LABOR-OFFICE OF LABOR
PREVAILING WAGE RATE DIVISION
5360 FLORIDA BOULEVARD
BATON ROUGE, LA. 70806

TELEPHONE NO: (504) 925-4224

Johnny L. Hodges

JOHNNY L. HODGES
ASSISTANT SECRETARY OF LABOR
OFFICE OF LABOR

REVISED: 8/1/81

LOUISIANA DEPARTMENT OF LABOR PREVAILING WAGE RATE DIVISION	REQUEST FOR WAGE DETERMINATION AND RESPONSE TO REQUEST AS AMENDED	R.S. 38:2301 (Act 65) and Related Statutes

Requesting Officer (Typed Name)

Mr. Bruce H. Adams, P.E.

Requesting Agency or Architectural Firm	Telephone
URS Engineers	(504) 837-6326

Date of Request	Estimated Advertising Date	Estimated Bid Opening Date
12-18-86		

Prior Decision Number (If Any)	Estimated Value of Contract	Type of Construction
LDL NO. 13675		[ ] BUILDING [ ] HIGHWAY [ ] SHIPBUILDING & REPAIR [XX] HEAVY [ ] MARINE DRED. [ ] WATER WELL DRILLING [ ]

Location of Project

Orleans Levee Board, Pontchartrain Beach Flood Protection Phase II

Decision Number	Parish	State
LDL NO. 13675-A	Orleans Parish	Louisiana

Effective Date	Address to Which Wage Determination Will Be Mailed
12-18-86	Mr. Bruce H. Adams, P.E. URS Engineers 3500 North Causeway Blvd. Metairie, Louisiana 70002
Expiration Date 3-18-87	
Supersedes Decision Number LDL No. 13675	

APPROVED BY:

Johnny L. Hodges

JOHNNY L. HODGES
ASSISTANT SECRETARY OF LABOR
OFFICE OF LABOR

Description of Project

PROJECT NO.: 2040-0375

Pontchartrain Beach Flood Protection Phase II, Estimated cost: $950,000.00, Includes construction of concrete "I" walls, steel swing gates on concrete foundation piling, earthen ramps with asphaltic pavement and water utility modifications.
DEI Project No. 1008, URS Project No. 46021.00

ıle 1: Work projects will be categorized under one of the following types of work:

A. Building Construction
B. Highway Construction
C. Heavy Construction
D. Shipbuilding
E. Marine floating bucket or hydraulic dredging
F. Water well drilling

ule 2: Geographic boundaries shall be established for each craft by the Assistant Secretary of Labor.

ıle 3: Every prevailing wage rate decision issued will list a minimum hourly wage rate and related fringe benefits for each classification of worker which may be expected to be utilized in the completion of the contracted project.

ule 4: Every prevailing wage rate decision issued will include a copy of these Prevailing Wage Rate rules in the form in which they are finally adopted.

ıle 5: There may be issued such modifications or addendums to prevailing wage rate decisions as the Assistant Secretary determines is necessary to update wage rate data or to include additional job classifications.

ule 6: Decisions will include definitions of such workers classifications as the Assistant Secretary deems necessary. Additional definitions or clarification of job functions for workers classifications may be obtained upon submission of a request to the Assistant Secretary.

ıle 7: Workers who perform job functions of a classification other than the classification in which they are listed shall be paid not less than the minimum wages issued for the classification in which they actually work.

lule 8: Apprentices endentured in an apprenticeship program approved by the Louisiana Office of Labor and who are performing job functions of the craft into which they are endentured shall be paid at the rate of pay resulting when the percentage points for the apprentices' current progression step is applied to the wage rate issued for the classification in which they are working.

ıle 9: All workers, except those apprentices described in Rule 8 above, who perform work directly on the job site must be paid not less than the minimum wages issued for the classification in which they work.

le 10: The contracting agency shall notify the Assistant Secretary for the Office of Labor of the successful bidder for the project and the date, time, and place of the prejob conference, which notice shall include an invitation to the Assistant Secretary or his designee to attend for the purpose of explaining the contractor's responsibilities under the prevailing wage law.

ıle 11: It shall be the responsibility of the general contractor on the first day the job commences to post the entire prevailing wage rate decision including these rules in a prominent and easily accessible place at the site of the work. It shall also be the responsibility of the general contractor to furnish a copy of the prevailing wage rate decision for the project and a copy of the prevailing wage rate rules to each subcontractor involved in the project and to explain to the subcontractor his responsibilities with respect to R.S. 38:2301 and the contract for the applicable project.

Rule 1: Field personnel of the Office of Labor will conduct inspection as assigned by the Assistant Secretary as well as routine inspections of the work projects for which a prevailing wage rate decision has been issued.

Rule 2: On each inspection the Office of Labor's representative shall first ascertain whether the prevailing wage rate decision is posted. He or she may then witness the work being performed, conduct interviews with/or take written statements from management personnel and/or workers on the job site or what other investigative techniques he or she may deem to be appropriate in order to determine whether or not the workers are being paid in compliance with the terms of the prevailing wage rate decision.

Rule 3: The Assistant Secretary or his designee, in order to ensure compliance and enforcement of a prevailing wage decision, may at any time during a project inspect the books and records of any contractor or subcontractor. The Assistant Secretary may initiate such inspection upon his own motion or after his receipt of an oral or written complaint from an employee on the project. The inspection of the books and records may take place at the jobsite or such other reasonable location specified by the Assistant Secretary or his designee, including but not limited to the office of the Assistant Secretary.

Rule 4: The failure of a contractor or subcontractor to timely furnish the books and records requested by the Assistant Secretary or his, designee or the furnishing of false or misleading information shall be deemed to be sufficient cause to preclude the waiver of the applicable penalty.

Rule 5: Workers employed on a project for which a prevailing wage rate decision has been issued who suspect that they are not being paid in accordance with the schedule of wages listed in the decision should contact:

Louisiana Department of Labor
Prevailing Wage Division
5360 Florida Boulevard
Baton Rouge, Louisiana 70806
Telephone (504) 925-4224

Rule 6: The names of all complaintants shall remain strictly confidential whether such complaint is verbal or written.

Rule 7: LSA - R.S. 23:964 reads as follows:

"***Any employer who discharges, or in any other manner discriminates against any employee because such employee has testified in any investigation or proceeding relative to enforcement of any of the labor laws of the State of Louisiana, shall be fined not less than one hundred dollars nor more than two hundred fifty dollars, or imprisoned for not less than thirty days nor more than ninety days or both."

Any employer who violates the provisions of the above-quoted statute shall be reported to the District Attorney for the parish in which the offence occurred. The District Attorney shall be supplied with any and all supportive evidence of the violation and a request from the Assistant Secretary of Labor that the employer be prosecuted to the fullest extent of the law.

Rule 8: These rules will abolish or supercede prevailing wage rules adopted on 11-20-80.

PREVAILING WAGE RATE DIVISION

I. HEAVY CONSTRUCTION PAGE 3 OF 4 DECISION NO. LDL 13675-A

A. Mechanic* Defined as an employee using the tools of a skilled trade or craft in the performance of his/her work.

PARISH: ORLEANS

CLASSIFISCATION	BASIC HOURLY RATES	FRINGE BENEFITS
BRICKLAYERS/STONEMASONS	14.50	2.04
CARPENTER/PILEDRIVERMEN	14.31	2.60
CEMENT MASONS	13.22	1.68
ELECTRICIANS	16.15	3.13
CABLE SPLICERS	16.15	3.13
IRONWORKERS	14.54	2.43
LABORERS (INCLUDING TRAFFIC SAFETY SIGNALMAN)	9.57	1.08
LINE CONSTRUCTORS:		
GROUP 1 - LINEMEN	12.10	1.70
GROUP 2 - GROUNDMEN	5.85	1.47
GROUP 3 - WINCH TRUCK OPERATOR AND TRACTOR DRIVER	8.72	1.58
GROUP 4 - HOLE DIGGER OPERATOR	10.47	1.64
PAINTERS:		
GROUP 1: JOURNEYMEN	13.235	2.115
GROUP 2: SPRAY	13.61	2.115
GROUP 3: INDUSTRIAL	15.535	2.115
PLUMBERS/PIPEFITTERS	16.80	2.43
POWER EQUIPMENT OPERATORS:		
GROUP 1: OPERATING ENGINEERS	14.31	2.50
GROUP 2: 60 TON CRANE & OVER	14.56	2.50

GROUP 3: CRANE ALL TYPES: DERRICKS: DECK WINCHES (2) HI-HO & SIMILAR TYPE EQUIPMENT: 3 DRUMS (OR MORE) STABILIZERS: PULLS ALL TYPES: CONCRETE MIXER 1 YD. & OVER: ALL

A. Mechanic* Defined as an employee using the tools of a skilled trade or craft in the performance of his/her work.

PARISH: ORLEANS

CLASSIFISCATION	CODES	BASIC HOURLY RATES	FRINGE BENEFITS
PAVERS: DITCHING OR TRENCHING MACHINES (TRACK TYPE): MECHANICS & EQUIPMENT WELDERS: WELL POINT SYSTEM: HOIST, 2 DRUMS OR MORE: HOIST, 1 DRUM, 40 VERTICAL FT. OR MORE: SCRAPERS, BULLDOZERS, RUBBER TIRED OR TRACK OTHER THAN FARMTYPE: SCOOPMOBILES: MOTOR PATROL: GRADEALL: ROLLERS ON HOT MIX: ASPHALT PAVING MACHINES, FRONT END LOADERS, OTHER THAN FARMTYPE 1 CU. YD. OR OVER: SHOVELS & BACKHOES, ALL TYPES & EQUIVALENT EQUIPMENT: PILEDRIVERS: SIDEBOOM CATS		14.56	2.50
GROUP 4: 2 DRUMS & SINGLE DRUM STABILIZERS: FRONT END LOADERS UNDER 1 CU. YD.: A-FRAME TRUCK EXCEPT WHEN HANDLING STEEL OR PIPE: FINISHING MACHINES (CONCRETE): POWER SUB-GRADERS: 2 TRACTORS (CRAWLER TYPE): 1 DRUM HOIST UNDER 40 VERTICAL FT.: FIREMEN: CONCRETE SPREADER: PUGMILL, BITUMINOUS DISTRIBUTOR ON SURFACE TREATMENT & EQUIVALENT EQUIPMENT: BULLFLOATS & EQUIVALENT EQUIPMENT: JOB GREASE MAN: UNIT OP.: WORK BOATS NOT REQUIRING LICENSED OPS.: INBOARD-OUTBOARD MOTORED CREW BOATS: CONCRETE MIXER UNDER 1 YD.: SPRAY CURING MACHINES: ROLLER ON SUBGRADE: 1 AIR COMPRESSOR OVER 125 CU. FT.: FORM GRADERS: ASHPHALT FINISHER SCREED MAN: PUMP OVER 4": SCALE OP.: CRUSHER OP.: CONCRETE JOINTING MACHINES: CONCRETE SAW: TACK MACHINES & EQUIVALENT EQUIPMENT: PUMPCRETE: ELECTRIC ELEVATOR (INSIDE): OILER-DRIVER: FARMTYPE RUBBER TIRED TRACTOR, WITH ATTACHMENT, EXCEPT BACKHOES: KOLUM BUFF & SIMILAR EQUIPMENT: FORK LIFTS 10 TON CAPACITY & UNDER BATCH PLANT OP., OILER ON CRANE USING AIR TO DRIVE PILES, FIREMAN OPERATING STEAM VALVE, UNIT OP.: OILER-DRIVER		14.81	2.50
GROUP 5: JUNIOR ENGINEER		10.73	2.50
GROUP 6: OILER		9.82	2.50
SHEETMETAL WORKERS		12.00	3.39
TEAMSTERS		9.82	1.20

WELDERS*
WELDERS RECEIVE RATES PRESCRIBED FOR CRAFT PERFORMING OPERATION TO WHICH WELDING IS INCIDENTAL.

Also add the following paragraph 1.11(h):

(h) All-Risk Builder's Risk Insurance

The Contractor shall furnish All-Risk Builder's Risk Insurance as follows:

1. Shall be All-Risk Builder's Risk Insurance naming the Board of Levee Commissioners of the Orleans Levee District as Owner, the Engineer (URS) and the Contractor and his Sub-Contractors and Sub-Sub-Contractors as additional insured as their interests may appear.

2. Maximum deductible of $50,000 for any peril.

3. Minimum coverage shall be as shown in the specimen policy following this special condition.

4. Company furnishing the insurance shall be subject to a Best's Rating of A+11 or better.

5. All Risk Builder's Risk Insurance furnished by the Contractor shall be submitted to the Board after opening of bids for approval before a contract can be signed.

6. Insurance shall be effective from the date of signing of the Contract to the date of Final Acceptance of the project.

7. Insurance shall be in the total amount of the contract.

8. Contractor shall be responsible for all deductibles. See the following pages K-9a through K-9c

SC-19. ENGINEER'S DECISION FINAL. Refer to paragraph 1.12 of the General Specifications. In the second paragraph, change the words, "Chief Engineer" to "Engineer".

SC-20. WITHDRAWAL OF BIDS. Refer to paragraph 1.31 of the General Specifications. Change the words "Thirty (30) Days" to "Ninety (90) Days".

SC-21. ADDENDUM. Refer to paragraph 1.35 of the General Specifications. Change the words "Chief Engineer" to "Engineer".

SC-22. REFERENCE TO MATERIALS BY NAME. Refer to paragraph 1.37 of the General Specifications. Delete the last sentence which reads, "Prior to the submission of proposal, any proposed substitution of material must be submitted to the Chief Engineer in writing for approval."

SC-23. REGULATORY REQUIREMENTS. The Contractor shall, without additional expense to the Owner, be responsible for obtaining any necessary licenses and permits, and for complying with any applicable Federal, State and municipal laws, codes and regulations, in connection with the prosecution of the Work. Contractor shall take proper safety and health precautions to protect the Work, the workers, the public and the property of others and shall also be

CONTRACTOR'S INSTALLATION OR BUILDER'S RISK FORM

INSURING CLAUSE

This policy, subject to the limitations, exclusions, terms and conditions hereinafter mentioned, is to insure, in respect of occurrences happening during t period of this policy, against all risks of physical loss of or damage to –

(a) Property in course of construction, reconstruction or repair whilst at the risk of the assured and whilst at the location of the said construction, reconstruction or repair operations (all of which are herein referred to as "the construction operations") which are the subject of the contract or contracts described in the schedule forming part hereof

(b) Property of every kind and description (including materials and supplies) owned by the assured and used or to be used in a part of, or incidental to, the construction operations wherever the said property maybe located within the Continental United States of Amer Canada St Pierre and Miquelon, and whilst in transit within a between any place or places aforesaid.

(c) Property of others used or to be used in, a part of, or incidental to t construction operations, for which the assured may be responsible shall, prior to any occurrence for which claim may be ma hereunder, have assumed responsibility.
Loss, if any, arising under this paragraph (c) shall be adjusted a and paid to the assured.

EXCLUSIONS

This policy does not cover.

(a) Any loss of use or occupancy howsoever caused;

(b) Penalties for non-completion of or delay in completion of contract or non compliance with contract conditions;

(c) Cost of making good faulty or defective workmanship, material, construction or design, but this exclusion shall not apply to damage resulting from such faulty or defective workmanship, material, construction or design.

(d) Wear, tear, normal upkeep, inherent vice, latent defect, vermin or normal making good.

(e) Loss or damage directly or indirectly occasioned by, happening through or in consequence of war, invasion, acts of foreign enemies, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection, military or usurped power, martial law or confiscation or nationalization or requisition or destruction of or damage to property by or under the order of any government or public or local authority.

(f) Loss or damage arising directly or indirectly from nuclear reaction, nuclear radiation or radioactive contamination however such nuclear reaction nuclear radiation or radioactive contamination may have been caused, nevertheless if a fire arises directly or indirectly from nuclear reaction, nuclear radiation or radioactive contamination a loss or damage arising directly from that fire shall (subject to t provisions of this policy) be covered, excluding however all loss damage caused by nuclear reaction, nuclear radiation or radioactiv contamination arising directly or indirectly from that fire.

(g) Loss or damage caused by frost or freezing unless resulting fro damage occasioned by fire &/or lightning &/or explosion &/ windstorm &/or hail &/or riot &/or riot attending a strike &/or civ commotion &/or aircraft &/or vehicles &/or smoke;

(h) Automobile except on worksite;

(i) Loss due to disappearance or revealed by inventory shortage alone.

(j) Mechanical breakdown, but this exclusion shall not be deemed t exclude loss or damage arising as a consequence of mechanic breakdown;

(k) Infidelity of the assured's employees;

(l) Loss or damage to material and/or equipment while in the course o ocean marine shipment;

(m) Contractor's equipment of every description

SCHEDULE

1. Limit of Liability for any one occurrence

2. Deductibles

Project name and number

4 Project location and description

Contract Price

6 Period of Contract

Rate/Premium

Earned premium shall be computed at a rate of _____ per $100 of the final total contract price as developed on completion of the construction project insured hereunder, subject to a minimum premium of $ _____ and there shall not be any return of premium in the event the final total contract price falls below the contract price stated in item 5 of the schedule or if the construction project insured hereunder is completed prior to the end of the period stated in item 6 of the schedule.

Attached to and forming a part of Policy No.

Assured

Producer

Dated

ENDORSEMENT NO. _____

VALUATION AND LIMITS OF LIABILITY: THIS COMPANY SHALL BE LIABLE ONLY TO THE EXTENT OF THE ACTUAL CASH VALUE OF THE PROPERTY AT THE TIME OF LOSS, BUT NOT EXCEEDING THE AMOUNT WHICH IT WOULD COST TO REPAIR OR REPLACE THE PROPERTY WITH MATERIAL OF LIKE KIND AND QUALITY WITHIN A REASONABLE TIME AFTER SUCH LOSS; AND IN NO EVENT SHALL THIS COMPANY BE LIABLE IN ANY ONE LOSS FOR MORE THAN:

(1) $_____ AT THE PREMISES DESCRIBED IN THE MONTHLY REPORTS

(2) $_____ AT ANY OTHER LOCATION WITHIN THE TERRITORIAL LIMITS DESCRIBED IN CLAUSE (B);

(3) $_____ ON PROPERTY IN DUE COURSE OF TRANSIT;

CONDITION 14, CANCELLATION CLAUSE, IS AMENDED TO INCLUDE THE FOLLOWING:

(IF CANCELLED AT THE REQUEST OF THE ASSURED)

(C) IN THE EVENT THE POLICY IS CANCELLED FOR NON-PAYMENT OF PREMIUM, THE CANCELLATION WILL BE EFFECTIVE 10 DAYS AFTER NOTICE IS MAILED TO THE INSURED AND MORTGAGEE (IF ANY).

IN ADDITION, ITEM 8 OF THE SCHEDULE, RATE/PREMIUM, IS ALSO AMENDED AS FOLLOWS:

IN THE EVENT THE POLICY IS CANCELLED FOR NON-PAYMENT OF PREMIUM THE MINIMUM PREMIUM SHALL BE 10% (TEN PERCENT) OF THE MINIMUM PREMIUM AS STATED THEREIN.

ATTACHED TO AND FORMING A PART OF POLICY NO.

ISSUED TO:

THIS ENDORSEMENT EFFECTIVE:

INSURANCE COMPANY

PUD 215 (9-78)

BY _____

ADDITIONAL CONDITIONS
TO
FORM HU 6041-CPS

17. MISREPRESENTATION AND FRAUD. THIS ENTIRE POLICY SHALL BE VOID IF, WHETHER BEFORE OR AFTER A LOSS, THE INSURED HAS CONCEALED OR MISREPRESENTED ANY MATERIAL FACT OR CIRCUMSTANCE CONCERNING THIS INSURANCE OR THE SUBJECT THEREOF, OR THE INTEREST OF THE INSURED THEREIN, OR IN CASE OF ANY FRAUD OR FALSE SWEARING BY THE INSURED RELATING THERETO.

18. FILING OF PROOF OF LOSS. IN THE EVENT OF LOSS OR DAMAGE, THE ASSURED SHALL, WITHIN NINETY-ONE (91) DAYS OF THE DATE OF LOSS OR DAMAGE, UNLESS SUCH TIME BE EXTENDED IN WRITING BY THE COMPANY, FILE PROOF OR STATEMENT OF LOSS, AS SPECIFIED ELSEWHERE IN THIS POLICY, WITH THE COMPANY.

19. SETTLEMENT OF LOSS. ALL ADJUSTED CLAIMS SHALL BE PAID OR MADE GOOD TO THE INSURED WITHIN SIXTY (60) DAYS AFTER PRESENTATION AND ACCEPTANCE OF SATISFACTORY PROOF OF INTEREST AND LOSS AT THE OFFICE OF THE COMPANY. NO LOSS SHALL BE PAID OR MADE GOOD IF THE INSURED HAS COLLECTED THE SAME FROM OTHERS.

20. NO BENEFIT TO BAILEE. THIS INSURANCE SHALL IN NOWISE INURE DIRECTLY OR INDERECTLY TO THE BENEFIT OF ANY CARRIER OR OTHER BAILEE.

21. PAIR, SET OR PARTS. IN THE EVENT OF LOSS OF OR DAMAGE TO:
(A) ANY ARTICLE OR ARTICLES WHICH ARE A PART OF A PAIR OR SET, THE MEASURE OF LOSS OF OR DAMAGE TO SUCH ARTICLE OR ARTICLES SHALL BE A REASONABLE AND FAIR PROPORTION OF THE TOTAL VALUE OF THE PAIR OR SET, GIVING CONSIDERATION TO THE IMPORTANCE OF SAID ARTICLE OR ARTICLES, BUT IN NO EVENT SHALL SUCH LOSS OR DAMAGE BE CONSTRUED TO MEAN TOTAL LOSS OF THE PAIR OR SET; OR
(B) ANY PART OF PROPERTY COVERED CONSISTING, WHEN COMPLETE FOR USE, OF SEVERAL PARTS, THE COMPANY SHALL ONLY BE LIABLE FOR THE VALUE OF THE PART LOST OR DAMAGED.

22. SUIT. NO SUIT, ACTION OR PROCEEDING FOR THE RECOVERY OF ANY CLAIM UNDER THIS POLICY SHALL BE SUSTAINABLE IN ANY COURT OF LAW OR EQUITY UNLESS THE SAME BE COMMENCED WITHIN TWELVE (12) MONTHS NEXT AFTER DISCOVERY BY THE INSURED OF THE OCCURRENCE WHICH GIVES RISE TO THE CLAIM, PROVIDED HOWEVER, THAT IF BY THE LAWS OF THE STATE WITHIN WHICH THIS POLICY IS ISSUED SUCH LIMITATION IS INVALID, THEN ANY SUCH CLAIMS SHALL BE VOID UNLESS SUCH ACTION, SUIT OR PROCEEDING BE COMMENCED WITHIN THE SHORTEST LIMIT OF TIME PERMITTED BY THE LAWS OF SUCH STATE.

23. CHANGES. NOTICE TO ANY AGENT OR KNOWLEDGE POSSESSED BY ANY AGENT OR BY ANY OTHER PERSON SHALL NOT EFFECT A WAIVER OR A CHANGE IN ANY PART OF THIS POLICY OR ESTOP THE COMPANY FROM ASSERTING ANY RIGHT UNDER THE TERMS OF THIS POLICY, NOR SHALL THE TERMS OF THIS POLICY BE WAIVED OR CHANGED, EXCEPT BY ENDORSEMENT ISSUED TO FORM A PART OF THIS POLICY.

ATTACHED TO AND FORMING A PART OF POLICY NO.

ISSUED TO:

THIS ENDORSEMENT EFFECTIVE:

INSURANCE COMPANY

BY_____
(AUTHORIZED REPRESENTATIVE)

responsible for all materials delivered and work performed until completion and acceptance of the Work.

SC-24. TESTING LABORATORY. The Owner shall select and reimburse the testing laboratory to determine that materials and workmanship comply with the requirements of these specifications. Such testing shall meet the requirements of all pertinent codes and regulations and selected standards as specified elsewhere in these Specifications.

The Owner will pay for all initial and routine testing services except as otherwise specified. However, when initial tests indicate non-compliance with the Contract Documents, any subsequent retesting occasioned by such non-compliance will be at the sole expense of the Contractor. Inspection or testing performed exclusively for the Contractor's convenience shall be borne by the Contractor.

The Owner will pay for soil and concrete testing.

The Contractor shall pay for concrete and asphalt batch design. Batch designs shall be tested by the Owner's testing laboratory.

Representatives of the testing laboratory shall have access to the work at all times. Contractor shall provide facilities for such access in order that the laboratory may perform its functions properly.

Contractor shall consult the testing laboratory at least 24 hours in advance to determine the time required to perform the tests and to issue each of the findings. Contractor shall include the required time for testing services within the construction schedule. When changes of the construction schedule are necessary, coordinate such changes with the testing laboratory as required.

All samples for testing, unless otherwise provided elsewhere in these specifications, shall be taken by the testing laboratory. All sampling equipment and personnel shall be provided by the testing laboratory unless otherwise specified. All deliveries of samples to the testing laboratory shall be performed by the testing laboratory unless otherwise specified.

SC-25. TEMPORARY UTILITIES.

SC-25.01 Temporary Lighting:

Contractor shall provide temporary lighting facilities for prosecution and inspection of the work. These facilities shall be installed and maintained by the Contractor. Locate in such a manner as to result in the least interference with work upon the Project site and existing facilities.

SC-25.02 Temporary Power:

Contractor shall provide temporary power facilities required for prosecution and inspection of the Work. These facilities shall be installed and maintained by the Contractor. Locate in such a manner as to result in the least interference with work upon the Project site and existing facilities.

SC-25.03 Temporary Water:

The Contractor shall make the necessary arrangements for securing and transporting all water required in the construction, including water required for the mixing of concrete, sprinkling, flushing, flooding or jetting, and including any temporary pipeline or equipment which may be necessary to make use of such water.

SC-25.04 Temporary Sanitary Facilities:

The Contractor shall provide adequate portable sanitary facilities at three locations on the site as established by the Engineer. They shall be cleaned, deoderized, and disinfected each day construction is in progress, all at the Contractor's expense.

SC-26. RESIDENT PROJECT REPRESENTATIVE'S OFFICE. In addition to the Contractor's field office, the Contractor shall also immediately provide a separate field office for the use of the Engineer's Resident Project Representative(s). The office shall be separate from all other offices, shall contain a minimum of 150 square feet of floor space, shall have telephone and electrical service (w/convenience outlets) and shall be lighted, heated, and air conditioned. One (1) desk top and one (1) 4-drawer lockable file cabinet (legal size) shall be provided. This office shall be lockable with passage locks provided by the Contractor and separate lock hasp devices suitable for the Resident Project Representative's own pad lock. Three (3) chairs and one table shall also be provided.

SC-27. PROJECT RECORD DOCUMENTS. The Contractor shall maintain at the project site for the Owner's permanent records one copy of all drawings, specifications, addenda, change orders (and other contract modifications), engineer's field orders and written instructions, approved shop drawings and submittals, field test reports, Contractor's survey notes, and construction photographs. These documents shall be stored in the Contractor's field office apart from documents used for construction in files and racks suitable for such storage. Documents shall be maint~ine in clean, dry and legible condition and in good order. Record documents shall not be used for construction purposes. Documents and samples shall be made available to the Engineer and Owner for inspection at all times. Any marking for changes, revisions, etc., shall be in red erasable pencil and, as necessary, other pencil colors.

Each document shall be labeled "Project Record". As construction progresses, all construction information shall be recorded and until the required information is recorded, no work shall be concealed. Project drawings shall be legibly marked to record actual construction with the location of subsurface utilities and appurtenances concealed during construction, referenced to visible and accessible features above ground. Field changes of dimensions and details shall be so marked as shall be changes made by change order and details not on the original contract drawings.

Specifications and addenda shall be marked in each section to record the manufacturer, trade name, catalogue number, and supplier of each product and item of equipment actually installed as well as changes by field order and change order.

At the close of the project all such documents shall be submitted by the Contractor to the Engineer. Engineer will submit these to the Owner. All submittals shall be transmitted in duplicate with date, Owner's project title and number, Contractor's name and address, title and number of each Record Document and Contractor's signature (or his authorized representative).

SC-28. SAFETY AND HEALTH REGULATIONS. The Code of Federal Regulations, Title 29, Occupational Safety and Health Administration (OSHA) shall apply. Safety and Health Provisions of the State of Louisiana shall apply where more stringent and where not covered by OSHA.

SC-29 PROJECT ACCESS ROUTES AND CLEANING

The Contractor shall be required to utilize the following access routes to and from the project site (in order of preference shown) for all heavy equipment, concrete and dirt hauling vehicles (empty or full), other major delivery vehicles, etc.:

1. Enter Leon C. Simon from Downman Road and access Lakeshore Drive near the Military Reserve Center then direct to the site.

2. Enter Leon C. Simon from Downman Road and access Lakeshore Drive from Franklyn Avenue then direct to the site.

3. Enter Franklyn Avenue to Lakeshore Drive then direct to the site.

4. Access Leon C. Simon from Downman or Franklyn to Elysian Fields then direct to the site.

The Contractor shall not access the project from the west along Lakeshore Drive. In addition, the Contractor shall maintain the streets utilized for construction and transport to and from the project free of any accummulation of concrete splatter, dirt, mud and debris to the degree of daily street cleaning, if required, utilizing street cleaning machines, street washing machines and manual labor all as required at no direct payment.

The Contractor shall limit access of heavy equipment and concrete dirt-hauling, and other major delivery vehicles as follows:

1. East End of Project (Adjacent to Ramp No. 3):

   The Contractor shall access Lakeshore Drive and enter the site from the eastern most gate (No. 1) of Old Lakeshore Drive (the extension of the former Amusement Park Midway) for all concrete, dirt-hauling, and other major delivery vehicles except for delivery of "protected-side" embankment and roadway material and equipment deliveries, which shall be by way of the east-side parking area through gate (No. 2) shown on the drawings.

2. West End and Center of Project (Adjacent to Ramp Nos. 1 and 2):

   The Contractor shall access Lakeshore Drive and enter the west-side parking area to gate No. 3 shown on the drawings for all concrete, dirt-hauling and other major delivery vehicles except for "flood-side" embankment and roadway material and equipment deliveries

which shall be accessed from the extreme west entrance to the former amusement park parking lot through gate No. 4 to the area of Ramp No. 1 and beyond the Sail Club area and Administration Building along the Contractor's shell haul road shown on the drawings.

SC-30 PARTIAL PAYMENTS

Refer to Paragraph 1.24 of the General Specifications. Change all references of ten percent (10%) retainage included therein to five percent (5%) retainage.

SC-31 GATE MONOLITH CONSTRUCTION

The Contractor shall be aware that his schedule shall include provisions to construct the ramp embankments immediately upon the receipt of the work order and then to construct the gate monoliths as long as possible after the ramp embankment construction as the contract period allows so as to allow any unexpected embankment to occur. The Contractor's scheduling of this work will be subject to the Engineer's review and approval in accordance with other requirements of these contract documents. See SC-32, below.

SC-32 DELAYS DUE TO UNEXPECTED EMBANKMENT SETTLEMENT

The Contractor shall monitor the existing settlement plates shown on the project drawings in accordance with Section 12 of these specifications. In the event that the Contractor does not receive approval of the Engineer to proceed with construction of the gate monoliths, any delays caused to the Contractor shall be paid by the Owner to the Contractor in accordance with the contract unit price bid for such delays. Payment shall be made only for delays along the Contractor's critical path of work in accordance with his schedule and shall be only as related to the gate monolith structure construction including foundation preparation through placement of the swing gates. The unit price bid shall be full compensation for any delays caused to the Contractor due to settlement of the adjacent embankment beyond that considered acceptable by the Owner and shall be per day per gate. No other compensation for delays to the Contractor shall be allowed.

Payment will be made under:

Pay Item No. 20: Delays Due to Unexpected Embankment Settlement - per day per gate.

DIVISION I-A

PROJECT REQUIREMENTS - SPECIAL PROVISIONS

1A-1. GENERAL DESCRIPTION OF WORK. The Work to be performed under these Contract Documents consists of the construction of the Pontchartrain Beach Flood Protection Improvement Project - Phase II in Orleans Parish, Louisiana. The Work includes the construction of the concrete I-wall cap, pile supported reinforced concrete gate monoliths and steel swing gates, earthen access ramps with asphalt pavements, tree relocations, one water line reconnection, and other work related to the complete and satisfactory construction of the Phase II flood protection plan. The Work included in this contract will complement the flood protection facilities recently completed under the Phase I contract. The project includes furnishing all labor, equipment, tools and materials necessary to construct the project.

1A-2. ITEMS FURNISHED BY CONTRACTOR. Contractor shall be fully responsible for all materials and equipment which he has furnished, and shall furnish necessary replacements at any time prior to expiration of the Correction Period.

1A-3. OFF-SITE STORAGE. Off-site storage arrangements shall be acceptable to Owner for all materials and equipment not incorporated into the work but included in Applications for Payment. Such off-site storage arrangements shall be presented in writing, and shall afford adequate and satisfactory security and protection. Off-site storage facilities shall be accessible to Engineer.

1A-4. EQUIVALENT MATERIALS AND EQUIPMENT. In accordance with Louisiana Public Contract Statute (LSA R.S. - 38:2295), these Contract Documents include provisions for use of equivalent materials and equipment. Requests for review of equivalency shall be submitted in accordance with the General Specifications and the submittals section.

1A-5. PREPARATION FOR SHIPMENT. All materials shall be suitably packaged to facilitate handling and protect against damage during transit and storage. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. All painted surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of Engineer.

Each item, package, or bundle of material shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

1A-6. LAND FOR CONSTRUCTION PURPOSES. Contractor will be permitted to use available land belonging to Owner, on or near the site of the Work, for construction purposes and for the storage of materials and equipment. The location and extent of the areas so used shall be as indicated on the drawings or as directed by the Engineer. Contractor shall immediately move stored material or equipment if any occasion arises, as determined by Owner, requiring access to the storage area. Materials or equipment shall not be placed on the property of Owner until Owner has agreed to the location to be used for storage.

1A-7. NOTICES TO OWNERS AND AUTHORITIES. Contractor shall, as provided in General Specifications, notify owners of adjacent property and utilities when prosecution of the Work may affect them.

When it is necessary to temporarily deny access by owners or tenants to their property, or when any utility service connection must be interrupted, Contractor shall give notices sufficiently in advance to enable the affected persons to provide for their needs. Notices shall conform to any applicable local ordinance and, whether delivered orally or in writing, shall include appropriate information concerning the interruption and instructions on how to limit their inconvenience.

Utilities and other concerned agencies shall be contacted at least 48 hours prior to cutting or closing streets or other traffic areas or excavating near underground utilities or pole lines.

1A-8. LINES AND GRADES. All Work shall be done to the lines, grades, and elevations shown on the drawings.

Basic horizontal and vertical control points will be established or designated by Owner. These points shall be used as datum for the Work. All additional survey, layout, baseline offsets and measurement Work shall be performed by Contractor as a part of the Work.

Contractor shall provide an experienced instrument man, competent assistants, and such instruments, tools, stakes, and other materials required to complete the survey, layout and measurement Work. In addition, Contractor shall furnish, without charge, competent men from his force and such tools, stakes, and other materials as Engineer may require in establishing or designating control points, in establishing construction easement boundaries, or in checking survey, layout, and measurement Work performed by Contractor.

Contractor shall keep Engineer informed, a reasonable time in advance, of the times and places at which he wishes to do Work, so that horizontal and vertical control points may be established and any checking deemed necessary by Engineer may be done with minimum inconvenience to Engineer and minimum delay to Contractor.

Contractor shall remove and reconstruct Work which is improperly located.

1A-9. CONNECTIONS TO EXISTING FACILITIES. Unless otherwise specified or indicated, Contractor shall make all necessary connections to existing facilities including structures, drain lines, and utilities such as water, sewer, gas, telephone, and electric. In each case, Contractor shall receive permission from Owner or the owning utility prior to undertaking connections. Contractor shall protect facilities against deleterious substances and damage.

Connections to existing facilities which are in service shall be thoroughly planned in advance, and all required equipment, materials and labor shall be on hand at the time of undertaking the connections. Work shall proceed continuously (around the clock) if necessary to complete connections in the minimum time. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the owning utility.

1A-10. UNFAVORABLE CONSTRUCTION CONDITIONS. Contractor shall confine his operations to work which will not be affected adversely by unfavorable weather, wet ground, or other unsuitable construction conditions. No portion of the Work shall proceed under conditions which would affect adversely the quality or efficiency of the Work, unless suitable special precautions or countermeasures are taken by Contractor.

IA-11. CUTTING AND PATCHING. As provided in the General Specifications and herein, Contractor shall perform all cutting and patching required for the Work and as may be necessary in connection with uncovering Work for inspection or for the correction of defective Work.

Contractor shall perform all cutting and patching required for the installation of improperly timed Work, remove samples of installed materials for testing, and provide for alteration of existing facilities or the installation of new Work in existing construction.

Except when the cutting or removal of existing construction is specified or indicated, Contractor shall not undertake any cutting or demolition which may affect the structural stability of the Work or existing facilities without Engineer's concurrence.

Contractor shall provide all shoring, bracing, supports, and protective devices necessary to safeguard all Work and existing facilities during cutting and patching operations.

Materials shall be cut and removed to the extent indicated on the drawings or as required to complete the Work. Materials shall be removed in a careful manner with no damage to adjacent facilities or materials. Materials which are not salvagable shall be removed from the site by Contractor.

All Work and existing facilities affected by cutting operations shall be restored with new materials, or with salvaged materials acceptable to Engineer, to obtain a finished installation with the strength, appearance, and functional capacity required. If necessary, entire surfaces shall be patched and refinished.

1A-12. CLEANING. Contractor shall keep the premises free at all times from accumulations of waste materials and rubbish. The Contractor shall provide adequate trash receptacles about the site, and shall promptly empty the containers when filled.

Construction materials, such as concrete forms and scaffolding shall be neatly stacked by Contractor when not in use. Contractor shall promptly remove splattered concrete, asphalt, oil, paint, corrosive liquids and cleaning solutions from surfaces to prevent marring or other damage.

Volatile wastes shall be properly stored in covered metal containers and removed daily.

Wastes shall not be buried or burned on the site or disposed of into storm drains, sanitary sewers, streams, or waterways. All wastes shall be removed from the site and disposed of in a manner complying with local ordinances and antipollution laws.

Adequate cleanup will be a condition for recommendation of progress payment applications.

1A-13. REFERENCE STANDARDS. Reference to the standards of any technical society, organization, or association, or to codes of local or state authorities, shall mean the latest standard, code, specification, or tentative standard adopted and published at the date of receipt of bids, unless specifically stated otherwise.

1A-14. ABBREVIATIONS AND SYMBOLS. Abbreviations used in the Contract Documents are defined as follows:

ACI	American Concrete Institute
AFBMA	Antifriction Bearing Manufacturers Association
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineering
ASTM	American Society for Testing and Materials
AWG	American Wire Gauge
AWPA	American Wood Products Association
AWWA	American Water Works Association
CRSI	Concrete Reinforcing Steel Institute
Fed Spec	Federal Specifications
IBBM	Iron Body, Bronze Mounted
IEEE	Institute Electrical and Electronics Engineers
IPS	Iron Pipe Size
MIL	Military Specification
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NPT	National Pipe Thread
PCI	Prestressed Concrete Institute
SSPC	Steel Structures Painting Council
UL	Underwriters' Laboratories
US	U.S. Bureau of Standards

1A-15. PRECONSTRUCTION CONFERENCE. In accordance with the General Specifications, prior to the commencement of Work at the site, a preconstruction conference will be held at a mutually agreed time and place. The conference shall be attended by:

Contractor and his superintendent.

Principal Subcontractors.

Representatives of principal suppliers and manufacturers as appropriate.

Engineer and Resident Project Representative.

Representatives of Owner.

Others as requested by Contractor, Owner, or Engineer.

Unless previously submitted to Engineer, Contractor shall bring to the conference a tentative schedule for each of the following:

Shop Drawings and other submittals.

Contractor shall be prepared to discuss the CPM network schedule and related information at the preconstruction conference. (Note that the CPM schedule and related information must be submitted at the time the contract is signed.)

The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda will include:

Contractor's tentative schedules.

Transmittal, review, and distribution of Contractor's submittals.

Processing applications for payment.

Maintaining record documents.

Critical Work sequencing.

Field decisions and Change Orders.

Use of premises, office and storage areas, security, housekeeping, and Owner's needs.

Major equipment deliveries and priorities.

Contractor's assignments for safety and first aid.

Engineer will preside at the conference and will arrange for keeping the minutes and distributing the minutes to all persons in attendance.

1A-16. PROGRESS MEETINGS. Engineer shall schedule and hold regular bi-weekly progress meetings. Contractor, Engineer, and all Subcontractors active on the site shall be represented at each meeting. Contractor may at his discretion request attendance by representatives of his suppliers, manufacturers, and other Subcontractors.

Engineer shall preside at the meetings and provide for keeping and distribution of the minutes. The purpose of the meetings will be to review the progress of the Work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop.

1A-17. SITE ADMINISTRATION AND SECURITY. Contractor shall be responsible for all areas of the site used by him, and all Subcontractors in the performance

of the Work. He will exert full control over the actions of all employees and other persons with respect to the use and preservation of property and existing facilities, except such controls as may be specifically reserved to Owner or others. Contractor has the right to exclude from the site all persons who have no purpose related to the Work or its inspection, and may require all persons on the site to observe the same regulations as he requires of his employees.

Further, Contractor shall be responsible for maintaining proper security of the Work including barricades, warning signs and lights, temporary fencing and other measures as may be required to properly secure the site and working operations during active work hours, after work hours and on days of no work. Contractor shall check these measures daily or more often, as is warranted. The Contractor shall be aware that the work site is immediately adjacent to areas of Public interest and access, and the Contractor shall be prepared to prevent such use, access and/or trespassing by the Public onto the work site by whatever legal means available, as agreeable to the Owner.

1A-18. PROJECT CLOSEOUT. Satisfactory project closeout is a condition of final acceptance of the Work.

Contractor shall deliver to Engineer all construction records, certifications, and other documents in accordance with the Contract Documents. All damaged or deterioriated surfaces shall be touched-up or repaired. All incomplete or defective work shall be remedied as required by the provisions for Final Inspection and Acceptance. Contractor shall remove from the site all of his temporary structures, trailers, tools, equipment, supplies, and unused or waste materials. Roads, fences, and other facilities damaged or deteriorated because of Contractor's operations shall be repaired. All ground surfaces affected by Contractor's operations shall be restored by grading, raking, smoothing, and other necessary operations. The site shall be thoroughly cleaned, and all rubbish and debris removed. Beach sand shall be cleaned of soils wasted during the progress of the Work.

After all work is complete, any necessary changes in the Contract Amount will be determined, and the necessary adjustment, if any, will be incorporated into a final Change Order.

Upon satisfactory completion of closeout activities, Contractor shall submit Application for Final Payment as provided in the General Specifications and Supplementary Conditions.

1A-19. DELETED.

1A-20. PROJECT SIGNS. The two existing signs (one at the Elysian Fields-Lakeshore Drive traffic circle and one at the west end of the project at Lakeshore Drive) shall be utilized except that the Contractor shall repaint and reletter as required by the Owner.

1A-21. PROTECTION OF EXISTING FACILITIES. The Contractor shall be responsible for integrity and protection of all existing facilities. If any damage is caused to any of the existing facilities by the Contractor, his employees, his subcontractors or any person, firm or agency acting under his contract, employment or direction, this damage shall be at the Contractor's expense.

1A-22. AGGREGATE SOURCES. Concrete aggregates meeting the quality requirements of these specifications have been produced from the sources listed below:

Producer	Pit Location	Lat.	Long.
A-1 Sand & Gravel	Magnolia, LA	30	90
A.B. Chisum Sand & Gravel Co.	Sicily Island, LA	31	91
American Sand & Gravel Co.	Hattiesburg, MS	31	89
Amyx Sand & Gravel Co.	Jena, LA	31	92
Arnold Bros. Sand & Gravel Co.	Merryville, LA	30	93
B & B Gravel Co.	Baton Rouge, LA	30	90
Blain Sand & Gravel	Columbia, MS	31	89
Blain Sand & Gravel	Prentiss, MS	31	89
Blain Sand & Gravel	Crystal Springs, MS	31	90
Brasswell Sand & Gravel Co.	Minden, LA	32	93
Delta Industries, Inc.	Crystal Springs, MS	31	90
Dixie Sand & Gravel	Amite, LA	30	90
Feliciana Sand & Gravel	Jackson, LA	30	91
Feliciana Sand & Gravel	St. Francisville, LA	30	91
General Portland	Melder, LA	31	92
Gifford Hill Co., Inc.	Arcola, LA	30	90
Gifford Hill Co., Inc.	Sibley, LA	32	93
Gifford Hill Co., Inc	Glenmore, LA	31	92
Gifford Hill Co., Inc.	Fluker, LA	30	90
Green Bros., Inc.	Crystal Springs, MS	31	90
Hammett & Green, Inc.	Foxworth, MS	31	89
Lambert Gravel Co.	St. Francisville, LA	30	91
La. Industries	Hickory, LA	30	89
La. Industries	Alexandria, LA	31	92
La. Industries	Paradise, LA	31	92
La. Industries	Pollock, LA	31	92
La. Industries	Fishville, LA	31	92
La. Industries	Perryville, LA	32	91
La. Industries	Isabelle, LA	30	89
Louisiana Industries	Jena, LA	31	92
Louisiana Industries	DeRidder, LA	30	93
La. Paving Co.	Pearl River, LA	30	89
Louisiana Sand & Gravel	Grangeville, LA	30	90
Lutesville Sand & Gravel	Bentley, LA	31	92
Lutesville Sand & Gravel	Colfax, LA	31	92
Magnolia Gravel Co.	Greenwell Springs, LA	30	90
Mid State Material Co.	Woodworth, LA	31	92
Mid State Sand & Gravel	Hotwell, LA	31	92
Monroe Sand & Gravel	Perryville, LA	32	92
Rebel Sand & Gravel	Denham Springs, LA	30	90
Red Stick Sand & Gravel Co.	Baywood, LA	30	90
Reed Crushed Stone Co.	Gilbertsville, KY	37	88
R. L. Hensley & Sons	Washington, MS	31	91
S.A.C.	Jena, LA	31	92
Smith Sand & Gravel	Mt. Herman, LA	30	90
Standard Gravel	Pearl River, LA	30	89
Standard Gravel	Clifton, LA	30	90

St. Catherine S&G	Natchex, MS	31	91
Traxler Bros. Sand & Gravel	Crystal Springs, MS	31	90
Trinity S. Div. Gen. Portland	Longville, LA	30	93
Trinity Sand & Gravel Co.	Kinder, LA	30	92

Concrete aggregates may be furnished from any of the above listed sources or at the option of the Contractor may be furnished from any other source designated by the Contractor and approved by the Engineer, subject to the conditions hereinafter stated and as specified in Section 6D, paragraph 6D-1.C.1.A.

If the Contractor proposes to furnish aggregates from a source or from sources not listed above, he may designate only a single source or single combination of sources of aggregates. If a source for coarse and/or fine aggregate so designated by the Contractor is not approved for use by the Engineer, the Contractor may not submit for approval other sources but shall furnish the coarse and/or fine aggregate, as the case may be, from a source listed above at no additional cost to the Owner.

Approval of a source of concrete aggregate is not to be construed as approval of all material from that source. The right is reserved to reject materials from certain localized areas, zones, strata, or channels, when such materials do not conform to the quality requirements of ASTM C 33-85 (CRD-C 133), Concrete Aggregates. Aggregate gradation shall be in accordance with the specified requirements of section 6D, paragraph 6D-2.A.2. Materials produced from any source, including those listed above, shall also meet all the requirements of section 6D of the Technical Specifications.

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

DIVISION I-B

PROJECT REQUIREMENTS - SUBMITTALS

1B-1. SCOPE. The project management tool commonly called CPM shall be employed by the Contractor for planning and scheduling all work required under the Contract Documents.

1B-1.01. Shop Drawing Schedule At the time the initial schedule is submitted, a schedule shall be submitted of the items of materials and equipment for which shop drawings are required by the specifications. For each required shop drawing, the date shall be given for intended submission of the drawing to Engineer for review and the date required for its return to avoid delay in any activity beyond the scheduled start date. Sufficient time shall be allowed for initial review, correction and resubmission, and final review of all shop drawings. Shop drawing submittals shall be included in the critical path schedule.

1B-1.02. Shop Drawings, Product Data and Samples

A. Description of Requirements

Type of Submittals. This Section of the Specifications describes the procedures for submittal requirements applicable to work-related submittals, such as shop drawings, product data, samples and miscellaneous work-related submittals. It does not include the requirements for administrative submittals which are described in other Division 1 sections and other contract documents.

Definitions. The work-related submittals of this Section, in addition to the definitions of the General Specifications and elsewhere in the Contract Documents, are further categorized for convenience as follows:

1. Shop drawings include specially prepared technical data of all forms including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements and similar information not in standard printed form for application to more than one project.

2. Product data includes standard printed information on materials, products and systems, not specially prepared for this project, other than the designation of selections from among available choices printed therein.

3. Samples include both fabricated and unfabricated physical examples of materials, products and units of work, both as complete units and as smaller portions of units of work, either for limited visual inspection or (where indicated) for more detailed testing and analysis.

4. Miscellaneous submittals related directly to the work (non-administrative) include warranties, maintenance agreements,

workmanship bonds, project photographs, survey data and reports, physical work records, statements of applicability, quality testing and certifying reports, copies of industry standards, record drawings,field measurement data, operating and maintenance materials, overrun stock, security/protection/safety keys and similar information, devices and materials applicable to the work and not processed as shop drawings, product data or samples.

B. General Submittal Requirements

Scheduling. Where appropriate in various required administrative submittals (listings of products, manufacturers, suppliers and subcontractors, and in job progress schedule), show principal work-related submittal requirements and time schedules for coordination and integration of submittal activity with related work in each instance.

Coordination of Submittal Times. Prepare and transmit each submittal to the Engineer sufficiently in advance of performing related work or other applicable activities, so the installation will not be delayed or improperly sequenced by processing times, including non-approval and resubmittal (if required). Coordinate with other submittals, testing, purchasing, delivery and similar sequenced activities. No extension of time will be authorized because of Contractor's failure to transmit submittals to the Engineer sufficiently in advance of the work.

Sequencing Requirements. As applicable in each instance, do not proceed with a unit of work until submittal procedures have been sequenced with related units of work, in a manner which will ensure that the action will not need to be later modified or rescinded by reason of a subsequent submittal which should have been processed earlier or concurrently for coordination.

Preparation of submittals. Provide permanent marking on each submittal to identify project, date, Contractor, subcontractor, submittal name and similar information to distinguish it from other submittals. Show Contractor's executed review and approval marking and provide space for the Engineer's "Action" marking. Package each submittal appropriately for transmittal and handling. Submittals which are received from sources other than through the Contractor's office will be returned "without action."

Transmittal Form. The transmittal form used to transmit submittals shall be as enclosed copy.

C. Specific Category Requirements

General. Except as otherwise indicated in the individual work sections, comply with general requirements specified herein for each indicated category of submittal.

TRANSMITTAL OF SHOP DRAWINGS, MONOLITH DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLE OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE FOR APPROVAL.

☐ NEW TRANSMITTAL

☐ RE-SUBMITTAL

REQUEST FOR ENGINEER'S REVIEW OF THE FOLLOWING ITEMS (THIS SECTION WILL BE INITIATED BY THE CONTRACTOR):

TO: URS Company
3500 North Causeway Boulevard
Suite 900
Metairie, Louisiana 70002

FROM:

TRANSMITTAL NO.

(IF ANY)
PREVIOUS TRANSMITTAL NO.

ITEM NO.	DESCRIPTION OF ITEM SUBMITTED, i.e., TYPE, SIZE, MODEL NO., ETC.	MFG. OR SUPPLIER	MFG. OR CONTR. CAT., CURVE, DRAWING OR BROCHURE NO.	NO. OF COPIES	PROJECT SPECIFICATION SECTION NUMBER	PROJECT DRAWING, SHEET OR PLAT NO.	URS USE ONLY CODE

DISTRIBUTION REQUESTED:		LETTER DWGS.			LETTER DWGS.	
	CONTRACTOR	_____	_____	URS OFFICE	_____	_____
	ON-SITE REP.	_____	_____	OTHERS	_____	_____

SIGNATURE OF CONTRACTOR

URS COMPANY (THIS SECTION TO BE USED ONLY BY THE ENGINEER TO DESIGNATE ACTION.)

ACTION CODES. THE FOLLOWING CODES ARE GIVEN TO THE ITEMS SUBMITTED: A-NO EXCEPTIONS TAKEN; B-REVISE AS NOTED; C-AMEND AND RESUBMIT; D-REJECTED-SEE REMARKS. CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS.

ENCLOSURES RETURNED
(LIST BY ITEM NO.)

BY: URS COMPANY

DATE

M-2a

1. Submittals shall contain:

   a. The date of submittal and the dates of any previous submittal.

   b. The Project title and number.

   c. Contract identification:

   d. The names of the:

      1) Contractor.
      2) Supplier.
      3) Manufacturer.

   e. Identification of the product, with the Specification Section number and equipment tag numbers.

   f. Field dimensions, clearly identified as such.

   g. Relation to adjacent or critical features of the work or materials.

   h. Applicable standards, such as ASTM or Federal Specification numbers.

   i. Notification to the Engineer in writing, at time of submission, of any deviations in the submittals from requirements of the Contract Documents.

   j. Identification of revisions on resubmittals.

   k. An 8 inch x 3 inch blank space for Contractor and Engineer stamps.

   l. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the Work and of Contract Documents. Engineer's review will not proceed unless Contractor's stamp is on drawings.

   m. Submittal sheets or drawings showing more than the particular item under consideration shall have all but the pertinent description of the item for which review is requested crossed out.

D. Shop Drawings. Provide newly-prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated), with name of preparer (firm name) indicated. The Contract Drawings shall not be traced or reproduced by any method for use as or in lieu of detail shop drawings. Show dimensions and note which are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards and special coordination requirements. Do not allow shop

drawing copies without appropriate final "Action" markings by the Engineer to be used in connection with the Work.

1. Initial Submittal. One (1) correctable translucent reproducible print and one (1) opaque reproduction of each shop drawing. The Engineer will use and retain the opaque print as review worksheet and will return the reproducible print marked with "Action" and with corrections and modifications (if any) as required.

2. Final Submittal. Seven (7) prints. Five (5) will be retained and remainder will be returned, one of which is to be marked-up and maintained by the Contractor as the "Record Document."

E. Product Data. Collect required data into one submittal for each unit of work or system, and mark each copy to show which choices and options are applicable to project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements. Maintain one set of product data (for each submittal) at project site, available for reference by the Engineer or others.

1. Submittals. Do not submit product data, or allow its use on the project, until compliance with requirements of Contract Documents has been confirmed by the Contractor. Submittal is for information and record, unless otherwise indicated. Initial submittal is final submittal unless returned promptly by the Engineer, marked with an "Action" which indicates an observed noncompliance. Submit six (6) copies, one (1) of which will be returned.

2. Installer's Copy. Do not proceed with installation of materials, products or systems until copy of applicable product data is in possession of installer.

F. Samples. Provide units identical with final condition of proposed materials or products for the work. Include "range" samples (not less than 3 units) where unavoidable variations must be expected, and describe or identify variations between units of each set. Provide full set of optional samples where the Engineer's selection is required. Prepare samples to match the Engineer's sample where so indicated. Include information with each sample to show generic description, source or product name and manufacturer, limitations, and compliance with standards. Samples are submitted for review and confirmation of color, pattern, texture and "kind" by the Engineer. Engineer will not "test" samples (except as otherwise indicated) for other requirements, which are the exclusive responsibility of the Contractor.

1. Submittal. At Contractor's option, provide preliminary submittal of a single set of samples for the Engineer's review and "Action." Otherwise, initial submittal is final submittal

unless returned with "Action" which requires resubmittal. Submit six (6) sets of samples in final submittal; one set will be returned.

2. Quality Control Set. Maintain returned final set of samples at project site, in suitable condition and available for quality control comparisons by Engineer and by others.

G. Distribution

General Distribution. Provide additional distribution of submittals (not included in foregoing copy submittal requirements) to subcontractors, suppliers, fabricators, installers, governing authorities and others as necessary for proper performance of the work. Include such additional copies in transmittal to the Engineer where required to receive "Action" marking before final distribution. Show such distributions on transmittal forms.

Review Time. Allow a minimum of two (2) weeks for the Engineer's initial processing of each submittal requiring review and response, except allow longer periods where processing must be delayed for coordination with subsequent submittals. The Engineer will advise the Contractor promptly when it is determined that a submittal being processed must be delayed for coordination. Allow two weeks for reprocessing each submittal. Advise the Engineer on each submittal as to whether processing time is critical to progress of the work, and therefore the work would be expedited if processing time could be foreshortened.

H. Engineer's Action.

1. Final Unrestricted Release. Work may proceed, provided it complies with contract documents, when submittal is returned with the following:

   Marking: "A" - No Exceptions Taken.

2. Final-But-Restricted Release. Work may proceed, provided it complies with notations and corrections on submittal and with contract documents, when submittal is returned with the following:

   Marking: "B" - Revised as Noted.

3. Returned for Resubmittal. Do not proceed with work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking. Do not allow submittals with the following marking (or unmarked submittals where a marking is required) to be used in connection with performance of the work:

   Marking: "C" - Amend and Resubmit.
   "D" - Rejected - See Remarks.

1B-1.03. Progress Reports. At the end of each month, the node numbers of the activities that have been completed with their actual start and completion dates, and a list of the activities on which Work is currently in progress and the number of working days required to complete each, shall be submitted to the Engineer.

If at any time during the Project, any activity is not completed by its latest scheduled completion date, Engineer shall be notified within 5 days of Contractor's plans to reorganize the work force to return to the schedule and prevent delays on any other activity. Owner may require Contractor to add to his plant, equipment, or construction forces, as well as increase the working hours, if operations fall behind schedule.

1B-1.04. Sequence of Construction. The following outline is a suggested sequence of construction operations. Other sequences proposed by the Contractor will be considered. It is anticipated that several of these operations will be occurring simultaneously in order for the Contractor to meet the proposed schedule. Further, it is also anticipated that the work of each of the individual operations might be constructed with multiple crews and machinery in order for the Contractor to meet the proposed schedule.

A. Suggested Sequence of Construction - Pontchartrain Beach Flood Protection Improvement Project - Phase II

1. Contractor shall obtain all necessary information in regard to existing utilities, and shall contact the owners in charge of utilities that may be affected by the Contractor's operation. The Contractor shall be responsible for the preservation of all public and private property, monuments, highway signs, telephone lines, cable television, water, gas, sewer, drainage pipes, other utilities, etc., along and adjacent to the Work; shall use every precaution necessary to prevent damage to pipes, conduits, and other underground structures; and shall protect carefully from disturbance or damage all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed.

2. Contractor shall clear and grub, and remove structures and obstructions within construction limits of the project, and relocate designated trees.

3. Construct water line re-connection and any other utility work.

4. Contractor shall construct earthen access ramps prior to pile driving of swing gates and begin fabrication of swing gates.

5. Contractor shall construct pile supported monoliths, and concrete I wall.

6. Finish access ramps with required asphaltic section and install gates.

7. With the new flood protection improvements complete and operational to the satisfaction of the Engineer, complete all

grading, fencing, dressing, fertilizing, seeding and mulching all earthwork and backfilled areas, site clean-up and demobilization operations.

Contractor shall organize the CPM network schedule so that several construction operations listed above, where appropriate, can be accomplished concurrently.

1B-2. PROJECT SCHEDULE. The Contractor shall prepare for the Owner's review and approval a CPM network schedule demonstrating his plan for fulfilling all Contract requirements.

Information in this schedule shall be comprehensive and shall represent all activities including submittals, submittal reviews, and procurement necessary to complete this Contract.

The diagram technique to be used shall be in accordance with conventional CPM activity (I-J) technique set forth in the Associated General Contractors of America publication: "CPM in Construction, A Manual for General Contractors," copyright 1976. In addition to the above information, the Contractor shall also provide the information listed below for each activity in the schedule.

1B-2.01. Duration - Work Days Required Indicate each CPM single trade activity utilizing a standardized work day calendar. Said calendar will be based upon a 6-day work week. Durations per single activity node shall be limited to 20 work days. Additional nodes shall be used as required.

1B-2.02. Area Code Number. Designate the location of the work to be accomplished within a specified zone.

1B-2.03. Activity Code. A list of activity codes shall be provided by the Contractor for the work activities shown on the CPM network schedule. Identify the work category from a list of standard codes furnished by the Owner. This code list may be expanded with a copy of any additions included with the network submittals.

1B-2.04 I-J Numbers - Start and Finish. Provide space as indicated on the Activity Diagram. Contractor's I-J number assignment is not required, but if used for the Contractor's purpose, will be superseded by the Owner's assignment of I-J numbers on the accepted CPM diagram for use in the Owner's cost control and progress reporting purposes.

1B-2.05. Cost Allocation. The Contractor shall assign the cost of work, a sum including allocation for materials, labor, equipment, overhead, and profit, to each activity. Cost per activity node shall not exceed $40,000 unless expressly accepted by the Owner. Additional nodes shall be used as required. The Contractor shall include this information on his original network submittal. The Contractor shall provide the Owner, upon request, the Contractor's backup cost information, including unit prices for excavation, backfill, concrete, etc., for allocating cost.

1B-3. CPM SUBMITTAL. The Contractor shall submit to the Engineer for review and approval the complete CPM network schedule and related information at the time the Contract is signed and executed by the Contractor. Contractor shall

also assign costs to each activity item indicated for such work on the date of contract execution.

Each initial schedule network diagram and all subsequent revisions thereto shall be submitted in one reproducible and three print copies of each sheet. Individual sheets shall not exceed 36 inches by 60 inches. The reproducible shall be without I-J numbers. If the Contractor elects to computerize his CPM schedule, he shall submit three copies of the computerized analysis to assist the Owner's review of his schedule.

1B-4. SCHEDULE NARRATIVES. Prepare detailed narrative statements of assumptions and conditions that provide supportive information for conclusions represented in each network schedule submitted. Such narrative shall accompany the CPM network submittals.

Indicate proposed area for work and for storage of specific materials, proposed use of equipment, assumptions, and methods that determine durations and sequences represented in specific areas of network analysis and schedule. Additionally, submit specific narrative statements relating to control and expediting of submittals, fabrication, and delivery of specific materials and equipment, and to supplement progress reports and successive revisions of the project schedule.

1B-5. REVIEW AND APPROVAL. Within 5 working days after receipt of the initial CPM network activity listing, the Owner will meet with the Contractor for joint review, correction, or adjustment of the Contractor's proposed approach. Within 5 days after the joint review, the Contractor shall submit a revised program reflecting agreements reached during the joint review. The Owner will review this resubmission, and if he determines that it is as previously agreed, he will accept it in writing. The accepted program will constitute the Contractor's project work schedule until it is subsequently revised by the Contractor and accepted by the Owner.

To the extent that the accepted network, or revisions thereto, indicate anything not jointly agreed upon, it shall be deemed to be not accepted by the Owner. Any omission of project work from the CPM network or activity listing, otherwise required for contract compliance, will not excuse the Contractor from completing such work within any applicable completion date.

1B-6. SCHEDULE REVIEW AND UPDATE. Bi-weekly, on dates mutually agreed upon, a jobsite meeting will be held to review the CPM network, activity listing, and job progress. The conditions under which a revision of the schedule will be required are as follows:

When delay in completion of any work item or sequence of work items results in an estimated extension of project completion by either 20 working days or by 5 percent of the remaining duration or time to complete the contract, whichever is less.

When delays in submittals or deliveries or work stoppages are encountered that make replanning or rescheduling of the work necessary.

When the schedule does not represent actual prosecution and progress of the work.

When contract modification necessitates schedule revision. The Contractor shall submit a subnetwork analysis of all change work with his proposal. If accepted, this subnetwork will become a part of the accepted schedule.

As part of this monthly review, the Contractor shall prepare a brief narrative report relating to the status of construction, submittals, approvals, and procurement. This report shall indicate areas where problems exist and are anticipated and shall prescribe action needed to be taken by the Owner or by the Contractor.

1B-7. CONTRACTOR'S REPRESENTATIVE. The Contractor shall designate an authorized representative who shall be responsible for production and review of the network diagram and who shall assume responsibility for reviewing progress of the work with the Owner. The contractor's representative shall have direct control and complete authority to act on behalf of the Contractor; and such authority shall not be interrupted throughout the duration of the Contract, without acceptance of the Owner.

1B-8. SCHEDULE FORMATS. Contractor shall provide all required CPM schedule input information. Contractor shall revise his input format as directed by the Engineer.

1B-8.01. Progress Report Form. The Owner will prepare report listings formulated in the sequences of "Scheduled Start by Weeks" and "Scheduled Finish by Weeks", or other sequence as convenient to report job progress, which will be the official reporting form for construction progress on this Contract.

1B-8.02. Report Procedures. Utilizing the Progress Report form, the Owner and the Contractor shall mutually determine and indicate the "Percent Complete This Period" or "Units in Place This Period" for each activity listed for the reporting period. The owner will process this information to prepare monthly progress payments and to analyze the CPM construction schedule.

1B-8.03. Progress Payment. The approved CPM activity list and assigned costs will constitute the basis for monthly progress payments wherein "Percent (or Units) Complete This Month", multiplied by "Total Cost (or Unit Costs) per Activity", will be reported to the Owner as a part of the Contractor's monthly progress payment request. Payments will not be made until the CPM activity list and assigned costs are accepted by the Owner.

1B-9. CONSTRUCTION PHOTOGRAPHS. Contractor shall be responsible for the production of construction photographs as provided herein. Engineer shall designate the subject of each photograph.

Ten (10) photographs of pertinent features thereof, shall be taken at locations selected by the Engineer before the commencement of Work at each site and promptly submitted to Engineer. The same views shall be rephotographed upon completion of all construction activities and submitted with Contractor's application for final payment. Ten additional progress photographs shall be made monthly throughout the progress of the Work as directed by the Engineer and submitted with each of the Contractor's applications for progress payment.

All photographs shall be produced by a competent photographer, and shall be color photographs of commercial quality. All negatives and two 8 x 10 prints of each view shall be submitted. Negatives shall be identified with description of view and date. Prints shall be mounted on linen with flap for binding or enclosed in clear plastic binders, and marked with the name and number of the contract, name of Contractor, description and location of view, and date photographed.

Engineer shall transmit one copy of each photograph to Owner.

SECTION N

Soil Boring Logs

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Orleans Levee District
Pontchartrain Beach Floodwalls and Levees, New Orleans, Louisiana

For: Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.
URS Engineers, Consulting Engineers, New Orleans, Louisiana

Boring No. 1 Soil Technician A. J. Mayeux Date 22 November 1985

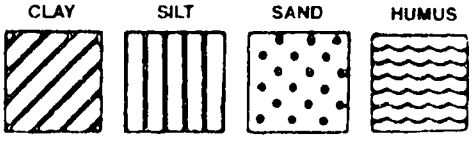
Ground Elev. _____ Datum _____ Gr. Water Depth See Text

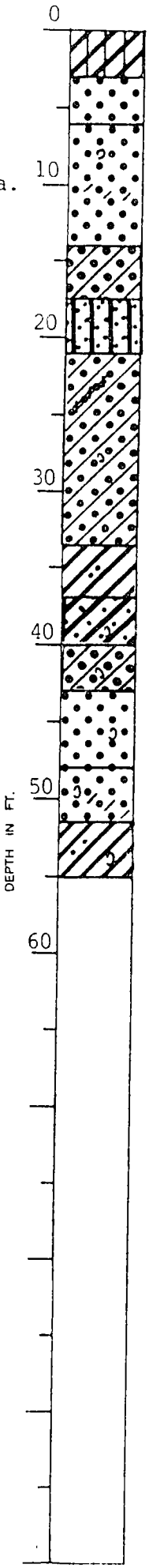
Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	2.0	2.5	0.0	3.0	Medium stiff gray & tan silty clay		
					(fill)		
2	3.5	5.0	3.0	6.0	Medium dense tan fine sand	4	11
3	6.0	7.5	6.0		Very loose gray sand w/shell fragments	1	2
					& clay layers		
4	8.5	10.0			Very loose gray sand w/clay layers	0	2
5	11.0	12.5		14.0	Ditto	0	2
6	14.5	15.0	14.0	17.5	Very loose gray clayey sand		
7	19.0	19.5	17.5	21.0	Very loose gray sandy silt		
8	24.0	24.5	21.0		Very loose gray clayey sand w/silty		
					clay layers & shell fragments		
9	29.0	29.5		33.5	Very loose gray clayey sand		
10	34.0	34.5	33.5	37.0	Medium stiff gray clay w/sand pockets		
11	39.0	39.5	37.0	40.0	Soft gray sandy clay w/shell fragments		
12	40.0	41.5	40.0	43.0	Loose gray clayey sand w/shell	2	7
					fragments		
13	43.5	45.0	43.0	48.0	Medium dense gray sand w/shell	3	11
					fragments		
14	48.5	50.0	48.0	51.5	Loose gray sand w/shell fragments	1	5
					& clay layers		
15	54.5	55.0	51.5	55.0	Medium stiff gray clay w/sand pockets		
					& shell fragments		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____





LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Orleans Levee District

Pontchartrain Beach Floodwalls and Levees, New Orleans, Louisiana

For: Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.

URS Engineers, Consulting Engineers, New Orleans, Louisiana

Boring No. 2 Soil Technician A. J. Mayeux Date 21-22 November 1985

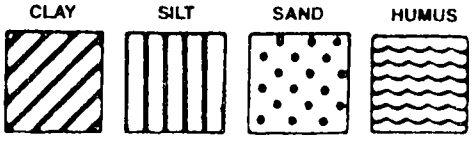
Ground Elev. _____ Datum _____ Gr. Water Depth See Text

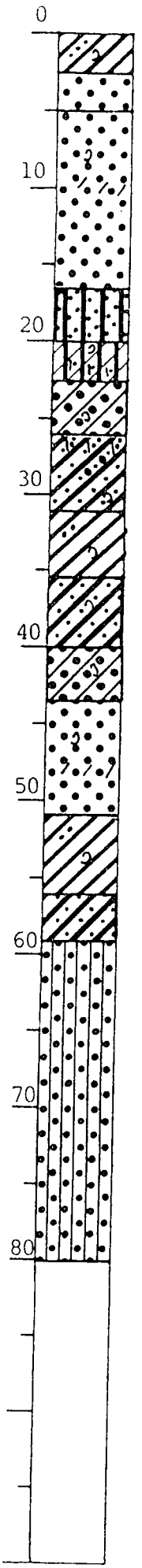
Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	2.0	2.5	0.0	2.5	Medium stiff gray & tan clay w/sand		
					layers, shells, etc. (fill)		
2	3.5	5.0	2.5	5.0	Loose tan fine sand	2	7
3	6.0	7.5	5.0		Very loose gray sand w/shell fragments	1	4
					& clay layers		
4	8.5	10.0			Ditto	2	3
4	11.0	12.5			Ditto	1	3
6	13.5	15.0		16.5	Ditto	1	1
7	17.5	18.0	16.5	20.0	Loose gray sandy silt		
8	20.5	21.0	20.0	22.5	Very loose gray clayey silt w/silty		
					sand layers & shells		
9	23.5	24.0	22.5	26.0	Very loose gray clayey sand w/shell		
					fragments		
10	26.5	27.0	26.0		Very soft gray sandy clay w/sand		
					pockets & shell fragments		
11	29.5	30.0		31.0	Very soft gray sandy clay w/silty sand		
					layers & shells		
12	32.5	33.0	31.0	35.5	Medium stiff gray clay w/sand pockets		
					& shell fragments		
13	35.5	36.0	35.5		Soft gray sandy clay w/shell fragments		
14	38.5	39.0		40.0	Ditto		
15	40.0	41.5	40.0	43.5	Very loose gray clayey sand w/shell	0	3
					fragments		
16	43.5	45.0	43.5		Medium dense gray sand w/shell	3	11
					fragments & clay layers		
17	48.5	50.0		51.0	Ditto	4	13

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____





LOG OF BORING

EUSTIS ENGINEERING COMPANY Sheet 2 of 2
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Orleans Levee District
Pontchartrain Beach Floodwalls and Levees, New Orleans, Louisiana
For: Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.
URS Engineers, Consulting Engineers, New Orleans, Louisiana

Boring No. 2 (Cont'd) Soil Technician A. J. Mayeux Date 21-22 November 1985
Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
18	54.0	54.5	51.0	56.0	Medium stiff gray clay w/sand pockets		
					& shell fragments		
19	58.0	58.5	56.0	59.0	Very stiff greenish-gray & tan sandy		
					clay		
20	59.0	60.5	59.0		Medium dense greenish-gray & tan silty	3	13
					sand		
21	63.5	65.0			Ditto	3	11
22	68.5	70.0			Ditto	3	12
23	73.5	75.0			Ditto	4	21
24	78.5	80.0		80.0	Ditto	4	16

DEPTH IN FT.

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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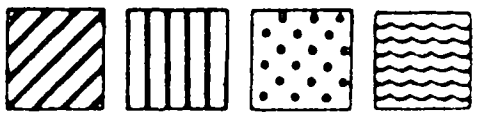
CLAY SILT SAND HUMUS



Remarks: _____

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Orleans Levee District
Pontchartrain Beach Floodwalls and Levees, New Orleans, Louisiana
For: Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.
URS Engineers, Consulting Engineers, New Orleans, Louisiana

Boring No. 3 Soil Technician A. J. Mayeux Date 15 November 1985
Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	0.5	Loose tan fine sand		
1	2.0	2.5	0.5	3.5	Stiff gray & tan clay w/fill & organic matter		
2	3.5	5.0	3.5	5.0	Medium dense gray clayey sand & wood	3	22
3	6.0	7.5	5.0		Loose gray sand w/shell fragments	1	5
4	8.5	10.0			Ditto	1	5
5	11.0	12.5		13.0	Ditto	2	5
6	13.5	15.0	13.0	17.0	Very loose dark gray clayey sand w/shells	0	1
7	19.0	19.5	17.0		Loose gray clayey silt w/shell fragments & sand		
8	24.0	24.5		27.0	Ditto		
9	29.0	29.5	27.0	33.0	Very loose gray clayey sand w/shell fragments		
10	34.0	34.5	33.0	38.0	Medium stiff gray clay w/silty sand pockets & lenses		
11	38.5	40.0	38.0	41.0	Loose gray sand w/shell fragments	2	8
12	41.0	42.5	41.0	43.0	Medium dense gray sand w/shell fragments	4	13
13	43.5	45.0	43.0	46.5	Loose gray sand w/shell fragments & clay layers	2	5
14	49.0	49.5	46.5	54.0	Stiff gray clay w/sand pockets & shell fragments		
15	54.0	54.5	54.0	55.0	Stiff greenish-gray silty clay w/sandy silt pockets		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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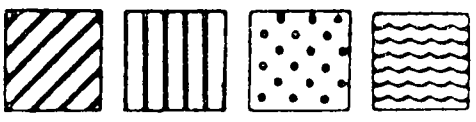
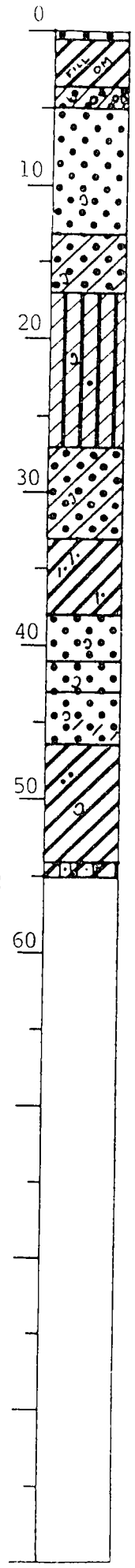
Remarks: _____





EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Orleans Levee District

Pontchartrain Beach Floodwalls and Levees, New Orleans, Louisiana

For: Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.

URS Engineers, Consulting Engineers, New Orleans, Louisiana

Boring No. 4 Soil Technician A. J. Mayeux Date 15 & 18 November 1985

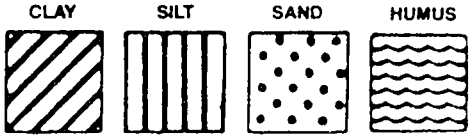
Ground Elev. _____ Datum _____ Gr. Water Depth See Text

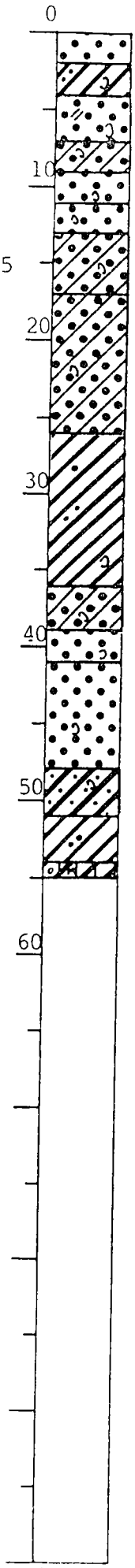
Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	0.5	2.0	0.0	2.0	Very loose tan sand	1	3
2	3.5	4.0	2.0	4.0	Stiff gray & tan clay w/sand pockets		
					& shells		
3	5.5	6.0	4.0	7.0	Very loose gray fine sand w/clay		
					pockets & shell fragments		
4	8.5	9.0	7.0	9.0	Very loose gray clayey sand w/shells		
5	9.0	10.5	9.0	11.0	Very loose gray sand w/shells	0	2
6	11.0	12.5	11.0	13.0	Medium dense gray sand w/shell	4	13
					fragments		
7	13.5	15.0	13.0	17.0	Loose gray clayey sand w/shells	2	6
8	19.0	19.5	17.0		Very loose gray clayey sand w/shells		
9	24.0	24.5		26.0	Ditto		
10	29.0	29.5	26.0		Very soft gray clay w/sand lenses &		
					pockets & shell fragments		
11	34.0	34.5		36.0	Ditto		
12	38.0	38.5	36.0	39.0	Very loose gray clayey sand w/shell		
					fragments		
13	39.0	40.5	39.0	41.0	Loose gray sand w/shell fragments	2	6
14	41.0	42.5	41.0		Medium dense gray sand w/shell	2	13
					fragments		
15	43.5	45.0		48.0	Ditto	1	11
16	48.5	50.0	48.0	51.0	Medium stiff gray sandy clay w/shell	1	4
					fragments		
17	52.0	52.5	51.0	54.0	Stiff gray clay w/sand pockets		
18	54.0	54.5	54.0	55.0	Stiff greenish-gray silty clay w/trace		
					of organic matter		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____





LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Orleans Levee District

Pontchartrain Beach Floodwalls and Levees, New Orleans, Louisiana

For: Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.

URS Engineers, Consulting Engineers, New Orleans, Louisiana

Boring No. 5 Soil Technician A. J. Mayeux Date 18 & 19 November 1985

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	0.5	Concrete		
			0.5	1.0	Shells & sand		
1	2.0	3.0	1.0	4.0	Medium stiff gray & tan clay w/sand		
					pockets & some shells & roots		
2	5.0	6.0	4.0	7.5	Soft gray clay w/shells & sand layers		
3	8.0	9.0	7.5	10.5	Soft gray clay w/sand pockets & lenses		
4	11.0	12.5	10.5	13.5	Very loose gray sand w/shell fragments	0	3
5	13.5	15.0	13.5	16.0	Medium dense gray sand w/shell	4	17
					fragments		
6	16.0	17.5	16.0	18.0	Very loose gray silty sand w/clay	1	3
					layers & shell fragments		
7	18.5	20.0	18.0	21.0	Loose gray clayey sand w/shell	3	4
					fragments		
8	21.0	22.5	21.0	23.0	Very soft gray sandy clay w/shell	0	2
					fragments		
			23.0	26.0	Wood w/some sandy clay & shells		
9	26.0	27.0	26.0		Loose gray clayey sand w/clay pockets		
					& shell fragments		
10	29.0	30.0		31.0	Ditto		
11	32.0	33.0	31.0		Soft gray clay w/sand layers, pockets		
					& shell fragments		
12	35.0	36.0		38.5	Ditto		
13	38.5	40.0	38.5	42.0	Loose gray sand w/shells	1	5
14	43.5	45.0	42.0		Medium dense gray sand w/shell	3	17
					fragments		
15	48.5	50.0		51.0	Ditto	2	9

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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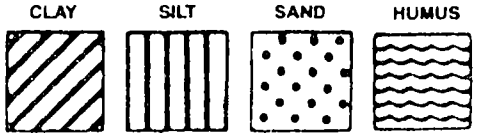

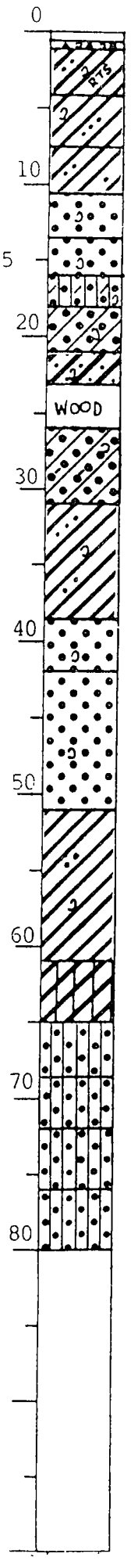

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Orleans Levee District
Pontchartrain Beach Floodwalls and Levees, New Orleans, Louisiana

For: Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.

URS Engineers, Consulting Engineers, New Orleans, Louisiana

Boring No. 5 (Cont'd) Soil Technician A. J. Mayeux Date 18 & 19 November 1985

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	SAMPLE Depth — Feet To	DEPTH STRATUM Feet From	DEPTH STRATUM Feet To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
16	54.0	55.0	51.0		Stiff gray clay w/sand pockets & shell		
					fragments		
17	59.0	60.0		61.0	Ditto		
18	64.0	65.0	61.0	65.0	Stiff greenish-gray silty clay		
19	67.0	68.0	65.0	68.5	Very loose greenish-gray silty sand		
20	68.5	70.0	68.5	72.0	Loose greenish-gray silty sand	2	7
21	73.5	75.0	72.0	76.0	Medium dense greenish-gray silty sand	6	21
22	78.5	80.0	76.0	80.0	Medium dense gray & tan silty sand	4	22

DEPTH IN FT.

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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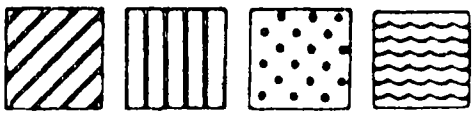
CLAY SILT SAND HUMUS



Remarks: N-8

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Orleans Levee District
Pontchartrain Beach Floodwalls and Levees, New Orleans, Louisiana

For: Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.
URS Engineers, Consulting Engineers, New Orleans, Louisiana

Boring No. 7 Soil Technician A. J. Mayeux Date 19 November 1985

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	0.5	Loose tan sand		
1	2.0	2.5	0.5	4.0	Medium compact gray & tan clay w/shells,		
					clay, gravel & wood		
2	5.0	5.5	4.0	7.5	Loose gray & tan clayey sand w/shell		
					fragments		
3	8.5	10.0	7.5		Medium dense gray sand w/shells	3	11
4	11.0	12.5			Ditto	3	17
5	13.5	15.0		16.0	Ditto	5	24
6	16.0	17.5	16.0	18.0	Loose gray sand w/shells	2	7
7	18.5	20.0	18.0		Very loose gray clayey silt	1	3
8	24.0	24.5		26.0	Very loose gray clayey silt w/silty		
					clay layers		
9	29.0	29.5	26.0	31.0	Loose gray clayey sand w/sandy silt		
					layers & shell fragments		
10	34.0	34.5	31.0		Medium stiff gray clay w/clayey sand		
					pockets & shell fragments		
11	37.5	38.0		38.0	Ditto		
12	38.5	40.0	38.0	41.0	Loose gray sand w/shell fragments	2	9
13	41.0	42.5	41.0	43.0	Medium dense gray sand w/shell	3	13
					fragments		
14	43.5	45.0	43.0	47.0	Loose gray sand w/shell fragments &	2	8
					clay layers		
15	48.5	50.0	47.0		Medium stiff gray clay w/clayey sand	1	4
					pockets & shell fragments		
16	54.0	54.5		55.0	Ditto		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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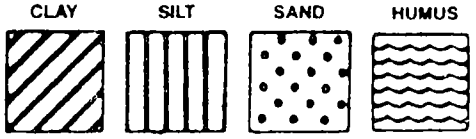
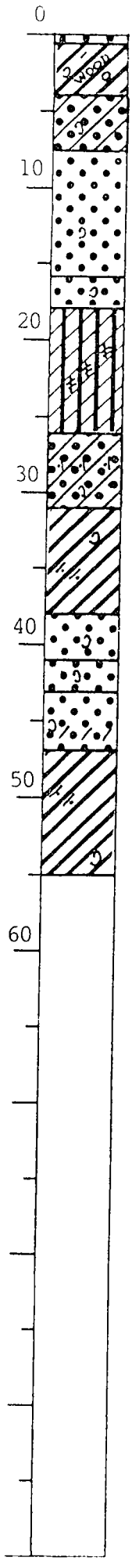
Remarks: _____





EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Orleans Levee District
Pontchartrain Beach Floodwalls and Levees, New Orleans, Louisiana

For: Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.
URS Engineers, Consulting Engineers, New Orleans, Louisiana

Boring No. 8 Soil Technician A. J. Mayeux Date 20 November 1985

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
			0.0	0.5	Concrete		
			0.5	1.0	Shells & sand		
1	2.0	2.5	1.0	3.0	Loose tan sand w/shells & clay		
2	3.5	5.0	3.0	5.0	Very loose tan sand	0	2
3	8.0	8.5	5.0	10.0	Medium dense gray silty sand w/clay		
					lenses, pockets & shell fragments		
4	10.0	11.5	10.0	12.0	Very loose gray sand w/shell fragments	0	2
5	12.5	14.0	12.0		Medium dense gray sand w/shell	4	24
					fragments		
6	15.0	16.5			Ditto	6	22
7	18.5	20.0		20.0	Medium dense gray sand w/sandy silt	7	11
					layers		
8	24.0	24.5	20.0		Soft gray silty clay w/sand pockets &		
					decayed shells		
9	29.0	29.5		31.5	Ditto		
10	34.0	34.5	31.5		Loose gray clayey sand w/clay layers		
11	39.0	39.5		40.0	Ditto		
12	40.0	41.5	40.0	43.0	Very loose gray sand w/shell fragments	1	3
13	43.5	45.0	43.0	48.0	Medium dense gray sand w/shell	4	14
					fragments		
14	48.5	50.0	48.0	54.0	Medium stiff gray sandy clay w/shell	1	5
					fragments		
15	54.0	54.5	54.0	55.0	Stiff greenish-gray & tan sandy clay		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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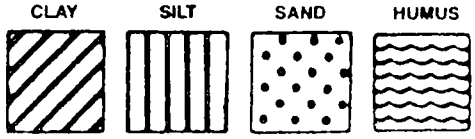

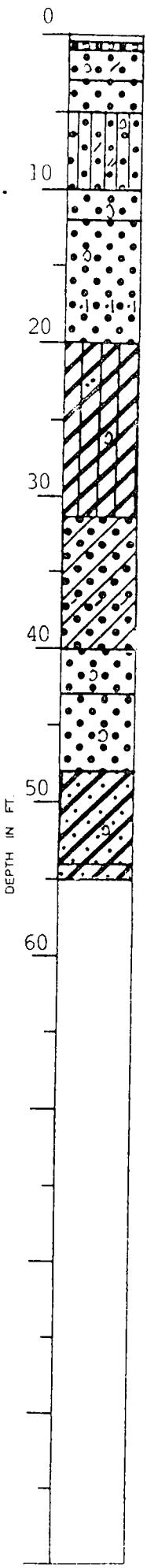

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Orleans Levee District

Pontchartrain Beach Floodwalls and Levees, New Orleans, Louisiana

For: Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.

URS Engineers, Consulting Engineers, New Orleans, Louisiana

Boring No. 9 Soil Technician A. J. Mayeux Date 20-21 November 1985

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	2.0	2.5	0.0	3.0	Medium dense brown & gray clayey sand		
					w/silty sand layers, roots & shells		
					(fill)		
2	3.5	5.0	3.0	6.0	Loose tan sand w/shell fragments	1	5
3	6.0	7.5	6.0		Very loose gray sand w/shell fragments	1	2
					& clay layers		
4	8.5	10.0			Ditto	0	2
5	11.0	12.5		13.0	Ditto	1	2
6	13.5	15.0	13.0	16.0	Very loose gray clayey sand w/shell	0	1
					fragments		
7	17.5	18.0	16.0	19.0	Soft gray clay w/sand pockets & shell		
					fragments		
8	20.5	21.0	19.0		Loose gray silty sand w/sandy clay		
					layers & shells		
9	23.5	24.0		25.0	Loose gray silty sand w/silty clay		
					lenses, layers & shell fragments		
10	26.5	27.0	25.0	29.0	Very loose gray clayey sand w/silty		
					clay layers & shell fragments		
11	29.5	30.0	29.0		Soft gray clay w/sand pockets, lenses		
					& layers & shell fragments		
12	32.5	33.0		35.0	Ditto		
13	35.5	36.0	35.0	38.5	Loose gray silty sand w/shell fragments		
14	38.5	40.0	38.5	41.0	Very loose gray clayey sand w/shell	0	1
					fragments		
15	41.0	42.5	41.0	43.5	Very loose gray sand w/shell fragments	1	3
16	43.5	45.0	43.5	47.0	Loose gray sand w/shell fragments	2	5

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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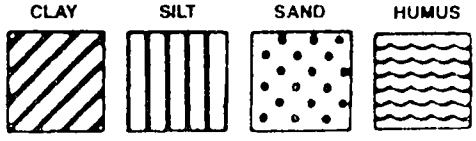

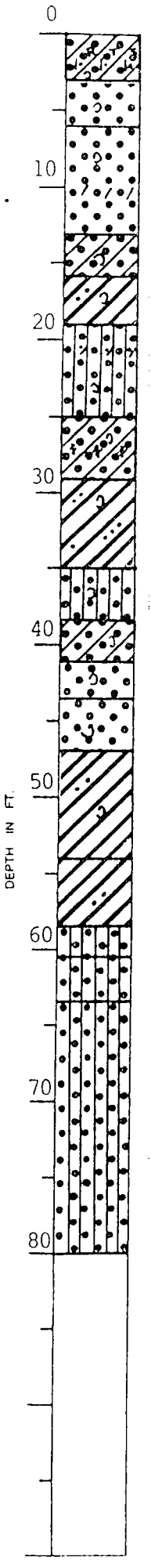

LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Orleans Levee District
Pontchartrain Beach Floodwalls and Levees, New Orleans, Louisiana

For: Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.
URS Engineers, Consulting Engineers, New Orleans, Louisiana

Boring No. 9 (Cont'd) Soil Technician A. J. Mayeux Date 20-21 November 1985

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
17	48.5	50.0	47.0	54.0	Medium stiff gray clay w/sand pockets	0	3
					& shell fragments		
18	54.0	54.5	54.0	58.5	Stiff greenish-gray & tan clay w/sand		
					pockets		
19	58.5	60.0	58.5	60.5	Very loose greenish-gray silty sand	1	3
20	61.0	62.5	60.5	63.5	Loose greenish-gray & tan silty sand	2	8
21	63.5	65.0	63.5		Medium dense greenish-gray & tan silty	2	13
					sand		
22	68.5	70.0			Ditto	3	18
23	73.5	75.0			Ditto	4	24
24	78.5	80.0		80.0	Ditto	4	26

DEPTH IN FT.

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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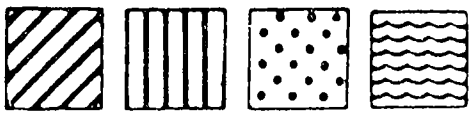
CLAY SILT SAND HUMUS



Remarks: _____

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: Orleans Levee District

Pontchartrain Beach Floodwalls and Levees, New Orleans, Louisiana

For: Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.

URS Engineers, Consulting Engineers, New Orleans, Louisiana

Boring No. 10 Soil Technician A. J. Mayeux Date 21 November 1985

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet From	To	DEPTH STRATUM Feet From	To	VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
1	2.0	2.5	0.0	3.0	Medium stiff gray & tan clay w/sand,		
					shells, gravel, etc. (fill)		
2	3.0	4.5	3.0	4.5	Medium dense gray & tan sand w/shell	3	14
					fragments		
3	6.0	7.5	4.5		Very loose gray sand w/clay layers &	0	3
					shell fragments		
4	8.5	10.0			Ditto	0	4
5	11.0	12.5		13.0	Ditto	1	4
6	13.5	15.0	13.0	16.5	Very loose gray silty sand	1	4
7	19.0	19.5	16.5		Loose gray silty sand w/many clay		
					layers & lenses		
8	24.0	24.5			Loose gray silty sand		
9	29.0	29.5		31.5	Loose gray silty sand w/alternating clay		
					layers & lenses		
10	34.0	34.5	31.5	35.0	Medium stiff gray clay w/sand pockets		
11	35.0	36.5	35.0	38.5	Very loose gray clayey sand w/shell	0	3
					fragments		
12	38.5	40.0	38.5		Loose gray sand w/shell fragments	2	7
13	43.5	45.0		47.0	Ditto	2	5
14	48.5	50.0	47.0	54.5	Soft gray clay w/sand pockets & shell	0	2
					fragments		
15	54.0	54.5	54.5	55.0	Stiff greenish-gray & tan sandy clay		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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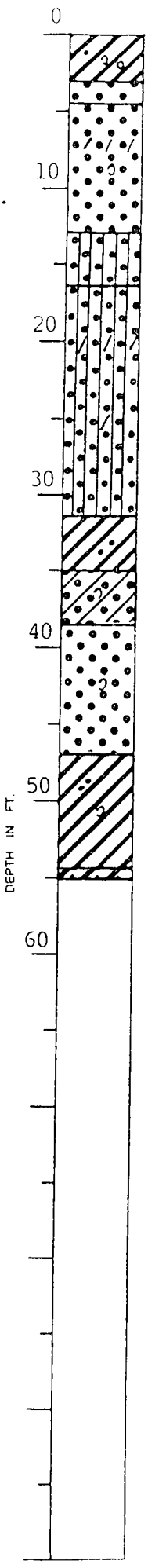


CLAY SILT SAND HUMUS

UNIFIED SOIL CLASSIFICATION

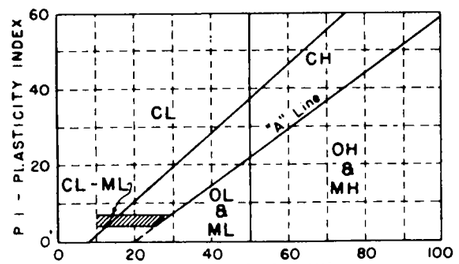
MAJOR DIVISION		TYPE	LETTER SYMBOL	SYMBOL	TYPICAL NAMES
COARSE - GRAINED SOILS More than half of material is larger than No 200 sieve size	GRAVELS More than half of coarse fraction is larger than No 4 sieve size	CLEAN GRAVEL (Little or No Fines)	GW		GRAVEL, Well Graded, gravel - sand mixtures, little or no fines
			GP		GRAVEL, Poorly Graded, gravel - sand mixtures, little or no fines
		GRAVEL WITH FINES (Appreciable Amount of Fines)	GM		SILTY GRAVEL, gravel - sand - silt mixtures
			GC		CLAYEY GRAVEL, gravel - sand - clay mixtures
	SANDS More than half of coarse fraction is smaller than No 4 sieve size	CLEAN SAND (Little or No Fines)	SW		SAND, Well - Graded, gravelly sands
			SP		SAND, Poorly - Graded, gravelly sands
		SANDS WITH FINES (Appreciable Amount of Fines)	SM		SILTY SAND, sand - silt mixtures
			SC		CLAYEY SAND, sand - clay mixtures
FINE GRAINED SOILS More than half the material is smaller than No 200 sieve size		SILTS AND CLAYS (Liquid Limit < 50)	ML		SILT & very fine sand, silty or clayey fine sand or clayey silt with slight plasticity
			CL		LEAN CLAY; Sandy Clay; Silty Clay, of low to medium plasticity
			OL		ORGANIC SILTS and organic silty clays of low plasticity
		SILTS AND CLAYS (Liquid Limit > 50)	MH		SILT, fine sandy or silty soil with high plasticity
			CH		FAT CLAY, inorganic clay of high plasticity
			OH		ORGANIC CLAYS of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt		PEAT, and other highly organic soil
WOOD			Wd		WOOD
SHELLS			Sl		SHELLS
NO SAMPLE					

NOTE: Soils possessing characteristics of two groups are designated by combinations of group symbols

DESCRIPTIVE SYMBOLS

COLOR	
COLOR	SYMBOL
TAN	T
YELLOW	Y
RED	R
BLACK	BK
GRAY	Gr
LIGHT GRAY	lGr
DARK GRAY	dGr
BROWN	Br
LIGHT BROWN	lBr
DARK BROWN	dBr
BROWNISH-GRAY	br Gr
GRAYISH-BROWN	gy Br
GREENISH-GRAY	gn Gr
GRAYISH-GREEN	gy Gn
GREEN	Gn
BLUE	Bl
BLUE-GREEN	Bl Gn
WHITE	Wh
MOTTLED	Mot

CONSISTENCY FOR COHESIVE SOILS		
CONSISTENCY	COHESION IN LBS./SQ.FT. FROM UNCONFINED COMPRESSION TEST	SYMBOL
VERY SOFT	< 250	vSo
SOFT	250 - 500	So
MEDIUM	500 - 1000	M
STIFF	1000 - 2000	St
VERY STIFF	2000 - 4000	vSt
HARD	> 4000	H



PLASTICITY CHART

For classification of fine - grained soils

MODIFICATIONS	
MODIFICATION	SYMBOL
Traces	Tr-
Fine	F
Medium	M
Coarse	C
Concretions	cc
Rootlets	rt
Lignite fragments	lg
Shale fragments	sh
Sandstone fragments	sds
Shell fragments	slf
Organic matter	O
Clay strata or lenses	CS
Silt strata or lenses	SIS
Sand strata or lenses	SS
Sandy	S
Gravelly	G
Boulders	B
Slickensides	SL
Wood	Wd
Oxidized	Ox

NOTES:

FIGURES TO LEFT OF BORING UNDER COLUMN "W OR D_{10}*"

Are natural water contents in percent dry weight

When underlined denotes D_{10} size in mm*

FIGURES TO LEFT OF BORING UNDER COLUMNS "LL" AND "PL"

Are liquid and plastic limits, respectively

SYMBOLS TO LEFT OF BORING

▽ Ground-water surface and date observed

(C) Denotes location of consolidation test**

(S) Denotes location of consolidated-drained direct shear test**

(R) Denotes location of consolidated-undrained triaxial compression test**

(Q) Denotes location of unconsolidated-undrained triaxial compression test**

(T) Denotes location of sample subjected to consolidation test and each of the above three types of shear tests**

FW Denotes free water encountered in boring or sample

FIGURES TO RIGHT OF BORING

Are values of cohesion in lbs./sq.ft. from unconfined compression tests

In parenthesis are driving resistances in blows per foot determined with a standard split spoon sampler (1 3/8" I.D., 2" O.D.) and a 140 lb. driving hammer with a 30" drop

Where underlined with a solid line denotes laboratory permeability in centimeters per second of undisturbed sample

Where underlined with a dashed line denotes laboratory permeability in centimeters per second of sample remoulded to the estimated natural void ratio

* The D_{10} size of a soil is the grain diameter in millimeters of which 10% of the soil is finer, and 90% coarser than size D_{10}.

**Results of these tests are available for inspection in the U.S. Army Engineer District Office, if these symbols appear beside the boring logs on the drawings.

GENERAL NOTES:

While the borings are representative of subsurface conditions at their respective locations and for their respective vertical reaches, local variations characteristic of the subsurface materials of the region are anticipated and, if encountered, such variations will not be considered as differing materially within the purview of clause 4 of the contract.

Ground-water elevations shown on the boring logs represent ground-water surfaces encountered in such borings on the dates shown. Absence of water surface data on certain borings indicates that no ground-water data are available from the boring, but does not necessarily mean that ground water will not be encountered at the locations or within the vertical reaches of such borings.

Consistency of cohesive soils shown on the boring logs is based on driller's log and visual examination and is approximate, except within those vertical reaches of the borings where shear strengths from unconfined compression tests are shown.

REVISION	DATE	DESCRIPTION	BY
4	2-10-84	2nd Para. General Notes Revised	LMNED-GS Let. dated 12 Dec. 83
3	9-3-71	ADDED UPPER LIMIT LINE (PI = 0.9 (LL - 8)) ON PLASTICITY CHART	LMVED-G LETTER D.T.O. 29 APRIL 1971
2	6-8-64	SYMBOL FW, NOTE REVISED	ORAL FROM LMVCG 5 JUNE 1964
1	9-17-63	1ST PAR. OF GENERAL NOTES REVISED	LMV-7 MULTIPLE LETTER, DATED 5 SEPT. 1963

SOIL BORING LEGEND

U S ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
FILE NO H-2-21800

PLATE A

TECHNICAL SPECIFICATIONS

SECTION 2

MOBILIZATION

PART 2-1 - GENERAL

Under this item of work, the Contractor shall set up his necessary general plant including shops, storage areas, temporary facilities and utilitie offices and such sanitary and other facilities as are required by local or state law or regulation. Such materials as required for mobilization and that are not be a part of the completed contract shall be as determined by the Contractor, except that they shall conform to any pertinent local or state law, regulation or code. The work required to provide the above facilities and services for mobilization shall be done in a safe and workmanlike manner and shall conform with pertinent local or state law, regulation or code. Good housekeeping consistent with adequate safety precautions shall be maintained. Unless provided for elsewhere, the cost of required insurance and bonds and/or any initiation of contract work will be included in this work.

PART 2-2 - PRODUCTS (NOT USED)

PART 2-3 - EXECUTION (NOT USED)

PART 2-4 - MEASUREMENT AND PAYMENT.

A. METHOD OF MEASUREMENT.

Mobilization shall be measured as a lump sum item and the amount bid shall not exceed 3% of the total contract bid price excluding the amount bid for mobilization. Should the bidder exceed the foregoing 3%, the Owner will make the necessary adjustment to determine the total amount bid based upon the arithmetically correct proposal. The amount bid shall include the furnishing and maintaining of services and facilities noted above to the extent and at the time the Contractor deems them necessary for his operations, consistent with the requirements of this Work and the required contract.

The amount bid shall be payable to the Contractor whenever he shall have completed 10% of the contract work. For the purposes of this item, 10% of the work shall be considered completed when the total payments earned, as reflected by the estimate of the work done, as set forth in General Specifications 1.24, "Partial Payment", not including the amount bid for this work, shall exceed 10% of the total amount of the Contractor's bid for this project.

B. BASIS OF PAYMENT.

This Work will be paid for at the lump sum price bid. Price thus paid shall be full compensation for completing the work specified.

Payment will be made under:

Pay Item No. 1 - Mobilization - per Lump Sum.

END OF SECTION

SECTION 3

CLEARING AND GRUBBING

PART 3-1 - GENERAL

A. SCOPE.

The work covered by this section consists of furnishing all plant, labor, equipment, and materials, and performing all operations necessary for the clearing and grubbing of the areas specified herein or indicated on the drawings, for the removal and disposal of all cleared and grubbed materials, and for the filling of all holes caused by grubbing operations, as specified herein.

B. QUALITY CONTROL.

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

1. Clearing. Station to station limits, transverse clearing limits from applicable centerline, percentage of area complete, type of material.

2. Grubbing. Station to station limits, transverse grubbing limits from applicable centerline, percentage of area complete, type of material.

3. Disposition of Cleared and Grubbed Materials. Method and location of disposition, damage to timber or improvements which are not to be cleared. The original and two copies of these records of inspections and tests, as well as the records of corrective action taken, shall be furnished the Engineer daily.

PART 3-2 - PRODUCTS (NOT USED)

PART 3-3 - EXECUTION

A. GENERAL.

All clearing and grubbing work for embankments and berms shall be completed in advance of access ramp embankment construction. If regrowth of vegetation occurs after clearing and grubbing and before placement of fill, the Contractor will be required to clear and grub the area again prior to embankment construction, and no payment will be made for this additional clearing and grubbing.

B. TREES.

Oak and palm trees shall be relocated in accordance with Section 15, "Tree Relocation". Trees not designated for relocation within the

limits of clearing and grubbing shall be felled with due regard for the safety of employees and others, but only after the Contractor notifies the Engineer of his intent to remove such trees and receives such approval from the Engineer in writing. No verbal authority for the removal of any tree by the Resident Project Representative will be given nor should it be requested; no such authority will be binding.

C. CLEARING.

1. Clearing. Clearing, unless otherwise specified, shall consist of the complete removal above the ground surface of all stumps, down timber, snags, brush, vegetation, old piling, loose stone, abandoned structures, fencing, sand bags, and similar debris. Growth standing in water in areas which are not drained may be cut off so as not to protrude more than 12 inches above the existing water surface. The areas to be cleared consist of the access ramp embankments together with strips 10 feet wide contiguous thereto, except on adjacent levee slopes. Levee slopes upon which embankments or other improvements are placed shall be cleared.

2. Vegetation. Vegetation to be removed shall consist of grass, bushes, and weeds. Close-growing grass and other vegetation shall be removed from areas to receive semicompacted or compacted road fill to provide a completely bare earth surface immediately prior to foundation preparation. Acceptance of the vegetation removal operation shall precede the initiation of foundation preparation in the area from which vegetation has been removed. For areas to receive uncompacted fill, close-growing grass and other vegetation shall be mowed not to exceed 2 in. above the ground surface or existing embankment prior to foundation preparation.

3. Borrow Areas. Borrow areas shall be cleared to the extent necessary to provide materials free from unsuitable matter. Only those portions of borrow areas from which borrow material will actually be obtained uder this contract shall be cleared to the extent necessary to provide materials free from unsuitable matter. Certain stumps and areas containing masses of organic matter or other unsuitable material may be left in place upon approval of the Engineer.

D. GRUBBING.

1. General. Grubbing shall consist of the removal of all stumps, roots, buried logs, old piling, old paving, old foundations, pipes, drains, and other unsuitable matter.

2. Areas to be Grubbed. Grubbing shall be performed within the limits of the access ramp embankment together with the 10-foot strips contiguous thereto, except on adjacent levee slopes. All roots and other projections over 1-1/2 inches in diameter shall be removed to a depth of 3 feet below the natural surface of the ground and to a depth of 3 feet below the subgrade for the foundation of structures.

The areas to be grubbed are those specified areas within the limits specified hereinabove from which trees, stumps, down timber, snags, old piling, abandoned structures, and other projections have been removed. In the event the areas specified are not drained, and growth and projections standing in water are cut off as permitted in paragraph 3-3.C.1, above, grubbing within such areas will not be required.

3. Borrow Areas. Grubbing of borrow areas will be required to the extent necessary to provide materials free from unsuitable matter. Only those portions of borrow areas from which borrow material will actually be obtained under this contract shall be grubbed to the extent necessary to provide materials free from unsuitable matter.

4. Filling of Holes. All holes caused by grubbing operations and removal of pipes and drains excluding holes in borrow areas, channels and ditches shall be backfilled with clay material as specified in Section 12, installed to the elevation of the original ground surface in 12" lifts (loose measure) and compacted to 95% of maximum density at optimum moisture content as per ASTM D698.

E. DISPOSAL OF DEBRIS.

1. General. Except as specified elsewhere, all debris resulting from clearing and grubbing operations shall, at the Contractor's option, be disposed of by removal from the site. The Contractor shall make a reasonable effort to channel merchantable material into the commercial market to make beneficial use of materials resulting from clearing and grubbing operations.

2. Chipping. All cut timber, down timber, dead timber, branches, and brush may be chipped. The chips shall be hauled away and disposed of by the Contractor at his expense. At the option of the Contractor, the chips may be either sold or used within the project area as a mulch for plantings.

3. Removal from Site of Work. The Contractor must remove all debris from the work site. Such disposal shall comply with all applicable Federal, State, and Local laws. The Contractor shall, at his option, either retain for his own use or dispose of by sale or otherwise, any such materials of value which are not specified to be returned to the Owner. The Owner is not responsible for the protection and safekeeping of any materials retained by the Contractor. Such materials shall be removed from the site of the work before the date of completion of the work. No debris from clearing operations is to be placed on adjacent property.

PART 3-4 MEASUREMENT AND PAYMENT.

A. METHOD OF MEASUREMENT.

Clearing and grubbing shall be measured as a lump sum item. The Work shall include furnishing all plant, labor, materials and equipment and performing all operations necessary for clearing and grubbing the areas

specified herein or indicated on the Drawings, for removing and disposing of all cleared and grubbed materials, and for filling holes resulting from grubbing operations, and for placing embankment to replace material removed as a result of vegetation removal operations.

Any additional items or elements of work shown on the drawings or specified herein for which a specific measurement or payment is not considered as incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT.

This Work will be paid for at the lump sum price. Price thus paid shall be full compensation for completing the work specified. Materials and equipment for work which are necessary to complete the Work under this section shall be furnished or performed and shall be considered incidental to the completed construction.

Payment will be made under:

Pay Item No. 2 - Clearing and Grubbing - per Lump Sum.

END OF SECTION

SECTION 4

REMOVAL OF STRUCTURES, OBSTRUCTIONS AND PAVEMENTS

PART 4-1 - GENERAL

A. SCOPE.

The work covered by this section consists of the removal and satisfactory disposal of all fences, structures (including foundations, drainage pipe, water lines, manholes and catch basins), pavements, abandoned pipelines and any other obstructions not designated or permitted to remain. The work shall include furnishing all plant, labor, equipment and materials, and performing all operations necessary for the removal and disposal of structures, obstructions and pavements and backfilling resulting trenches, holes and excavation pits, as called for on the drawings or specified herein.

B. GENERAL CONSTRUCTION REQUIREMENTS.

The Contractor shall remove and dispose of all foundations, fences, pavements and other structures and obstructions (including catch basins, manholes and pipe) designated for removal within the limits of construction as indicated on the Drawings. Designated salvageable material shall be removed in specified sections which may be readily transported or relocated elsewhere within the project and shall be placed at specified storage or other areas by the Contractor. Materials not designated to be salvaged shall be disposed of by the Contractor at his expense. Cavities left by structure removal shall be backfilled to the level of the original ground and compacted as specified in paragraph 4-3.C, below. Explosive demolition will not be allowed for the removal of anything under any circumstances.

PART 4-2 - PRODUCTS (NOT USED)

PART 4-3 - EXECUTION

A. REMOVAL OF STRUCTURES AND OBSTRUCTIONS.

Designated fences, abandoned piping foundations, and subsurface structures and obstructions, including catch basins, manholes, and pipe should be removed within the limits of construction as necessary to accommodate construction of the ramp embankments and disposed of as specified in paragraph 4-3.D, below.

Fences designated to be removed shall be removed and stored as directed by Owner. Upon acceptance by the Owner of the fence, the fencing will from that point in time cause to be the responsibility of the Contractor, except any fencing which may be reinstalled within this contract.

B. REMOVAL OF PAVEMENTS.

Concrete and asphalt pavement for non-roadway surfaces and curbs in designated areas shall be removed and disposed of as specified in

paragraph 4-3.D, below. Any saw cutting required for pavement removal shall be incidental to the work.

C. BACKFILL OF EXCAVATIONS.

Excavations shall be as required for the removal of any buried item included in this specification. Contractor shall take whatever precautions necessary to assure the proper stability of his excavations including side slopes, sheeting, bracing and cofferdams, etc. Such measures and precautions shall be engineered at the Contractor's expense and shall be submitted to the Engineer.

All excavations including holes, pits or trenches resulting from the removal and disposal of structures, including all items covered in Section 4, shall be backfilled with clay material as specified in Section 12 installed to the elevation of the original ground surface, and each layer compacted to 95% of maximum density at optimum moisture content as per ASTM D698. Backfill material used for the purpose of filling excavations shall be paid for as "Compacted Clay Backfill". All backfill work shall be done in dry conditions which will permit proper compaction of the backfill material. Contractor shall maintain the groundwater level as necessary to achieve the specified compaction utilizing whatever means of dewatering necessary.

D. DISPOSAL OF DEBRIS.

Except as specified elsewhere, all debris shall be removed from the site of work. Such disposal shall comply with all applicable Federal, State, and Local laws. The Contractor shall, at his option, either retain for his own use or dispose of by sale or otherwise, any such materials of value. The Owner is not responsible for the protection and safekeeping of any materials retained by the Contractor. Such materials shall be removed from the site of work as it is accumulated. No debris from clearing operations is to be placed on adjacent property.

PART 4-4 MEASUREMENT AND PAYMENT.

A. METHOD OF MEASUREMENT.

Removal of structures and obstructions shall be measured as a lump sum item and shall include the removal and disposal of designated fences, foundations, subsurface structures including catch basins, manholes and pipes and any other obstructions designated in the Drawings or specified in these Specifications.

Removal and disposal of concrete and asphalt pavement (non-roadway) shall be measured per square yard. Concrete curbs removed shall be considered incidental to the Work.

Excavation necessary for the removal of items designated to be removed, and the disposal of debris resulting from such excavation, shall be considered incidental to the related work item.

Backfill for excavations resulting from the removal of structures, obstructions and pavement including all items covered in Section 4, shall be measured by the cubic yard in place.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement or payment is not specified shall be considered as incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT.

This work will be paid for at the contract unit prices per lump sum, per linear foot, per square yard and by cubic yard, as applicable.

Prices thus paid shall be full compensation for completing the work specified. Materials and equipment which are necessary to complete the work under this section shall be furnished or performed and shall be considered incidental to the completed construction.

Payment will be made under:

Pay Item No. 3:	Removal of Structures and Obstructions - per Lump Sum.
Pay Item No. 4:	Removal of Pavement (Non-Roadway) - per Square Yard.
Pay Item No. 5:	Compacted Clay Backfill - per Cubic Yard

END OF SECTION

SECTION 5

PRESTRESSED CONCRETE PILES

PART 5-1 - GENERAL

A. SCOPE

The work covered by this section consists of furnishing all plant, equipment, labor, materials, and performing all operations in connection with the manufacture and installation of prestressed precast concrete piling in accordance with these specifications and applicable drawings.

B. QUALITY CONTROL

1. General. The Contractor shall establish and maintain quality control for pile driving operations, assure compliance with contract specifications and maintain records of his quality control for all construction operations including, but not limited to the following:

   a. Record of tests for gradation of aggregate and compressive strength of concrete as required, including proportioning of mix.

   b. Setting and bracing of forms and checkout just prior to concrete placement, including accurate placement of reinforcing steel.

   c. Casting, handling and storage of prestressed, precast piling; records of prestressing tension strands.

   d. Curing (method and duration).

   e. Concrete cylinder testing.

   f. Driving (pile driver; final positioning: tip and top elevations, uplift and vertical tolerances after driving; pulled piles and redriving; blows per foot for the full driven length of the piles; removal and disposal of damaged piles; location and elevation of any obstruction encountered and action directed by Engineer.

   The Contractor shall provide the Engineer 48 hour notice of the above operations so as to allow for proper scheduling of required field representation services.

2. Reporting. The original and two copies of these records and tests, as well as the records of corrective action taken, shall be furnished the Engineer daily.

PART 5.2 - PRODUCTS

A. TYPES AND PROPERTIES

1. Types. Piles shall be uniformly square in section, of size 12-inch by 12-inch. Corners shall be chamfered 3/4 inches or, in lieu of chamfering, may be rounded to a 1-inch radius.

2. Properties. Except as otherwise specified herein all materials used in the manufacture of the concrete piles shall conform to the applicable requirements of Section 6D - STRUCTURAL SITE CAST CONCRETE. Cement may be Type II or Type I conforming to ASTM C150 but total tricalcium aluminate content for Type I shall not exceed 8.0 percent. The use of fly ash is allowed. The Contractor shall be responsible for the design of the concrete mix and for meeting the strength requirements. However, the mixes and curing operation shall be submitted for approval. The design f'c shall be 5,000 psi (pounds per square inch) at 28 days or such earlier age as concrete is to receive its full service load or maximum stress. Prior to transfer of prestressing force to concrete, f'c shall be 4,000 psi. The minimum ultimate compressive strength of concrete f'_c, shall be determined by the average computed compressive strength from tests of three standard 6 by 12 inch cylinders tested in accordance with the requirements of ASTM Designation C39, for "Compressive Strength of Cylindrical Concrete Specimens". Each test shall include one test cylinder made at each of three different times during each placement in accordance with the provisions of paragraph 5-2.B.5. All cylinders will be made and tested by the Contractor and witnessed by the Engineer's representative. Facilities shall be made available to the Engineer's representative for making any additional test cylinder required by the Engineer. Concrete test cylinders shall be cured at the same location, under identical conditions, and by the identical method used to cure the piles cast of the same concrete placements from which the samples were taken.

B. MANUFACTURE

1. General. Except as otherwise specified herein, the piles shall be controlled, made, placed, and cured in accordance with the provisions of Article 2.4.33 of the Standard Specifications for Highway Bridges of the American Association of State Highway Officials.

2. Reinforcing. The prestressed reinforced system shall be 7-wire, uncoated, 1/2" diameter stress-relieved steel strands conforming to the requirements of ASTM A416, grade 250, specifications for "Uncoated Seven-Wire Stress-Relieved Steel Strand for Prestressed Concrete". Initial tension in 1/2" strands before release shall be 25,200 pounds. Prestress force shall be determined by measuring hydraulic jack pressure with a

calibrated dynamometer. The prestress force shall be checked by accurately measuring tendon elongation between 1,000-pound and 25,200 pound applied prestress forces. Elongation requirements shall be obtained from load-elongation curves for the steel used, and the applied prestress force shall be computed from the measured elongation. If the difference between the computed force and the measured jack force exceeds 5 percent, the cause of the discrepancy shall be ascertained and corrected. The prestressing strands shall be cut prior to reducing the temperature of the stream. Spiral reinforcing shall be cold-drawn steel wire conforming to ASTM A82 specifications for "Cold-Drawn Steel Wire for Concrete Reinforcement". Reinforcing steel other than the 7-wire stress-relieved strand and spiral reinforcing shall conform to the requirements specified for reinforcement in section 6B.

3. Forms. Forms shall be arranged to provide ample working room and easy access for carrying out all operations required for the proper placing, consolidation, and finishing of the concrete for the piles. The design of the forms shall be such that removal can be accomplished without damage to the completed piles. Forms shall remain in place until piles are removed from the casting bed.

   The use of steel forms on concrete founded casting beds is required. Outer forms shall enclose all except the top horizontal surface. The side forms may have a maximum drift on each side not exceeding 1/4" per foot. The top of the concrete casting shall be given a uniformly smooth finish to match the finish surface of the formed sides.

4. Tolerances. Pile ends shall be plane surfaces and perpendicular to the axis of pile with a maximum tolerance 1/8" per foot transversely. The maximum sweep (deviation from straightness measured along two perpendicular faces of the pile, while not subject to bending forces) shall not exceed 1/8" in any 10' of its length, 3/8" in any 40' or 3/16" x (total length in feet)/20 feet.

5. Casting. Piles shall be cast on level, tight, platforms, constructed to prevent settlement during the casting and curing operations. Piling shall be cast in a horizontal position. Casting in tiers will not be permitted. When casting is once started, it shall be carried on as a continuous operation until the pile is completed. All concrete shall be thoroughly compacted by internally vibrating, spading and rodding during the placing operation and it shall be thoroughly worked around the reinforcement and into the corners of the forms. The intensity of vibration shall be sufficient to cause the concrete to flow and settle into place. Vibration shall be applied uniformly over the length of the pile and shall be of sufficient duration

to insure thorough compaction of the concrete. Spading and rodding during the placing operation shall supplement the vibration. Surfaces shall be free from detrimental porosity or honeycomb. Small areas of honeycomb which are purely surface in nature, extending to a depth of no than 1 inch, may be repaired in the manner directed. Honeycomb extending to the plane of reinforcing will be cause for rejection. Each pile shall be marked to indicate pick-up points, date of casting and 1-foot intervals to permit counting of number of blows per foot of driving for the total length of the pile. During the time of casting each set of concrete piles, the Contractor shall make a minimum of nine standard 6-inch by 12-inch concrete test cylinders in accordance with the provisions of ASTM Designation C31, "Making and Curing Concrete Test Specimens in the Field". A minimum of three test cylinders shall be made at three times during each placement; the first time early in the placement, the second time in the middle of the placement, and the third time near the end of the placement. The use of special embedded or attached lifting devices shall be subject to approval of the Engineer.

6. Curing. Concrete piles shall be steam cured in accordance with the applicable requirements of Article 2.4.33 of the Standard Specifications for Highway Bridges of the American Association of State Highway Officials, edition with yearly revisions and additions to date. Curing shall be continued until the concrete has attained a minimum compressive strength of 4,000 psi as determined by tests on the concrete test cylinders herein before specified. The prestressing strands shall be cut prior to reducing the temperature of the steam. Concrete test cylinders shall be cured at the same location, under identical conditions and by the identical method used to cure the piles cast of the same concrete placements from which the samples were taken.

7. Storage, Handling, and Transportation.

   a. The methods used for storage and handling of the piles shall be such that the piling will not be subjected to overstress, spalling, or other injury. The compressive cylinder strength at transfer of prestressing force shall be not less than 4,000 psi as indicated by test cylinders. The piling may be removed from the casting bed to nearby storage anytime after transfer of stress provided the maximum length does not exceed 78 feet for 2-point pickup or 54 feet for 1-point pickup. Prestressed concrete piling shall be held at the plant until the minimum 28-day compressive strength is attained.

      Piles which are damaged during curing, handling, transportation, or driving to the extent that they are rendered unsuitable to be incorporated in the work shall be removed from the site of work by the Contractor at no cost to the Owner.

Prestressed concrete piling shall be held at the plant until one of the following criteria are met:

1) 10 days after the specified minimum 28-day compressive strength is attained, or

2) 14 days after casting, provided the specified minimum 28-day compressive strength has been attained.

b. In general, piles shall be lifted by means of a suitable bridle or slings attached to the pile at the marked pickup points. The employment of other pickup points or any other type of pickup shall be subject to approval of Engineer.

c. Storage areas for prestressed members shall be stabilized, and suitable foundations shall be provided so differential settlement or twisting of members will not occur. Stacked members shall be separated and supported by battens placed across the full width of each bearing point. Battens shall be continuous over more than one stack of precast units. Stacking of members shall be such that lifting devices will be accessible and undamaged. The upper members of a stacked tier shall not be used as storage areas for shorter members or equipment.

d. In transporting members by truck, railroad car or barge, provisions shall be made for supporting the members as described above, except battens can be continuous over more than one stack of units, with adequate bracing to insure their maintaining the vertical position and damping of dangerous vibrations. Trucks with double bolsters are generally satisfactory provided the members are fully seated on the outer bolsters at not more than 3 feet or the depth of the member from the end and the inner bolster is not more than 8 feet from the end of the member or the designated pickup point. Adequate padding material shall be provided between tie chains or cables to preclude chipping of concrete. Any noticeable indication of lateral deflection of vibration during transportation shall be corrected by rigid bracing between members or by means of lateral trussing.

PART 5-3 - EXECUTION

A. PLACING

Piles shall be driven as accurately as practicable in the correct locations, true to line both laterally and longitudinally and to the vertical or batter lines, all as indicated in the drawings. A lateral deviation from the correct location at the cut-off elevation of not more than 3 inches will be permitted. A variation in slope of not more than 1/4 inch per foot of longitudinal axis will be permitted. The correct relative position of group piles shall be maintained by the use of templates or by other approved means. Any pile

driven out of correct location shall be pulled and redriven by the Contractor at no additional cost to the Owner.

B. DRIVING

Piles shall be driven by an approved single-acting steam hammer or air hammer delivering approximately 19,500 ft-lb of energy per blow. The weight of the moving parts of the hammer shall be at least 2/3 the weight of the pile to be driven. The hammer shall be operated at all times at the steam or air pressure and at the speed recommended by the manufacture. Boiler or compressor capacity shall be sufficient to operate the hammer continuously at full rated speed. Piles shall be protected during driving by a cushion and cap of approved design. Pile drivers shall have firmly supported leads extending to the lowest point the hammer must reach to maintain the hammer in proper alignment at all times. A pile shall not be driven until it is approved for driving. Approval will be based on the condition of curing and on its compressive strength as indicated by the test cylinders. The Contractor shall predrill pilot holes at all pile locations through the existing compacted levee embankments to an elevation of +5.0 ft NGVD. Predrilling shall be accomplished by a wet rotary method utilizing a fish tail bit. The diameter of the predrill hole should not exceed 75% of the side dimension of the pile. Should additional predrilling be required lower than the above elevation, such predrilling shall not be accomplished without prior approval of the Engineer and if allowed, additional predrilling shall not extend closer than 5' above the required tip elevation. Each pile shall be driven continuously and without voluntary interruption until the required depth of penetration has been attained or until the maximum permissible blows per foot of 75 is reached, whichever occurs first. Deviation from this procedure will be permitted only in case the driving is stopped by causes which could not reasonably have been anticipated. Splicing of concrete piles will not be permitted. Any pile that cannot be driven to the required depth because of an obstruction shall, as directed by the Engineer, be cut off perpendicular to the axis of the pile and used or abandoned. If the pile is to be used, cutting methods shall not damage the portion of the pile reinforcement to be left in place. If the pile is abandoned, it shall be cut off, or removed, and another pile driven adjacent thereto, as directed by the Engineer. If a pile is pulled and cannot be redriven the hole shall be filled with tremie placed concrete as directed. The Contractor shall make observations to detect any uplift of piles already driven and uplifted piles shall be backdriven to the original penetration without additional cost to the Owner. Piles shall not be driven within 100 feet of concrete less than seven days old nor within 30 feet of concrete less than 28 days old. The Contractor shall provide every facility for the Engineer to inspect and record data relative to pile driving operations. This record shall include blows per foot for each foot of pile penetration; final tip elevation; and blows per foot prior to seating.

C. DAMAGED AND MISPLACED PILES

Any pile which is cracked or broken because of internal defects or by improper handling or driving, or which is otherwise injured so as to impair it for its intended use, or any pile driven out of proper location, shall be removed and replaced. All work of removal and cost of replacement shall be borne by the Contractor at no additional expense to the Owner. The Engineer may require the Contractor to pull certain selected piles after driving for test and inspection to determine the condition of the piles. Any pile so pulled and found to be damaged to such extent as, in the opinion of the Engineer, would impair its usefulness in the completed structure, shall be removed from the site of the work and the Contractor shall furnish and drive a new pile to replace the damaged pile. Piles pulled and found by the Engineer to be sound and in a satisfactory condition shall be redriven.

PART 5-4 - MEASUREMENT AND PAYMENT

A. METHOD OF MEASUREMENT

Prestressed precast concrete piles will be measured for payment on the basis of lengths along the axis of the pile in place below the cut-off elevation. The cut-off portion of any pile will be measured for payment on the basis of the difference between the length specified and the length driven below cut-off elevation. Pile and cut-off lengths will be measured to the nearest tenth of a foot.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement or payment is not specified shall be considered as incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT

1. Driven Piles. Payment for each concrete pile acceptably driven will be made at the contract price per linear foot for "Piling, Concrete, Precast, Prestressed, 12-inch", which price shall include all costs incidental to furnishing, predrilling, driving, jetting, backdriving, cutting off and inspecting the concrete piles.

2. Cutoffs. Payment will be made for the measured cutoff portion of any concrete pile at the rate of 50 percent of the contract unit price for furnishing and driving the pile and no other payment will be made for such cutoff.

3. Pulled Piles

   a. Each concrete pile pulled at the direction of the Engineer for inspection and found to be in good condition will be paid for at the contract unit price for furnishing and

driving the pile in its original driven position, plus 50% of the contract unit price for furnishing, driving and pulling. Payment for pulled pile shall include backfilling the pile hole with tremie placed concrete, if required. Undamaged pulled piles when redriven acceptably will be paid for at 50 percent of the contract unit price for furnishing and driving the measured length of piles redriven, which price shall constitute payment for redriving only (the cost of furnishing, driving and pulling the piles have been paid for as specified above).

b. When a pile is pulled for inspection and found to be damaged due to Contractor negligence, no payment will be made for originally furnishing and driving such pile or for the operation of pulling. Said pile shall be replaced by a new pile which will be paid for at the contract unit price for the length acceptably driven.

c. When a pile is driven, but not acceptably placed or driven out of alignment and pulled at the direction of the Engineer, no payment will be made for either originally furnishing and driving such pile or for the operation of pulling. If the pile is undamaged and it is acceptably redriven at the direction of the Engineer, it will then be paid for at the contract unit price.

Payment will be made under:

Pay Item No. 6: Piling, Concrete, Precast, Prestressed, 12 inch square - per Linear Foot.

END OF SECTION

SECTION 6A

FORMWORK

PART 6A-1 - GENERAL

A. RELATED WORK SPECIFIED ELSEWHERE.

1. Structural Sitecast Concrete: Section 6D.

2. Reinforcing Steel. Section 6B.

3. Expansion and Construction Joints: Section 6C.

B. REFERENCE STANDARDS

1. American Concrete Institute (ACI) Standards, Current Editions.

ACI 347 Recommended Practice for Concrete Formwork

2. U.S. Department of Commerce , National Bureau of Standards (NBS) Product Standard.

PS 1-74 For Construction and Industrial Plywood

C. SUBMITTALS.

1. Shop Drawings. Formwork drawings which show the plan for joining of facing panels and details shall be submitted for review where formwork is required to produce Class A finish, or as otherwise indicated on the drawings.

PART 6A-2 - PRODUCTS

A. DESIGN.

The design and engineering of the formwork , as well as its construction, shall be the responsibility of the Contractor. The formwork shall be designed for loads, lateral pressure and allowable stresses in accordance with Chapter 2 of ACI Standard 347. Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of the concrete and shall have sufficient rigidity to maintain specified tolerances. For Class A finish, the design shall be made to limit deflection of facing material between studs as well as deflection of studs and walers to 0.0025 times the span.

B. MATERIALS.

1. Forms shall be fabricated with facing materials that produce the specified construction tolerance requirements of paragraph 6D-1.D.2 and the surface requirements of paragraph 6D-1.D.3.

a. Class "A" Finish. This class of finish shall apply to I-walls, T-walls and to all exterior form surfaces not covered by backfill. The form facing material shall be composed of new, well-matched tongue and groove lumber or new plywood panels conforming to NBS Product Standard PS-1, Concrete Form, Class I, Grade B Plyform, High Density Overlay, Exterior Type or Structural I, Grade B Plywood, High Density Overlay, all Exterior Type. The Grade B side shall face the concrete.

b. Class "D" Finish. This class of finish shall apply to all unexposed surfaces. The sheathing may be of wood or steel.

2. Form Accessories. Ties and other similar form accessories to be partially or wholly embedded in the concrete shall be of a commercially manufactured type. After the ends or end fasteners have been removed, the embedded portion of metal ties shall terminate not less than 2-inches from any concrete surface either exposed to view or exposed water. Plastic snap ties may be used in locations where the surface will not be exposed to view. Form ties shall be constructed so that the ends or end fasteners can be removed without spalling the concrete.

3. Form Coating shall be a commercial formulation of satisfactory and proven performance that will not bond with, stain or adversely affect concrete surfaces and will not impair subsequent treatment of concrete surfaces depending upon bond or adhesion nor impede the wetting of surfaces to be cured with water or curing compounds.

PART 6A-3 - EXECUTION

A. INSTALLATION.

Forms shall be mortar tight, properly aligned and adequately supported to produce concrete surfaces meeting the surface requirements of paragraph 6D-1.D.3 and conforming to construction tolerance of paragraph 6D-1.D.2. Where concrete surfaces are to be permanently exposed to view, joints in form panels shall be arranged to provide a pleasing appearance. Where forms for continuous surfaces are placed in successive units, care shall be taken to fit the forms over the completed surface so as to obtain accurate alignment of the surface and to prevent leakage of mortar. Forms shall not be re-used if there is any evidence of surface wear and tear or defects which would impair the quality of the surface. All surfaces of forms and embedded materials shall be cleaned of any mortar from previous concreting and of all other foreign material before concrete is placed in them.

B. CHAMFERING.

All exposed joints, edges and external corners shall be chamfered by molding placed in the forms unless the drawings specifically state that chamfering is to be omitted or as otherwise specified. Chamfered joints shall not be permitted where earth or rockfill is placed in contact with concrete surfaces. Chamfered joints shall be terminated a sufficient distance outside the limit of the earth or rockfill so that the end of the joints will be clearly visible.

C. COATING.

Forms for exposed or painted surfaces shall be coated with form oil or a form-release agent before the form or reinforcement is placed in final position. The coating shall be used as recommended in the manufacturer's printed or written instructions. Forms for unexposed surfaces may be wet with water in lieu of coating immediately before placing concrete; except that in cold weather with probable freezing temperatures, coating shall be mandatory. Surplus coating on form surfaces and coating on reinforcing steel and construction joints shall be removed before placing concrete.

D. REMOVAL.

Forms shall not be removed without approval, and all removal shall be accomplished in a manner which will prevent injury to the concrete. Forms shall not be removed before the expiration of the minimum time indicated below, except as otherwise directed or specifically authorized. When conditions of the work are such as to justify the requirements, forms will be required to remain in place for a longer period.

1. Unsupported Concrete. Formwork for walls, columns, sides of beams, gravity structures and other vertical type forms not supporting the weight of concrete shall not be removed in less than 24 hours. The time depends on temperature, lift heights and type and amount of cementitious material in the concrete.

E. SURFACE REQUIREMENTS.

Allowable tolerances in the structure for each class of finish caused by offsets resulting from displaced, misplaced or mismatched forms or sheating or loose knots in sheathing, or other similar form defects shall be as specified in paragraph 6D-1.D.3.

F. FIELD QUALITY CONTROL.

Forms and embedded items, ties and other accessories as specified in paragraph 6A-2.B.2 shall be inspected in sufficient time prior to each concrete placement by the Contractor in order to

certify to the Engineer that they are ready to receive concrete. Inspection of forms shall include a detailed evaluation of leakage control methods, type and application of release agent, and form cleanliness to avoid dirt transfer to the concrete. The results of each inspection shall be reported in writing daily.

PART 6A-4 - MEASUREMENT AND PAYMENT

No separate payment will be made for formwork and all costs in connection therewith shall be included in the contract unit or lump sum prices for items of work to which the work is incidental.

END OF SECTION

SECTION 6B

REINFORCING STEEL

PART 6B-1 - GENERAL

A. SCOPE.

The work covered by this Section consists of furnishing all equipment, materials, techniques and labor for providing and placing steel bars, welded wire fabric and accessories for concrete reinforcement.

B. RELATED WORK SPECIFIED ELSEWHERE.

1. Formwork: Section 6A

2. Expansion and Construction Joints: Section 6C

3. Structural Sitecast Concrete: Section 6D

C. APPLICABLE PUBLICATIONS.

The following publications (current edition) of the issue 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. American Concrete Institute (ACI) Standards.

ACI 315-80 Details and Detailing of Concrete Reinforcement

ACI 315R-80 Manual of Engineering and Placing for Drawings Detailing Reinforced Concrete Structures

ACI 318 Building Code Requirements for Reinforced Concrete

2. American Society for Testing and Materials (ASTM Standards).

A 615 Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

E 8 Tension Testing of Metallic Materials

D. QUALITY CONTROL.

1. Materials Tests. The Contractor shall have required material tests performed by an approved laboratory to demonstrate that the materials are in conformance with the specifications. Tension tests shall be performed on full cross section specimens in accordance with ASTM E 8, using a gage length that spans the extremities of specimens with welds or sleeves included. Tests shall be at the Contractor's expense.

2. General. The Contractor shall establish and maintain quality control for proper installation of all work covered in this section to assure compliance with contract specifications and maintain records of his quality control for all construction operations including but not limited to the following:

   A. Minimum concrete cover of reinforcement steel.

   B. Number, size, and location of placement.

   C. Maintain adequate splicing lengths where required.

3. Reporting. The original and two copies of these records and tests, as well as the records of corrective action taken, shall be furnished the Engineer daily.

E. SUBMITTALS.

1. Shop Drawings. The Contractor shall prepare and submit complete shop drawings to the Engineer for approval in accordance with specified requirements. Shop drawings shall include the following:

   A. Reinforcement steel schedules complete with the quantity, shape and size, dimensions, and bending details.

   B. Details of bar supports including types, sizes, spacing and sequence.

2. Test Reports. Certified test reports of reinforcement steel showing that the steel complies with the applicable specifications shall be submitted to the Engineer by the Contractor. Reports shall be furnished for each steel shipment and shall be identified with specific lots prior to use of the steel in the work.

3. Disposition Records. A system of identification which shows the disposition of specific lots of approved test materials in the work shall be established and submitted to the Engineer before completion of the contract.

PART 6B-2 - PRODUCTS

A. MATERIALS.

1. Reinforcing Steel.

   a. Billet-Steel Bars shall conform to ASTM A 615, Grade 40 for bar sizes 3 through 11, including the following requirements:

      1) Tension test specimens shall be bars of full cross section as rolled for all sizes.

2) The bend test requirements shall be based upon 180 degree bends of full size bars for all grades of steel. The bend diameters for bend tests shall be as indicated in the following table and shall be measured on the inside of bars:

Bar Size	Maximum Diameter
#3, #4 and #5	4 bar diameters
#6, #7 and #8	5 bar diameters
#9, #10 and #11	5 bar diameters

Note: Grade 60 bars may be substituted on a one to one basis at no additional cost to the Owner.

2. Reinforcing Steel Accessories.

a. Bar Supports shall conform to ACI 315 or ACI 315R. Bar supports for formed surfaces exposed to view or to be painted shall be plastic protected wire, stainless steel or precast concrete supports. Precast concrete bar supports shall be wedge-shaped, not larger than 3-1/2 x 3-1/2 inches, of thickness equal to that indicated for concrete cover and shall have an embedded hooked tie wire for anchorage. If formed surface is exposed to view, the precast concrete bar support shall be the same quality, texture and color as the finished surface.

b. Wire Ties shall be 16-gage or heavier black annealed wire.

PART 6B-3 - EXECUTION

A. INSTALLATION.

Reinforcement steel and accessories shall be installed or placed as specified, as shown on contract and as approved on shop drawings. Placement details of reinforcement and accessories not specified or shown on drawings shall be in accordance with ACI 315, ACI 315R-80, or ACI 318. Reinforcement shall be fabricated to shapes and dimensions shown, placed where indicated within the specified tolerance and adequately supported during concrete placement. At the time of concrete placement all reinforcement 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.

1. Hooks and Bends. Reinforcement bars may be mill or field bent. All bars shall be bent cold unless otherwise authorized. No bar partially embedded in concrete shall be field bent unless indicated on the drawings or otherwise authorized. All hooks or bends shall be in accordance with ACI 318.

2. Placing Tolerances.

a. Spacing of Bars. Bars shall be spaced as indicated on the drawings or as otherwise directed. The spacing between adjacent bars and the distance between layers may not vary from the indicated position by more than one bar diameter nor more than one inch, whichever is less.

b. Concrete Cover. The minimum and maximum concrete cover of main reinforcement steel shall be as indicated on the drawings. The concrete tolerances shall be as follows:

Minimum Cover	Maximum Cover
6"	6-1/2"
4"	4-3/8"
3"	3-3/8"
2-1/2"	2-3/4"
2"	2-1/4"
1-1/2"	1-3/4"
1"	1-1/8"
3/4"	7/8"

3. Splicing. Splices in reinforcement steel shall be as specified, shown on the drawings or as directed by the Engineer. Bars may be spliced at alternate or additional locations at no additional cost to the Owner, subject to the approval of the Engineer. except as provided herein, all splicing procedures and the requirements of ACI 318.

a. Lapped Splices shall be used only for bars smaller than size #14. Bar laps may be placed in contact and securely tied or may be spaced transversely apart to permit the embedment of the entire surface of each bar in concrete, but shall not be spaced farther apart than one-fifth the required length of lap nor 6-inches. Lengths of laps for bars shall conform to the requirements of ACI 318, except when otherwise shown on the drawings.

6B-4 - MEASUREMENT AND PAYMENT.

No separate payment will be made for bars and accessories and all costs in connection therewith shall be included in the contract unit or lump sum prices for items of work to which the work is incidental.

END OF SECTION

SECTION 6C

EXPANSION AND CONSTRUCTION JOINTS

PART 6C-1 - GENERAL

A. SCOPE.

This section covers the materials, techniques and workmanship requirements for forming expansion and construction joints in concrete structures.

B. RELATED WORK SPECIFIED ELSEWHERE.

1. Structural Sitecast Concrete: Section 6D

C. APPLICABLE PUBLICATIONS.

The following publication (current edition) 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. American Society of Testing and Materials (ASTM) Standards. (With corresponding U.S. Army Corps of Engineers Handbook for Concrete and Cement (CRD) Specifications where indicated.)

D 1751 (CRD-C 508)	Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)
D 1752 (CRD-C 500)	Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

2. U.S. Army Corps of Engineers Handbook for Concrete and Cement (CRD) Specifications.

CRD-C 513	Rubber Waterstops
CRD-C 572	Polyvinylchloride Waterstops

D. QUALITY ASSURANCE.

1. Materials Tests.

a. Non-Metallic Waterstops. Samples of materials and splices as required in paragraph 6C-1.E.2 below shall be visually inspected and tested by and at the expense of the Owner for compliance with CRD-C 513 or CRD-C 572, as applicable. If a sample fails to meet the specification requirements, new samples shall be provided and the cost of retesting will be deducted from payments due the Contractor at the rate of $650.00 per material sample retested and $100.00 per splice sample retested.

2. Qualifications of Splicing Procedures for Waterstops. Procedures for splicing waterstops shall be submitted to the Engineer for approval.

   a. Non-Metallic Waterstops. Procedure and performance qualifications for splicing non-metallic waterstops shall be demonstrated by the manufacturer at the factory and the Contractor at the job site by each making three splice samples of each size and type of finished waterstops for inspection and testing.

E. SUBMITTALS.

1. Test Reports. Certified manufacturer's test reports shall be provided for premolded expansion-joint filler strips, compression seals and lubricant, and waterstops to verify compliance with the applicable specifications.

2. Samples. The Contractor shall supply waterstop materials and splice samples for inspection and testing and shall identify so as to indicate manufacturer, type of material, size and quantity of material and shipment represented. Each materials sample shall be a piece not less than 12 inches long cut from each 200 feet of finished waterstop furnished, but not less than a total of four linear feet of each type and size furnished. For splices made in factory and every 10 splices made at the job site shall be furnished for inspection and testing. The splice samples shall be made using straight run pieces with the splice located at the mid-length of the sample and finished as required for the installed waterstop. The total length of each splice sample shall be not less than 12 inches long. Test samples shall be furnished at least 60 days prior to the installation of waterstops in the work.

PART 6C-2 - PRODUCTS

A. MATERIALS.

1. Expansion Joint Filler Strips, Premolded shall conform to ASTM D 1751 or ASTM D 1752, Type I or resin impregnated fiberboard conforming to the physical requirements of ASTM D 1752.

2. Waterstops - Non-Metallic. Rubber waterstops shall conform to CRD-C 513. Polyvinylchloride waterstops shall conform to CRD-C 572.

3. Plastic Sealant. This sealant shall conform to the applicable provisions of Federal Specification SS-S-02210 "Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints".

PART 6C-3 - EXECUTION

A. INSTALLATION.

Joint locations and details, including materials and methods of installation of joint fillers and waterstops, shall be as specified, shown on the drawings and as directed. In no case shall any fixed metal be continuous through an expansion joint.

1. Expansion Joints. Premolded filler strips shall be accurately positioned and secured against displacement to clean, smooth concrete surfaces. Materials used to secure premolded fillers to concrete shall not harm the concrete. The groove shall be thoroughly cleaned of all laitence, curing compound, foreign materials, protrusions of hardened concrete or any dust which shall be blown out of the groove with oil-free compressed air.

2. Waterstops shall be installed in joints as shown on the drawings or otherwise directed. Waterstops shall be carefully and correctly positioned during installation to eliminate faulty installation that may result in joint leakage. All waterstops shall be installed so as to form a continuous watertight diaphragm in each joint. Adequate provision shall be made to support and protect the waterstops during the process of work. Any waterstop puncture or damage shall be replaced or repaired at the Contractor's expense. The concrete shall be thoroughly consolidated in the vicinity of the waterstop. Suitable guards shall be provided to protect exposed projecting edges and ends of partially embedded waterstops from damage when concrete placement has been discontinued.

   a. Splices. Joints in waterstops shall be spliced together using the approved splicing procedures to form a continuous watertight diaphragm.

      1) Non-Metallic Waterstops. All splices shall be made on a bench in a temporary shop provided at the site of the installation or at the manufacturer's plant. A miter guide and portable power saw shall be used to cut the ends to be joined to insure good alignment and contact between joined surfaces. The continuity of the characteristic features of the cross section of the waterstop shall be maintained across the splice.

      2) Rubber Waterstops. Splices shall be vulcanized in accordance with the manufacturer's recommendations.

      3) Polyvinylchloride Waterstops. Splices shall be made by heat sealing the adjacent surfaces in accordance with manufacturer's written recommendations. A thermostatically controlled electric source of heat

shall be used to make all splices. The correct temperature at which splices should be made should be sufficient to melt but not char the plastic. Waterstops shall be reformed at splices with a remolding iron with ribs or corrugations to match the pattern of the waterstop. The spliced area, when cooled and bent by hand in as sharp an angle as possible, shall show no sign of separation.

PART 6C-4 MEASUREMENT AND PAYMENT.

No separate payment will be made for expansion joints, waterstops or the expansion joints filler, and all costs in connection therewith shall be included in the contract unit or lump sum prices for items of work to which the work is incidental.

END OF SECTION

SECTION 6D

STRUCTURAL SITECAST CONCRETE

PART 6D-1 - GENERAL

A. RELATED WORK SPECIFIED ELSEWHERE.

1. Expansion and Construction Joints in Concrete - Section 6C.

2. Reinforcing Steel - Section 6B.

3. Formwork for Concrete. Section 6A

B. REFERENCE STANDARDS (Current Edition).

1. American Concrete Institute (ACI) Standards.

ACI 116R	Cement and Concrete Terminology
ACI 211 (CRD-C99)	Recommended Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete
ACI 304.2R	Placing Concrete By Pumping Methods
ACI 305R	Hot Weather Concreting

2. American Society for Testing and Materials (ASTM) with Corresponding CRD Standard Indicated where Available.

C 29-78 (CRD-C 106)	Unit Weight and Voids in Aggregate
C 31 (CRD-C 11)	Making and Curing Concrete Test Specimens in the Field
C 33 (CRD-C 133)	Concrete Aggregates
C 39 (CRD-C 14)	Compressive Strength of Cylindrical Concrete Specimens
C 70 (CRD-C 111)	Surface Moisture of Fine Aggregate
C 94 (CRD-C 31)	Ready-Mixed Concrete
C 127-84 (CRD-C 107)	Specific Gravity and Absorption of Coarse Aggregate
C 128-84 (CRD-C 108)	Specific Gravity and Absorption of Fine Aggregate
C 136 (CRD-C 103)	Sieve Analysis of Fine and Coarse Aggregates

C 143 (CRD-C 5)	Slump of Portland Cement Concrete
C 150 (CRD-C 201)	Portland Cement
C 171-69 (CRD-C 310)	Sheet Materials for Curing Concrete
C 172 (CRD-C 4)	Sampling Fresh Concrete
C 192 (CRD-C 10)	Making and Curing Concrete Test Specimens in the Laboratory
C 231 (CRD-C 41)	Air Content of Freshly Mixed Concrete by the Pressure Method
C 260 (CRD-C 13)	Air Entraining Admixture for Concrete
C 494 (CRD-C 87)	Chemical Admixture for Concrete
C 566 (CRD-C 113)	Total Moisture Content of Aggregate by Drying
C 595 (CRD-C 203	Blended Hydraulic Cements
C 618 (CRD-C 255)	Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Portland Cement Concrete
D 75 (CRD-C 155)	Sampling Aggregates
E 329 (CRD-C 500)	Inspection and Testing Agencies for Concrete, Steel and Bituminous Materials as Used in Construction

3. Concrete Plant Manufacturer's Bureau (CPMB). 6th Edition (CRD-C 95) Concrete Plant Standards (Revised 1 December 1977).

4. National Bureau of Standards (NBS) Handbook.

   44 Specifications, Tolerance and Other Technical Requirements for Commercial Weighing and Measuring Devices (4th Edition, 1971, with Replacement Sheets).

5. U.S. Army Corps of Engineers Handbook for Cement and Concrete (CRD).

CRD-C 94	Surface Retarders
CRD-C 100	Sampling Concrete Aggregate and Aggregate Sources and Selection of Material for Testing
CRD-C 104	Calculation of Fineness Modules of Aggregate
CRD-C 112	Surface Moisture in Aggregate by Water Displacement

CRD-C 143 Meters for Automatic Indication of Moisture in Fine Aggregate

CRD-C 300-77 Membrane-Forming Compounds for Curing Concrete

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

CRD-C 521 Frequency and Amplitude of Vibrators for Concrete

CRD-C 621 Non-Shrink Grout

6. Louisiana Standard Specifications for Roads and Bridges, State of Louisiana Department of Transportation and Development (LDOTD).

1003.2 Aggregate for Portland Cement Concrete and Mortar

7. Federal Specifications

A-A-1555 Paint, Powder (Cementitious, White and Colors)

C. QUALITY ASSURANCE.

1. Preconstruction Sampling and Testing.

a. Aggregates. The aggregate sources listed in Division 1-A, paragraph 1A-22 have been determined to be capable of producing materials of a quality acceptable for this project. Proposed materials produced from similar strata, or of similar quality will be approved. If the Contractor proposes to furnish aggregates from a source not listed in paragraph 1A-22, samples consisting of not less than 500 pounds of each size coarse aggregate and 300 pounds of fine aggregate taken in accordance with CRD-C 100 shall be delivered to the Owner's testing laboratory within 15 days after Notice to Proceed. Sampling and shipping of samples shall be at the Contractor's expense. Testing by and at the expense of the Owner will be in accordance with the applicable CRD or ASTM test methods. Tests to which aggregate may be subjected are specific gravity, absorption, freezing-and-thawing in concrete, alkali-aggregate reaction, organic impurities, and other tests that are necessary to demonstrate that the aggregate is of quality which is at least equivalent to those listed in paragraph 1A-22. Information pertaining to concrete aggregates shall include current quarry company name; past quarry company name(s) if any; nearest town; types and approximate quantities of materials to be used; quarry phone number; quarry representative to contact about sampling; and directions to the quarry (and office if at a different location) including a detailed map and/or written directions.

b. Cementitious Materials, Admixtures, Curing Compound. In advance of concrete placement the Contractor shall notify the Engineer of the source of materials, along with sampling location, brand name, type and quantity to be used in the manufacture and/or curing of the concrete.

c. Air-Entraining Admixture or Other Chemical Admixtures which have been in storage at the project site for longer than 6 months or which have been subjected to freezing will be retested at the expense of the Contractor and the results reported to the Engineer at least one week before use. The admixture shall be rejected if test results indicate noncompliance with 6D-2.A.3.

d. Water Reducing and Retarding Admixtures will be accepted based on compliance with applicable specification requirements, except that 6-month and 1-year compressive strength requirements are waived.

2. Construction Testing by Owner. The Owner selected Testing Laboratory shall sample and test aggregates and concrete to determine compliance with the specifications. The Contractor shall provide facilities and labor as may be necessary for procurement of representative test samples. Samples of aggregates will be obtained at the point of batching in accordance with ASTM D 75. Concrete will be sampled in accordance with ASTM C 172. Slump and air content will be determined in accordance with ASTM C 143 and C 231, respectively. Compression test specimens will be made and cured in accordance with ASTM C 31 and compression test specimens tested in accordance with ASTM C 39. Samples for strength tests of each class of concrete placed each day will be taken not less than once each day, nor less than once for each 150 cubic yards of concrete placed. Three specimens will be made from each sample; two will be tested at 28 days (90 days for concrete with pozzolan) for acceptance and one will be tested at 7 days for information. Acceptance will be based on the average of the compressive strengths of the specimens tested at 28 days (90 days for concrete with pozzolan).

D. EVALUATION AND ACCEPTANCE.

1. Concrete Strength. The strength of the concrete will be considered satisfactory so long as the average of all sets of three consecutive test results equal or exceed the required specified strength f'c and no individual test result falls below the specified strength f'c by more than 500 pounds per square inch. Additional analysis or testing may be required at the Contractor's expense when the strength of the concrete in the structure is considered potentially deficient. Concrete work judged inadequate shall be reinforced with additional construction as directed by the Engineer or shall be replaced at the Contractors expense.

2. Construction Tolerances. Variation in alignment, grade and dimensions of the structures from the established alignment, grade and dimensions shown on the drawings shall be within the tolerances specified in the following table:

TABLE 1

CONSTRUCTION TOLERANCES FOR REINFORCED CONCRETE STRUCTURES

(1)	Variations from the plumb:	
	a. In the lines and surfaces of columns piers, walls, and in arrises	In any 10 feet of length - 1/4-inch Maximum for entire length- 1-inch
	b. For exposed corner columns, control-joint grooves, and other conspicuous lines	In any 20 feet of length - 1/4-inch Maximum for entire length- 1/2-inch
(2)	Variation from the level or from the grades indicated on the drawings:	In any 10 feet of length - 1/4-inch In any 20 feet of length - 3/8-inch
	a. In slabs and in arrises	Maximum for entire length 3/4-inch
(3)	Variation of the linear wall lines from established position in plan	In any 20 feet - 1/2-inch Maximum - 1-inch
(4)	Variation in the sizes and location of sleeves, and wall openings	Minus - 1/4-inch Plus - 1/2-inch
(5)	Variation in cross-sectional dimensions of columns, and beams and in the thickness of slabs and walls	Minus - 1/4-inch Plus - 1/2-inch
(6)	Footing:	
	a. Variation in dimensions in plan	Minus - 1/2-inch Plus - 2-inch when formed or plus 3-inches when placed against unformed excavation
	b. Misplacement of eccentricity	2 percent of the footing width in the direction of misplacement but no more than - 2-inches
	c. Reduction in thickness	Minus-5 percent of specified thickness

3. Surface Requirements. The surface requirements for the classes of finish required by Section 6A, Formwork, paragraph 6A-2.B.1, shall be as hereinafter specified. Allowable irregularities are designated "abrupt" or "gradual" for purpose of providing for surface variations. Offsets resulting from displaced, misplaced or mismatched forms, or sheathing, or by loose knots in sheathing, or other similar form defects, shall be from warping, unplaneness or similar variations from planeness, or true curvature, shall be considered "gradual" irregularities. "Gradual" irregularities will be checked for compliance with the prescribed limits with a 5-ft. template, consisting of a straightedge for plane surfaces and a shaped template for curved or warped surfaces. In measuring irregularities, the straightedge or template may be placed anywhere on the surface in any direction, with the testing edge held parallel to the intended surface.

Class of Finish	Irregularities (Max. Allowable)	
	Abrupt, inches	Gradual, inches
A	1/8	1/4
D	1	1

4. Appearance. Permanently exposed surfaces shall be cleaned, if stained or otherwise discolored, by a method which does not harm the concrete and which is approved by the Engineer.

E. SUBMITTALS.

1. Test Reports.

a. Concrete mixture proportions shall be determined by the Contractor and submitted for approval. The proportions of all ingredients and nominal maximum coarse aggregate size that will be used in the manufacture of each quality of concrete shall be stated. Proportions shall indicate weight of cement, pozzolan, water and weights of aggregates in a saturated surface-dry condition. Admixture quantities per cubic yard shall also be reported. The submission shall be accompanied by test reports for a laboratory complying with ASTM E 329 which show that proportions thus selected will produce concrete of qualities indicated. Concrete compression strength results submitted shall include specific gravity and absorption of fine and coarse aggregates determined by ASTM C 128 and ASTM C 127, respectively; slump; air content and concrete temperature. The submission shall provide information specified in paragraph 6D-2.B. No substitution shall be made in the source or type of materials used in the work without additional tests

to show that the new materials and quality of concrete are satisfactory.

b. Cement and pozzolan will be accepted on the basis of manufacturer's certification of compliance, accompanied by mill test reports that materials meet the requirements of the specification under which is furnished. Certification and mill test reports shall be from current production and shall be representative of the particular lot furnished. No cement or pozzolan shall be used until notice of acceptance has been given by the Engineer. Cement and pozzolan will be subject to check testing from samples obtained at the mill, at transfer points or at the project site, as scheduled by the Engineer, and such sampling will be by or under the supervision of the Owner at its expense. Material not meeting specifications shall be promptly removed from the site of work.

c. Ground iron blast furnace slag will be accepted on the basis of manufacturer's certification of compliance, accompanied by mill test reports that the materials meet the requirements of the specification under which it is furnished. Certification and mill test reports shall identify the particular lot furnished. No ground iron blast furnace slag shall be used until notice of acceptance has been given by the Engineer. Ground iron blast furnace slag will be subject to check testing from samples obtained at the mill, at transfer points or at the project site, as scheduled by the Engineer, and such sampling will be by or under the supervision of the Owner at its expense. Material not meeting specifications shall be promptly removed from the site of work.

d. Aggregates. Test reports of aggregates shall be submitted from a laboratory complying with ASTM E 329. Tests to be conducted shall be those required to demonstrate that the aggregate conforms to the requirements of 6D-2.A.2. Gradation tests submitted for fine aggregate shall include the No. 8 and No. 30 sieve sizes. No aggregate shall be used until notice of acceptance has been given by the Engineer.

e. Non-shrink Grout

General. Descriptive literature of the grout proposed for use shall be furnished together with a certificate from the manufacturer stating that it is suitable for the application or exposure for which it is being considered. In addition, a detailed plan shall be submitted for approval, showing equipment and procedures proposed for use in mixing and placing the grout.

Prepackaged Material requiring only the addition of water will be accepted on the basis of certified laboratory test

results showing that the material meets the requirements of CRD-C 621. When fine aggregate is to be added, the Contractor shall also furnish for approval the design mix proportions together with certified copies of laboratory test results indicating that the mix is in conformance with the requirements of CRD-C 621.

Mixture Proportions using a volume-change controlling ingredient shall be submitted for approval. The submittal shall include the design mix propositions of all ingredients and certified copies of laboratory test results indicating that the materials and the mix is in conformance with the requirements of CRD-C 621.

2. Manufacturer's Certificate.

   a. Impervious sheet curing materials shall be certified for compliance with all specification requirements.

   b. Air-entraining admixture shall be certified for compliance with all specification requirements.

   c. Water-reducing admixture shall be certified for compliance with all specification requirements.

   d. Curing compound shall be certified for compliance with all specifications requirements.

   e. Retarding Admixture shall be certified for compliance with all specification requirements.

   f. High-Range Water-Reducing Admixture shall be certified for compliance with all specification requirements.

3. Review of Plant, Equipment and Methods.

   a. Batch Plant. Details of the data on concrete plant shall be submitted for review by the Engineer for conformance with paragraph 6D-3.A.1 and paragraph 6D-3.A.2.

   b. Mixers. The make, type and capacity of concrete mixers proposed for mixing concrete shall be submitted for review by the Engineer for conformance with paragraph 6D-3.A.1 and paragraph 6D-3.A.3. The results of the initial mixer uniformity tests as required in paragraph paragraph 6D-3.G.2.1 shall be submitted within five days of the initiation of placing.

   c. Conveying Equipment. The methods and equipment for transporting, handling, and depositing the concrete shall be submitted for review by the Engineer for conformance with paragraph 6D-3.B.

d. Placing. All placing equipment and methods shall be submitted for review by the Engineer for conformance with paragraph 6D-3.D.

e. Joint Clean-up. The method and equipment proposed for joint clean-up shall be submitted for review by the Engineer for conformance with paragraph 6D-3.C.3.

f. Curing. The curing medium, equipment and methods to be used shall be submitted for review by the Engineer for conformance with paragraph 6D-3.F.

g. Cold-weather Requirements. If concrete is to be placed under cold weather conditions, the proposed materials, methods and protection shall be in accordance with the requirements of paragraph 6D-3.D.3 and paragraph 6D-3.F.4 for approval by the Engineer.

h. Hot-weather Requirements. If concrete is to be placed under hot weather conditions, the materials and methods shall be in accordance with the requirements of paragraph 6D-3.D.4 for approval by the Engineer.

PART 6D-2 - PRODUCTS

A. MATERIALS.

1. Cementitious Materials shall be portland cement, portland blast-furnace slag cement, or portland-pozzolan cement or portland cement in combination with pozzolan or ground iron blast furnace slag and shall conform to the appropriate specifications listed below.

a. Portland Cement. ASTM C 150, Type I or Type II, including low alkali requirements of Table 1A and false set requirements of Table 2A, except that the maximum amount of C_3A in Type I cement shall be 15 percent including false set requirements.

b. Portland Blast-Furnace Slag Cement. ASTM C 595, Type I S. The portland cement or clinker shall meet the requirements of ASTM C 150 or low alkali cement.

c. Portland-Pozzolan Cement - ASTM C 595 Type IP. The portland cement or clinkers shall meet the requirements of ASTM C 150 for low alkali cement; the pozzolan shall meet the requirements of ASTM C 618 Table 1A, available alkali.

d. Pozzolan. Pozzolan shall conform to ASTM C 618 Class C or Class F, with the optional requirements of Table 2A.

e. Pozzolan-Modified Portland Cement. ASTM C 595 Type I (PM).

f. Slag-Modified Portland Cement shall conform to ASTM C 595 Type I (SM).

g. Portland Blast-Furnace Slag Cement shall conform to ASTM C 595 Type IS.

h. Ground Iron Blast Furnace Slag. Ground Iron Blast-Furnace Slag shall conform to ASTM C 989.

2. Aggregates shall be produced from the sources and under conditions described in paragraph 6D-1.C.1.a. Fine aggregate shall conform to the grading requirements of ASTM C 33 or Section 1003, paragraph 1003.02 (b) of Louisiana Department of Transportation and Development (LDOTD). Coarse aggregate shall conform to the grading requirements of ASTM C 33 or LDOTD 1003.02 (c) as shown in the following table:

OPTION			
1	2	3	4
ASTM #467 (1-1/2" NMS)	LDOTD Grade B (1-1/2" NMS)	ASTM #57 (1" NMS)	LDOTD Grade A (1" NMS)

Grading requirements of 3/4" NMS coarse aggregate shall conform to ASTM C 33 size No. 67. The nominal maximum size shall be as listed in paragraph 6D-2.B.2.

3. Admixtures to be used, when required or permitted shall conform to the appropriate specification listed below:

a. Air-Entraining Admixture. ASTM C 260.

b. Water-Reducing or Retarding Admixtures. ASTM C 494, Type A, B or D.

c. High Range Water-Reducer. ASTM C 494 Type F. The admixture may be used only when approved by the Engineer, such approval being contingent upon particular mixture control as described in the Contractor's Quality Control Plan.

4. Curing Materials.

a. Impervious Sheet Materials. ASTM C 171, type optional except polyethelene film, if used, shall be white opaque.

b. Membrane-Forming Curing Compound. CRD-C 300, pigmented or non-pigmented. Non-pigmented compound shall contain a fugitive dye.

5. Water for mixing and curing shall be fresh, clean, drinkable, and free of injurious amounts of oil, acid, salt, alkali, except that undrinkable water may be used if it meets the requirements of CRD-C 400.

6. Water Proofing materials shall be as specified in paragraph 6D-3.E.2.b.

7. Non-Shrink Grout shall conform to CRD-C 621. The type shall be expansive-cement.

B. MIXTURE PROPORTIONING.

1. General. For each portion of the structure, concrete mixture proportions shall be determined by the Contractor so that the following requirements contained herein are met. Where a concrete production facility has compressive test records, a standard deviation shall be established. Documentation that proposed concrete proportions produce the required average compressive strength, f_{cr}, determined in 6D-2.B.4 shall be based on previous field experience (6D-2.B.5.a) or laboratory trial batches (6D-2.B.5.b).

2. Concrete Properties.

a. Specified Specified Strength, f_c, shall be as follows:

Compressive Strength at 28* days, psi	Structure or Portion of Structure
2500	4" stabilization slab
3000	All other structures

*90 days if fly ash is used

b. Maximum Water-Cementitious Ratio shall be as follows:

Water-Cementitious Ratio, by wt.	Structure of Portion of Structure
0.64	4" stabilization slab
0.58	All other structures

c. Nominal Maximum size coarse aggregate shall be 1 or 1-1/2 inches except 3/4-inch nominal maximum size coarse aggregate shall be used when any of the following conditions exist: the narrowest dimension between sides of forms is less than 7-1/2 inches; the depth of the slab is less than 4-1/2 inches or when the minimum clear spacing between reinforcing or between reinforcing steel and sheet piling is less than 2 inches. The nominal maximum size aggregate (NMSA) and the maximum size aggregate (MSA) shall be as defined in ACI 116R.

d. Air Content as determined by ASTM C 231 shall be between 4 and 7 percent except that when the nominal maximum size coarse aggregate is 3/4-inch it shall be between 5 and 7 percent.

e. Slump. The slump shall be determined in accordance with ASTM C-143 and shall be within the range of 1 to 4 inches. Where placement by pump is approved, the slump before pumping shall not exceed 6 inches and shall remain within a 3-inch band. Where the use of chemical admixtures conforming to ASTM C 494, Type F is approved, the slump shall not exceed 8 inches after the admixture is added.

f. Pozzolan Content. If pozzolan is to be used, it will be limited to a maximum of 25 percent by absolute volume of the total cementitious materials.

3. Determining Standard Deviation. Test records from which a standard deviation is calculated shall:

- represent materials, quality control procedures, and conditions similar to those expected at the proposed work;

- not be from a project where the allowable changes in materials and/or proportions were more restricted than for the proposed work;

- represent concrete produced to meet a specified strength or strengths, f'_c, within 1000 psi of that specified for the proposed work;

- consist of at least 30 consecutive tests or two groups of consecutive tests totaling at least 30 tests;

- be from different batches;

- be the average of strengths from two cylinders made from the same sample of concrete and tested at the age indicated in 6D-2.B.2.a; and

- be from concrete that was produced within one year of the time when concrete placement is expected to begin for the proposed work.

a. For 30 Test Records. Use an unmodified standard deviation and calculate f_{cr} as per 6D-2.B.4.a.

b. For 15 to 29 Test Records. Where a concrete production facility does not have 30 test records, but does have a record based on 15 to 29 consecutive tests, a modified standard deviation may be established as the product of the standard deviation based on 15 to 29 tests and a modification factor from the following table. Calculate f_{cr} as per 6D-2.B.4.a.

Number of Records*	Modification Factor for Standard Deviation
15	1.16
20	1.08
25	1.03
30 or more	1.00

*Interpolate for intermediate numbers of records.

c. For Less Than 15 Test Records. No standard deviation is needed. Calculation of f_{cr} shall be as per 6D-2.B.4.b.

4. Required Average Compressive Strength, f_{cr}. In meeting the strength requirements specified in 6D-2.B.2.a, the selected mixture proportions shall produce an f_{cr} exceeding f'_c as indicated below.

a. For 15 to 30 Records. If a standard deviation is calculated as per 6D-2.B.3 or 6D-2.B.3.a, f_{cr} shall be determined based on the value of f'_c and the standard deviation, s, as follows:

Standard Deviation	Required Average Strength, f_{cr} (psi)
≤505	$f'_c + 1.34\ S$
>505	$f'_c + 2.33\ S-500$

b. For Less Than 15 Records. When a concrete production facility does not have field strength test records for calculation of standard deviation, f_{cr} shall be determined based on the value of f'_c as follows:

Specified Strength, f'_c (psi)	Required Average Strength, f'_{cr} (psi)
<3000	$f'_c + 1000$
3000 - 5000	$f'_c + 1200$
>5000	$f'_c + 1400$

5. Documenting Average Strength.

a. Field Experience. Required average strength, f_{cr}, can be documented by field experience if compressive strength test records consisting of not less than 10 consecutive tests and encompassing a period of not less than 60 days are used. Test records shall represent similar materials to those proposed and similar conditions to those expected. Changes in materials, conditions and proportions within the test record shall not have been more closely restricted than those for the proposed work.

b. Laboratory Trial Batches. Samples of approved aggregates shall be obtained in accordance with the requirements of ASTM D 75. Samples of materials other than aggregate shall be representative of those proposed for the project and shall be accompanied by manufacturer's test reports indicating compliance with applicable specified requirements. Trial mixtures having proportions, consistencies and an air content suitable for the work shall be made based on ACI 211.1 (CRD-C 99), using at least three different water-cement ratios which will produce a range of strength encompassing those required for the work. The target water-cement ratios required in 6D-2.B.2.b will be converted to a weight equivalency as described in ACI 211.1. Trial mixtures shall be designed in accordance with the procedure in ACI 211.1, Chapter 5, using the absolute volume basis for determining the required amount of fine aggregate. Format for submittal of proportioning shall be in accordance with ACI 211.1, paragraph 6.3.7.2. The Contractor shall provide a copy of this section of the contract specifications entitled STRUCTURAL SITECAST CONCRETE to the laboratory that performs the concrete proportioning at least 60 days (120 days when pozzolan is used) prior to the date when the first concrete will be placed for this project. Representative samples for all concrete materials proposed for this project shall also be delivered to the laboratory that performs the concrete proportioning at least 60 days (120 days when pozzolan is used) in advance of the time when concrete placement is expected to begin for the project. When all of these materials have been delivered, the name, address and phone number of this laboratory and a list of the sources and types of all concrete materials shall be submitted to the Engineer. Trial mixtures shall be designed for maximum permitted slump and air content. The dry rodded weight per cubic foot of the coarse aggregate determined according to ASTM C 29 using the rodding procedure (para. 8), the fineness modulus of the fine aggregate determined according to CRD-C 104, the yield, and test results of concrete properties in 6D-2.B.2 shall be reported. For each water-cement ratio, at l east three test cylinders for each test age shall be made and cured in accordance with ASTM C 192. They shall be tested at 7 and 28 days (7, 28, and 90 days if pozzolan is used) in accordance with ASTM C39. From these test results a curve shall be plotted and submitted showing the relationship between water-cement ratio and design age strength.

PART 6D-3 - EXECUTION

A. PRODUCTION EQUIPMENT.

1. Capacity. The batching, mixing and placing equipment shall have a capacity of at least 30 cubic yards per hour.

2. Batching Plant shall conform to the requirements of the Concrete Plant Standards of CPMB and as specified herein; however, rating plates attached to batch plant equipment are not required.

   a. Equipment. The batching controls shall be semi-automatic or automatic. The semi-automatic batching system shall be provided with interlocks such that the discharge device cannot be actuated until the indicated material is within the applicable tolerances. The semi-automatic or automatic batching system shall be equipped within an accurate recorder or recorders which meet the requirement of the Concrete Plant Standards of CPMB. Separate bins or compartments shall be provided for each size group of aggregate, cement, pozzolan and slag. Aggregates shall be weighed either in separate weigh batchers with individual scales or cumulatively in one weigh batcher on one scale. Aggregate shall not be weighed in the same batcher with cement, pozzolan, or slag. If both cement and pozzolan or slag are used they may be batched cumulatively provided portland cement is batched first. If measured by weight, water shall not be weighted cumulatively with another ingredient. Water batcher filling and discharging valves shall be so interlocked that the discharge valve cannot be opened before the filling valve is fully closed. An accurate mechanical device for measuring and dispensing each admixture shall be provided. Each dispenser shall be interlocked with the batching and discharging operation of the water so that each admixture is separately batched and distribution throughout the batch in the specified mixing period. Where use of truck mixers make this requirement impracticable, the admixture dispensers shall be interlocked with the sand batcher. Admixtures shall not be combined prior to their introduction into water and sand. The plant shall be arranged so as to facilitate the inspection of all operations at all times. Suitable facilities shall be provided for obtaining representative samples of aggregates from each bin or compartment.

   b. Scales. The weighing equipment shall conform to the applicable requirements of NBS Handbook 44, except that the accuracy shall be plus or minus 0.2 percent of scale capacity. The Contractor shall provide standard test weights and any other auxiliary equipment required for checking the operating performance of each scale or other measuring devices. The tests shall be made at the frequency required in paragraph 6D-3.G.2.d and in the presence of the Engineer.

   c. Batching Tolerances.

      Weighting Tolerances. Whichever of the following tolerances is greater shall apply, based on required scale reading.

Material	Percent of Required Weight	Percent of Scale Capacity
Cementitious Materials	+1	+0.3
Aggregate	+2	+0.3
Water	+1	+0.3
Admixture	+3	+0.3

Volumetric Tolerances. For volumetric batching equipment the following tolerances shall apply to the required volume of material being batched:

Water: Plus or minus 1 percent.

Admixtures: Plus or minus 3 percent.

d. Moisture Control. The plant shall be capable of ready adjustment to compensate for the varying moisture contents of the aggregates, and to change the weights of the materials being batched. An electric moisture meter complying with the provisions of CRD-C 143 shall be provided and be operating for measuring of moisture in the fine aggregate. The sensing element shall be arranged so that measurement if made near the batcher charging gate of the sand bin or in the sand batcher.

3. Mixers.

a. General. The mixers shall not be charged in excess of the capacity recommended by the manufacturer. The mixers shall be operated at the drum or mixing blade speed designated on the manufacturer's data plate. The mixers shall be maintained in satisfactory operating condition, and the mixer drums shall be kept free of hardened concrete. Should any mixer at any time produce unsatisfactory results, its use shall be promptly discontinued until it is repaired.

b. Concrete plant mixers shall be tilting, non-tilting, horizontal shaft or vertical-shaft type and shall be provided with an acceptable device to lock the discharge mechanism until the required mixing time has elapsed. The mixing time and uniformity shall conform to all the paragraphs in ASTM C 94 applicable to central-mixed concrete.

c. Truck Mixers. Truck mixers, the mixing of concrete therein, and concrete uniformity, shall conform to the requirements of ASTM C-94. A truck mixer may be used either for complete mixing (transmit-mixed) or to finish the partial mixing done in a stationary mixer (shrink-mixed). Each truck shall be equipped with two counters from which it will be possible to determine the number of revolutions at mixing speed and the number of revolutions at agitating speed.

B. CONVEYING EQUIPMENT.

1. General. Concrete shall be conveyed from mixer to forms as rapidly as practicable and within the time interval in paragraph 6D-3.D.2 by methods which will prevent segregation or loss of ingredients. Any concrete transferred from one conveying device to another shall be passed through a hopper which is conical in shape and shall not be dropped vertically more than eight feet, except where suitable equipment if provided to prevent segregation and where specifically authorized. Telephonic or other satisfactory means of rapid communication between the mixing plant and the forms in which concrete is being placed shall be provided and available for use by the Engineer.

2. Buckets. The interior hopper slope shall be not less than 50 degrees from the horizontal, the minimum dimension of the clear gate opening shall be at least 5 times the nominal maximum size aggregate and the area of the gate opening shall be not less than two-square feet. The maximum dimension of the gate opening shall not be greater than twice the minimum dimension. The bucket gates shall be essentially grout tight when closed and may be manually, pneumatically or hydraulically operated except buckets larger than 2 cubic yards shall not be manually operated. The design of the bucket shall provide means for positive regulation of the amount and rate of deposit of concrete in each dumping station.

3. Transfer Hoppers. Concrete may be charged in non-agitating hoppers for transfer to other conveying devices. Transfer hoppers shall be capable of receiving concrete directly from delivery vehicles, and have conical-shaped discharge features. The machine shall be equipped with a hydraulically-operated gate and with a means of external vibration to effect complete and facile discharge. Concrete shall not be held in non-agitating transfer hoppers more than 30 minutes.

4. Trucks. Truck mixers operating at agitating speed or truck agitators used for transporting plant-mixed concrete shall conform to the requirements of ASTM C 94. Non-agitating equipment may be used for transporting plant mixed concrete over a smooth road when hauling time is less than 15 minutes. Bodies of non-agitating equipment shall be smooth, watertight, metal containers equipped with gates that will permit the discharge of the concrete.

5. Chutes. When concrete can be placed directly from a truck mixer, agitator or non-agitating equipment, the chutes attached to this equipment may be used. A discharge deflector shall be used when required by the Engineer. Separate chutes and other similar equipment will not be permitted for conveying concrete except when specifically approved.

6. Belt Conveyors. Belt conveyors may be used when approved. Such conveyors shall be designed and operated to assure uniform flow

of concrete from mixer to final place of deposit without segregation of ingredients or loss of mortar and shall be provided with positive means for preventing segregation of the concrete at the transfer points and the point of placing. Belt conveyors shall meet the additional requirements as follows: The idler spacing shall not exceed 36 inches. If concrete is to be placed through installed horizontal or sloping reinforcing bars the conveyor will discharge concrete into a pipe or elephant trunk which is long enough to extend through the reinforcing bars. In no case will concrete be discharged to free fall through the reinforcing bars.

7. Pump Placement. Concrete may be conveyed by positive displacement pump when approved. The pumping equipment shall be piston or squeeze pressure type. The pipeline shall be rigid steel pipe or heavy duty flexible hose. The inside diameter of the pipe shall be at least three times the nominal maximum size coarse aggregate in the concrete mixture to be pumped but not less than 4 inches. The maximum size coarse aggregate shall not be reduced to accommodate the pumps. The distance to be pumped shall not exceed limits recommended by the pump manufacturer. The concrete shall be supplied to the concrete pump continuously. When pumping is completed, concrete remaining in the pipeline shall be ejected without contamination of concrete in place. After each operation, equipment shall be thoroughly cleaned, and flushing water shall be wasted outside of the forms. Except for the above requirements, pump placement shall be in accordance with ACI 304.2R.

C. PREPARATION FOR PLACING.

1. Steel Sheet Piling and Embedded Items. Before placing concrete, care shall be taken to determine that all embedded items are firmly and securely fastened in place as indicated on the drawings, or required. Steel sheet piling and other embedded items shall be free of oil and other foreign matter such as loose coatings or rust, paint and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed. Voids in sleeves, inserts and anchor slots shall be filled temporarily with readily removable materials to prevent the entry of concrete into voids.

2. Concrete on Earth Foundations. Earth surfaces upon which concrete is to be placed shall be clean, damp, and free from frost, ice, and standing or running water. Prior to placing concrete the earth foundation shall have been compacted.

3. Construction Joint Treatment.

   a. General. Concrete surfaces to which other concrete is to be bonded shall be prepared for receiving the next lift or adjacent concrete by cleaning with either air-water cutting, sandblasting, high pressure water jet, or other approved method.

b. Cleaning.

Air-Water Cutting. Air-water cutting of a construction joint shall be performed at the proper time and only on horizontal construction joints. The surface shall be cut with an air-water jet to remove all laitance and to expose clean, sound fine aggregate, but not so as to undercut the edges of the larger particles of aggregate. The air pressure used in the jet shall be 100 psi plus or minus 10 psi and the water pressure shall be just sufficient to bring the water into effective influence of the air pressure. When approved by the Engineer, a retarder complying with the requirements of CRD-C 94 may be applied to the surface of the lift in order to prolong the period of time during which air-water cutting is effective. Prior to receiving approval, the Contractor shall furnish samples of the material to be used and shall demonstrate the method to be used in applications. After cutting, the surface shall be washed and rinsed as long as there is any trace of cloudiness of the wash water. The surface shall again be washed just prior to placing the succeeding lift. Where necessary to remove accumulated laitance, coatings, stains, debris, and other foreign material, sandblasting will be required as the last operation before placing the next lift.

High-Pressure Water Jet. A stream of water under a pressure of not less than 3000 psi may be used for cleaning. Its use shall be delayed until the concrete is sufficiently hard so that only the surface skin or mortar is removed and there is no undercutting of coarse aggregate particles. Where the cleaning occurs more than two days prior to placing the next lift or where work in the area subsequent to the cleaning causes dirt or debris to be deposited on the surface, the surface shall be cleaned again as the last operation prior to placing the next lift. If the water jet is incapable of a satisfactory cleaning, the surface shall be cleaned by sandblasting.

Sandblasting. When employed in the preparation of construction joints, sandblasting shall be performed as the final operation completed before placing the following list. The operation shall be continued until all accumulated laitance, coatings, stains, debris, and other foreign materials are removed. The surface of the concrete shall then be washed thoroughly to remove all loose materials. The surface shall again be washed just prior to placing the succeeding lift.

Waste Disposal. The method used in disposing of waste water employed in cutting, washing and rinsing of concrete surfaces shall be such that the waste water does not stain, discolor, or affect exposed surfaces of the structures, or

damage the environment of the project area. Method of disposal shall be subject to approval.

D. PLACING.

1. General. Concrete placement will not be permitted when, in the opinion of the Engineer, weather conditions prevent proper placement and consolidation. Concrete shall be deposited as close as possible to its final position in the forms, and in so depositing there shall be no vertical drop greater than eight feet except where suitable equipment is provided to prevent segregation and where specifically authorized. Depositing of the concrete shall be so regulated that it may be effectively consolidated in horizontal layers 1-1/2 feet or less in thickness with a minimum of lateral movement. The amount deposited in each location shall be that of construction joints shall be kept continuously wet for the first twelve hours during the twenty-four hour period prior to placing concrete. Free water shall be removed prior to placement of concrete. Sufficient placing capacity shall be provided so that concrete placement can be kept plastic and free of cold joints while concrete is being placed.

2. Time Interval Between Mixing and Placing. Concrete shall be placed within thirty minutes after discharge into non-agitating equipment. When concrete is truck mixed or when a truck mixer or agitator is used for transporting concrete mixed by a concrete plant mixer, the concrete shall be delivered to the site of work and discharge shall be completed within 1-1/2 hours after introduction of the cement to the aggregates. Concrete shall be placed within 15 minutes after it has been discharged from agitating equipment.

3. Cold-Weather Placing. Concrete shall not be placed without a procedure approved in accordance with paragraph 6D-1.E.3.g when the concrete is likely to be subjected to freezing temperatures before the expiration of the curing period. The ambient temperature of the space adjacent to the concrete placement and surfaces to receive concrete shall be maintained at not less than 32°F. The placing temperature of the concrete having a minimum dimension of 12 inches or less shall be between 60° and 75°F. The placing temperature of the concrete having a minimum dimension greater than 12 inches shall be between 50° and 75°F. Heating of the mixing water or aggregates will be required to regulate the concrete placing temperatures. Materials entering the mixer shall be free from ice, snow or frozen lumps.

4. Hot-Weather Placing. Concrete shall be properly placed and finished with approved procedures in accordance with paragraph 6D-1.E.3.h. The concrete placing temperature shall not exceed 90°F. Cooling of the mixing water and/or aggregates will be required to obtain an adequate placing temperature. An approved retarder will be used to facilitate placing and finishing when the placing temperature of the concrete reaches or exceeds 85°F.

Steel forms and reinforcement shall be cooled prior to concrete placement when steel temperatures are greater than 120°F. Conveying and placing equipment shall be cooled if necessary to maintain proper concrete placing temperature.

5. Consolidation. Immediately after placing, each layer of concrete shall be consolidated by internal vibrating equipment. Vibrators will not be used to transport concrete within the forms. Hands spading may be required if necessary with internal vibrating along formed surfaces permanently exposed to view. The vibrating equipment shall at all times be adequate in number of units and power to properly consolidate the concrete. A spare vibrator shall be kept on the job site during all concrete placing operations. Form or surface vibrators shall not be used unless specifically approved. Vibrators of the proper size, frequency and amplitude shall be used for the type of work being performed in conformance with the following requirements:

Application	Head Diameter (inches)	Frequency VPM (Min)	Amplitude (in.) (Min)
Thin walls, beams, etc.	1-1/4 - 2-1/2	9000-13500	0.02 - 0.04
General Const.	2 - 3-1/2	8000-12000	0.025 - 0.05

The frequency and amplitude shall be within the limits indicated in the table above when determined in accordance with paragraph 6D-3.G.2.i. The vibrator shall be inserted vertically at uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1-1/2 times the radius of action of the vibrator. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the preceding layer if such exists. It shall be held stationary until there is a general cessation in escape of large bubbles of entrapped air at the surface of the concrete (generally for 5 to 15 seconds) and then shall be withdrawn slowly at about 3 inches per second with an up and down type motion. A minimum of two vibrators shall be used in wall construction. One vibrator shall be used to level the mix. The second vibrator shall be used to consolidate the mass and minimize surface blemishes.

E. FINISHING.

1. Unformed Surfaces.

a. General. The ambient temperature of spaces adjacent to surfaces being finished shall be not less than 50°F. In hot weather when the rate of evaporation of surface moisture, as determined by use of Figure 2.1.5 of ACI 305, may reasonably be expected to exceed 0.2 pounds per square feet per hour, provision for windbreaks, shading, fog spraying, or wet 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.

b. General. All unformed surfaces that are not to be covered by additional concrete or backfill shall be finished to the elevation shown on the drawings. Surfaces to receive additional concrete or backfill shall have a float finish, unless a steel trowel finish is specified, and shall be true to the elevation shown on the drawings. Surfaces to receive additional concrete or backfill shall be brought to elevation shown on the drawings and left true and regular. Exterior surfaces shall be sloped for drainage unless shown on the drawing or as directed. Joints shall be carefully made with a jointing tool. The finished surfaces shall be protected from stains or abrasions.

c. Float Finish. Surfaces shall be screeded and darbied or bull-floated to bring the surface to the required finish level with no coarse aggregate visible. No water, cement or mortar shall be added to the surface during the finishing operation. The concrete, while still green but sufficiently hardened to bear a man's weight without deep imprint, shall be floated to a true and even plane. Floating may be performed by use of hand or power driven equipment. Hand floats shall be made of magnesium or aluminum. Tolerance for a floated finish shall be true plan within 5/16-inch in ten feet as determined by 10-foot straight edge placed anywhere on the slab in any direction.

d. Trowel Finish. A steel trowel finish shall be applied to the top surfaces of I-walls, T-walls and columns. Concrete surfaces shall be finished with a float finish and after surface moisture has disappeared, the surface shall be steel-troweled to a smooth, even, dense finish free from blemished including trowel marks. Tolerance shall be true planes within 5/16-inch in ten feet as determined by a 10-foot straight edge placed anywhere on the slab in any direction.

2. Formed Surfaces. After form removal, all fins and loose materials shall be removed. All voids, and honeycombs exceeding 1/2 inch in diameter and all tie rod holes permanently exposed to view shall be reamed or chipped and filled with dry pack mortar. Defective areas larger than 36 square inches in any surface, permanently exposed or not shall be delineated in a rectangular shape by a saw cut a minimum depth of 1-inch and repaired with concrete replacement. The cement used in the mortar or concrete for all surfaces permanently exposed to view shall be a blend of portland cement and white cement properly proportioned so that the final color when cured will be the same as adjacent concrete. Temperature of the concrete, ambient air, replacement concrete or mortar during remedial work including curing shall be above 50^{O}F. The prepared area shall be dampened, brush-coated with a neat cement grout or with an approved epoxy

resin, and filled with mortar or concrete. The mortar shall consist of 1 part cement to 2-1/2 parts fine aggregate. The quantity of mixing water shall be the minimum necessary to obtain a uniform mixture and permit placing. Mortar shall be thoroughly compacted in place and struck off to adjacent concrete. Replacement concrete shall be drier than the usual mixture and thoroughly tamped into place and finished. Forms shall be used if required. Metal tools shall not be used to finish permanently exposed surfaces. The patched areas shall be cured for seven days.

a. General. Surfaces, unless other type of finish is specified, shall be left with the texture imparted by the forms except defective surfaces shall be repaired as described above. Uniform color shall be maintained by use of only one mixture without changes in materials or proportions for any structure or portion of structure which is exposed to view or on which a special finish is required. The form panels used to produce the finish shall be orderly in arrangement, with joints between panels planned in approved relation to openings and other architectural features. Forms shall not be reused if there is any evidence of surface wear or defects which would impair the quality of the surface.

b. Waterproof Finish. This type of finish shall be applied to all exposed concrete surfaces after structural backfill. As approved by the Engineer and after all required patching, cleaning and correction of imperfections have been completed, the concrete surface shall be given a waterproof finish as hereinafter described. The finish shall not be applied before the initial moist curing period is complete. The temperature of the air adjacent to the surface shall not be less than 50°F for 24 hours prior to and 24 hours following the application of the finish. If the temperature of the air adjacent to the surface is above 90°F, the surface shall be cooled prior to the application of the finish by hosing with clean water until it reaches a temperature of 85°F. The finish for any area shall be completed in the same day and the limits of a finished area shall be made at natural breaks in the finished surface.

The surface to be finished must be smooth, structurally sound, clean and free of dirt, form marks, loose mortar particles, paint, films, protective coatings, efflorescence, laitance, etc. The waterproof finish shall consist of dampening the surface ahead of the cementitious paint application with clean water. The cementitious paint (Thoroseal, or equal) shall be prepared by mixing a minimum of 25 pounds of paint powder (color, pearl gray) conforming to Fed. Spec. A-A-1555, per gallon of mixing liquid. The mixing liquid shall contain one acrylic bonding agent to three parts of clean water. The paint shall be applied at a minimum of two brush coats. Each coat shall be applied at

a rate of 2 pounds of paint per square yard of surface. The applied coating shall be uniform, completely filling all pits, air bubbles, and surface voids.

F. CURING AND PROTECTION.

1. General. All concrete shall be cured by an approved method for a period of 7 days. Immediately after placement, concrete shall be protected from premature drying, extremes in temperatures, rapid temperature change, and mechanical injury. All materials and equipment needed for adequate curing and protection shall be available and at the placement site prior to the start of concrete placement. Concrete shall be protected from the damaging effects of rain for 12 hours, flowing water for 14 days. Concrete shall be shielded from direct rays of the sun for 3 days. No fire or excessive heat shall be permitted near or in direct contact with concrete at any time.

2. Moist Curing. Concrete shall be maintained continuously (not periodically) wet for the entire curing period. If water or curing materials stain or discolor concrete surfaces which are to be permanently exposed, they shall be cleaned as required in paragraph 6D-1.D.4. When wooden form sheathing is left in place during curing, the sheathing shall be kept wet at all times. Horizontal surfaces shall be cured by ponding, by covering with a minimum uniform thickness of 2 inches continuously saturated sand, or by covering with saturated non-staining burlap or cotton mats or sealed impervious sheet materials. Horizontal construction joints may be allowed to dry for twelve hours immediately prior to placing of the following lift.

3. Membrane Curing. Concrete may be cured with an approved curing compound in lieu of moist curing except that membrane curing will not be permitted on any surface to which sack rubbed finish is to be applied, any surface to receive a waterproof finish or any surface containing protruding steel reinforcement, or an abrasive aggregate finish.

   a. A pigmented type curing compound conforming to CRD-C 300 may be used on surfaces which will not be exposed to view when the project is completed, or on surfaces that are to be painted. A non-pigmented type curing compound, containing a fugitive dye, conforming to CRD-C 300 with the reflective requirements waived may be used on surfaces which will be exposed to view when the project is completed.

   b. The curing compound shall be applied to formed surfaces immediately after the forms are removed and prior to any patching or other surface treatment except the cleaning of loose sand, mortar, and debris from the surface. The surfaces shall be thoroughly moistened with water and the curing compound shall be applied to unformed surfaces as soon as free water has disappeared. The curing compound

shall be applied in a 2-coat continuous operation by approved motorized power-spraying equipment and at a uniform coverage of not more than 400 square feet per gallon for each coat. The second coat shall be applied in a direction perpendicular to that of the first coat. Concrete surfaces which have been subjected to rainfall within 3 hours after curing compound has been applied shall be resprayed by the method and at the coverage herein specified. All concrete surfaces on which the curing compound has been applied shall be adequately protected for the duration of the entire curing period from pedestrian and vehicular traffic and from any other cause which will disrupt the continuity of the curing membrane.

4. Cold Weather. When the mean daily outdoor low temperature is less than $32^{o}F$, the temperature of the concrete shall be maintained above $40^{o}F$ for at least the first 3 days and above $32^{o}F$ for the remainder of the required curing period. In addition, during the period of protection removal, the air temperature adjacent to the concrete surfaces shall be controlled so that concrete near the surface will not be subjected to a temperature differential of more than $25^{o}F$ as determined by observation of ambient and concrete temperatures indicated by suitable thermometers furnished by the Owner as required and installed adjacent to the concrete surface and 2 inches inside the surface of the concrete. The installation of the thermometers shall be made by the Contractor at such locations as may be directed. Curing compounds shall not be used on concrete surfaces which are maintained at curing temperature by use of free steam.

5. Impervious-Sheet Curing. Concrete that may be cured using impervious sheets should be horizontal or near horizontal surfaces. All surfaces shall be thoroughly wetted and be completely covered with waterproof paper, polyethylene film or polyethylene-coated burlap having the burlap thoroughly water-saturated before placing. The covering shall be laid with the light colored side up. The covering shall be lapped not less than 12 inches and securely weighed down or shall be lapped not less than 4 inches and taped to form a continuous cover with completely closed joints. The sheets shall be weighted to prevent displacement so that they remain in contact with the concrete during the specified curing period. Coverings shall be folded down over exposed edges of slabs and secured by approved means. Sheets shall be immediately repaired or replaced if tears or holes appear during the curing period.

G. CONTRACTOR QUALITY CONTROL.

1. General. The Contractor shall perform the inspection and tests described in paragraph 6D-3.G.2 and based upon the results of these inspections and tests he shall take the action required in paragraph 6D-3.G.3 and submit reports as required in paragraphs 6.D-3.G.2, 6D-3.G.3 and 6D-3.G.4. The laboratory performing the tests shall conform to ASTM E 329. The individuals who sample and test concrete or the constituents of 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 test procedures equivalent to the ACI minimum guidelines for certification of concrete Field Testing Technicians, Grade I.

2. Inspection Details and Frequency of Testing.

a. Fine Aggregate.

Grading. At least once during each shift in which concrete is being delivered, there shall be one sieve analysis and fineness modulus determination in accordance with ASTM C 136 and CRD-C-104, respectively, for the fine aggregate or for each fine aggregate, if it is batched in more than one size or classification, The location at which samples are taken may be selected by the Contractor at the most advantageous for control. However, the Contractor is responsible for delivering fine aggregate to the mixer within specification limits.

Moisture Content. There shall be, when the opinion of the Engineer the electric moisture meter is not operating satisfactorily, at least four tests for moisture content in accordance with either ASTM C 70, C 566, or CRD-C 112 during each 8-hour period of mixing plant operation. The times for the tests shall be selected randomly within the 8-hours period. Additional tests shall be made whenever the slump is shown to be out of control or excessive variation in workability is reported by the placing foreman. When the electric moisture meter is operating satisfactorily, at least two direct measurements of moisture content shall be made per day to check the calibration of the meter.

b. Coarse Aggregate.

Grading. At least once during each shift concrete is being delivered, there shall be a sieve analysis in accordance with ASTM C 136 for each size group of coarse aggregate. The location at which samples are taken may be selected by the Contractor as the most advantageous for production control. However, the Contractor is responsible for delivering the aggregate to the mixer within specification limits. A test record of samples of aggregate taken shall show the results of the 5 most recent tests including the current test. The Contractor may adopt limits for control coarser than the specification limits for samples taken other than at the batch plant bins to allow for degradation during handling.

Moisture Content. A test for moisture content of each size of coarse aggregate in accordance with ASTM C 566 or CRD-C

112 shall be made at least once a shift. When two consecutive readings for smallest size coarse aggregate differ by more than 1.0 percent, frequency of testing shall be increased to that specified for fine aggregate in paragraph 6D-3.G.2.a. These results shall be used to adjust the added water in the control of the batch plant.

c. Deleterious Substances. When in the opinion of the Engineer, a problem exists in connection with deleterious substances in fine or coarse aggregates, tests shall be made in accordance with ASTM C 33. Testing frequency shall be not less than one per week.

d. Scales.

Weighing Accuracy. The accuracy of the scales shall be checked by test weights at least once a month for conformance with the applicable requirement of 6D-3.A.2.b. Such tests shall also be made whenever there are variations in properties of the fresh concrete which could result from batching errors.

Batching Accuracy. Once a week the accuracy of each batching and recording device shall be checked during a weighting operation by noting and recording the required weight, recorded weight, and the actual weight batched. The Contractor shall provide the necessary calibration devices and confirm that the admixture dispensers described in paragraph 6D-3.A.2.a are operating properly.

e. Batch-Plant Control. When the concrete plant is operating the measurement of all constituent materials including cement, pozzolan, slag, each aggregate, water and admixtures shall be continuously controlled. The aggregate weights and amount of added water to compensate for free moisture weights and amount of added water to compensate for free moisture in the aggregates shall be adjusted as necessary. The amount of air-entraining admixture shall be adjusted to control air content within specified limits. A report shall be prepared indicating type and source of cement used, type and source of pozzolan or slag used, amount and source of admixtures used, aggregate source, the required aggregate and water weights per cubic yard, amount of water as free moisture in each size of aggregate, and the batched aggregate and water weights per cubic yard for each class of concrete batched during plant operation. Two copies of this report shall be submitted once per week to the Engineer. This report shall also include gradation and moisture content results.

f. Concrete.

Air Content. At least two tests for air content shall be made on randomly selected batches of each class of concrete

during each 8-hour period of concrete production or at least once a day when concrete is placed. Additional tests shall be made when excessive variation in workability is reported by the placing foreman or Engineer. Tests shall be made in accordance with ASTM C 231. The average of each set of two tests shall be plotted on a control chart on which the average is set at 5.5 percent and the upper and lower control limits at 6.5 and 4.5 percent respectively. The range shall be plotted on a control chart on which the upper control limit is 2.0 percent. For concrete having a nominal maximum aggregate size of 3/4-inch, the average shall be set at 6.0 percent and the lower and upper control limits of 5.0 and 7.0 percent respectively.

Slump. At least four slump tests shall be made on randomly selected batches of each mixture of concrete during each day's concrete production in accordance with ASTM C 143. Additional tests shall be made when excessive variation in workability is reported by the placing foreman or Engineer. The average of each set of two tests shall be plotted on a control chart on which the upper and lower limits are set 1.5 inch above and below the mid-range value. The range shall be plotted on a control chart on which the upper control limit is 3.0 inches.

g. Preparation for Placing. Foundation or construction joints, forms and embedded items shall be inspected in sufficient time prior to each concrete placement by the Contractor in order to certify to the Engineer it is ready to receive concrete. The results of each inspection shall be reported in writing.

h. Placing. The placing foreman shall supervise all placing operations, shall determine that the correct quality of concrete or grout is placed in each location and shall be responsible for measuring and recording concrete temperatures, ambient temperature, weather conditions, time of placement, yardage placed, and method of placement.

i. Vibrators. The frequency and amplitude of each vibrator shall be determined in accordance with CRD-C 521 prior to initial use and at least once a month when concrete is being placed. Additional tests shall be made when a vibrator does not appear to be adequately consolidating the concrete. The frequency shall be determined while the vibrator is operating in concrete holding the tachometer against the upper end of the vibrator while almost submerged and just before the vibrator is withdrawn from the concrete. The amplitude shall be determined with the head vibrating in air. Two measurements shall be taken, one near the tip and another near the upper end of the vibrator head, and these results averaged. The make, model, type and size of the vibrator and frequency and amplitude results shall be reported in writing.

j. Curing.

Moist Curing. At least once each shift but not less than once per day, including weekends and holidays an inspection shall be made of all areas subject to moist curing. The surface moisture condition shall be noted and recorded.

Curing Compound. No curing compound shall be applied until it has been verified that the compound is properly mixed and ready for spray. At the end of each operation the quantity of compound used and the area of concrete surface covered shall be reported and the rate of coverage in square feet per gallon shall be computed. The report shall state whether coverage is uniform.

Impervious Sheet Curing. At least once each shift, but not less than once per day including weekends and holidays, an inspection shall be made of all areas being cured using impervious sheets. The condition of the covering and the tightness of the laps and tapes shall be noted and recorded.

k. Protection. At least once each shift an inspection shall be made of all areas subject to cold weather protection. Deficiencies shall be noted. During removal of protection, measurement of concrete and ambient temperature shall be at least hourly.

l. Mixer Uniformity.

Concrete Plant Mixer. At the start of concrete placing, and at least once every six months when concrete is being placed, uniformity of concrete shall be determined. The tests shall be performed in accordance with ASTM C 94. Whenever adjustments in mixer or increased mixing times are necessary because of failure of any mixer to comply, the mixer shall be retested after adjustment. Results of tests shall be reported in writing.

Truck Mixers. At the start of concrete placing and at least once every three months when concrete is being placed, uniformity of concrete shall be determined in accordance with ASTM C 94. The truck mixers shall be selected randomly for testing. When satisfactory performance is found in one truck mixer, the performance of mixers of substantially the same design and condition of blades may be regarded as satisfactory. Results of tests shall be reported in writing.

3. Action Required.

a. Fine Aggregate.

Grading. When the amount passing any sieve is outside the specification limits, the fine aggregate shall immediately be resampled and retested. If there is another failure on any sieve, the fact shall immediately be reported to the Engineer, and immediate steps shall be taken to rectify the situation.

Moisture Content. Whenever the moisture content of the fine aggregate changes by 0.5 percent or more, the scale settings for the fine aggregate batcher and water batcher shall be adjusted directly or by means of a moisture compensation device.

b. Coarse Aggregate.

Grading. When the amount passing any sieve is outside the specification limits, the coarse aggregate shall immediately be resampled and retested. If the second sample fails on any sieve, the fact shall be reported to the Engineer. When two consecutive moving averages of 5 tests are outside of specification limits, that fact shall be reported to the Engineer and immediate steps shall be taken to correct the grading.

c. Deleterious Substances. When the results for a deleterious substance is outside the specification limit, the aggregate shall be resampled and retested for the deleterious substance that failed. If the second sample fails, that fact shall be reported to the Engineer. When material finer than No. 200 sieve for coarse aggregate exceeds specification limit, immediate steps, such as washing or other corrective actions, shall be initiated.

d. Scales. Whenever either the weighing accuracy or batching accuracy if found not to comply with specification requirements, the plant shall not be operated until necessary adjustments or repairs have been made. Discrepancies in recording accuracies shall be corrected immediately.

e. Concrete.

Air Content. Whenever points on the control chart approach the upper or lower control limits, an adjustment should be made in the amount of air-entraining admixture batched. If a single test result is outside the specification limit, such adjustment is mandatory. As soon as practical after each adjustment, another test shall be made to verify the correctness of the adjustment. Whenever a point falls above the upper control limit for range, the dispenser shall be calibrated to insure that it is operating correct-

ly and with good reproducibility. Whenever two consecutive points either for average or range are outside the control limits, the Engineer shall be notified. Whenever the air content departs from the specified range, the concrete shall not be delivered to the forms.

Slump. Whenever points on the control chart approach the upper or lower control limits, an adjustment should be made in the batch weights of water and fine aggregate. The adjustments are to be made so that the total free water does not exceed that amount specified in the approved mixture proportions based on the free water available with the fine aggregates and that amount of water batched. If the adjustments to the batch weights or water and fine aggregate do not satisfactorily produce the required slump, the mixture shall be re-proportioned to meet the specified criteria and re-submitted to the Engineer for approval. When a single slump is outside the control limits, such adjustment if mandatory. As soon as practical after each adjustment, another test shall be made to verify the correctness of the adjustment. Whenever the slump exceeds the upper limit stipulated in paragraph 6D-2.B.4, the concrete shall not be delivered to the forms. Whenever two consecutive slump tests, made during a period when there was no adjustment of batch weights, produce a point on the control chart for range above the upper control and the additional testing for aggregate moisture content required in paragraph 6D-3.G.2 shall be undertaken.

f. Placing. The placing foreman shall not permit placing to begin until he has verified that an adequate number of acceptable vibrators in working order and with competent operators are available. Placing shall not be continued if any pile is inadequately consolidated. If any batch of concrete fails to meet the temperature requirements, immediate steps shall be taken to improve temperature controls.

g. Curing.

Moist Curing. When a daily inspection report lists an area of inadequate curing, the required curing period for that area shall be extended by one day.

Curing Compound. When the coverage rate of curing compound is less than that specified or when the coverage is not uniform, the entire surface shall be sprayed again.

Impervious Sheet Curing. When a daily inspection lists any tears, holes or laps of joints that are not completely closed, the tears and holes shall be promptly repaired or the sheets replaced, the joints closed and the required curing period for those areas shall be extended by one day.

h. Protection. Whenever any concrete temperature during the period of protection or protection removal fails to comply with the specification, that fact shall be reported to the Engineer and immediate steps should be taken to correct the situation.

i. Mixer Uniformity. When a mixer fails to meet mixer uniformity requirements, either the mixing time shall be increased or adjustments shall be made to the mixer until compliance is achieved.

4. Reports. All results of tests conducted at the project site shall be reported as required. Each report shall include the updating of control charts covering the entire period from the start of the construction season through the current week. During periods of cold weather protection, reports of pertinent temperatures shall be made daily. These requirements do not relieve the Contractor of the obligation to report certain failures immediately as required in preceding paragraphs. Such reports of failures and the action taken shall be confirmed in writing in the routine reports. The Engineer has the right to examine all contractor quality control records.

PART 6D-4 - MEASUREMENT AND PAYMENT.

A. METHOD OF MEASUREMENT.

All concrete will be measured for payment by the cubic yard. Reinforced concrete, stabilization slab, waterstops, expansion joint filler, cementitious paint, curing compounds and other components shall be incidental thereto, and which price shall include the cost of all labor, materials and the use of all equipment and tools required to complete the concrete work.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement or payment is not specified shall be considered as incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT

Payment will be made under:

Pay Item No.7: Concrete - per Cubic Yard.

END OF SECTION

SECTION 7A

MISCELLANEOUS METALWORK

PART 7A-1 - GENERAL

A. SCOPE.

The work covered by this section consists of furnishing all plant, labor, materials and equipment, and furnishing and installing the miscellaneous metal work as shown on the drawings and specified herein and shall include, but is not limited to, the following items:

1. Reserved.

2. Corrosion Resistant Steel (C.R.S.).

   a. Gate seal plates (except welded anchors).

   b. Bolts, anchor bolts, threaded studs, washers, nuts, seal retaining bars, and seal deflecting bars.

   c. Latching devices including handles, double end stud, eyebolts, and turnbuckle, anchor rods, nuts, and cap screws and seal retaining bars.

   d. Settlement reference bolts.

   e. Identification tag for reference bolts.

3. Forged and Machined Steel.

   a. Welded anchors for gate seal plates, including anchor bolts, leveling nuts, and steel beams.

4. Hinges and Bearings. Hinges for swing gate including set screws, bolts, nuts, washers, shims, grease seals and fittings, mech. tubing, bronze bushings, upper hinge shaft, thrust washer, struts, bearing plate and bearing pedestal.

5. Fabricated Steel.

   a. Galvanized corner protection angles with welded stud anchors.

   b. Slip joint, I-wall to T-wall.

   c. Bolt brackets.

   d. Galvanized Removable Guard Post and Accessories.

6. Manufactured Products.

a. Flexible bonding jumpers for bonding of piling as specified in Section 8.

b. Adjustable shackle padlocks and screw jacks.

B. QUALITY CONTROL.

1. General. The Contractor shall establish and maintain quality control for proper fabrication and installation of all work covered in this section to assure compliance with contract specifications and maintain records of his quality control for all construction operations including but not limited to the following:

a. Fabrication.

b. Protective coating.

c. Placement and protection.

d. Material compliance with plans and specifications.

2. Reporting. The original and two copies of these records and tests, as well as the records of corrective action taken, shall be furnished to the Engineer daily.

C. SHOP DRAWINGS.

The Contractor shall prepare and submit for approval, complete shop drawings and descriptive literature showing details of all auxiliary items required as indicated herein or on the contract drawings. Shop drawings shall indicate computed weights of structural steel and approval of shop drawings will constitute acceptance of the computed weights shown on these drawings.

PART 7A-2 - PRODUCTS

A. FABRICATED ITEMS.

1. General. Fabrication and placement of all fabricated items shall be as indicated on the drawings and shall conform to the applicable provisions of Section 7B.

2. Materials.

a. Stainless Steel Bolts and Nuts. Stainless steel bolts shall conform to ASTM F 493-78, Group 2, Condition CW, 316 Alloy. Stainless steel bolts shall conform to the applicable provisions of paragraph 7B-3.F. Stainless steel nuts shall conform to ASTM 594.

b. Corrosion Resistant Steel. Corrosion resistant steel shall conform to Federal Specification QQ-S-766C and Am. 5, Class 304. High strength corrosion resistant steel shall conform to ASTM A 276, Type 431.

c. Hinges.

Mechanical Tubing. The mechanical tubing for the swing gate hinges shall consist of cold drawn seamless material conforming to the applicable provisions of ASTM specification A 513, Type 6.

Bearing Pedestal. The bearing pedestal for the swing gate shall consist of a stainless steel shaft (ASTM A-276, Type 431) with a stainless steel bottom plate (ASTM A-276, Type 304).

Lubrication fittings for bearings for the swing gate shall be pressure type with thread or surface check and 1/8-inch NPT threads, Alemite, or equal. Grease seals shall be Garlock Std., Klosure No. 2176 and 2753 or equal.

Bushings and Thrust Washers. Bushings and thrust washers for the swing gate shall conform to the applicable provisions of ASTM B 22, Copper Alloy No. 937, "Bronzed Castings for Bridges and Turntables". The upper hinge shaft shall be high strength CRS meeting ASTM A 276, Type 431 specifications.

d. Seal Plates. Seal plates shall be solid corrosion-resistant steel ASTM A 263 of the sizes and dimensions indicated on the drawings.

Seal Plate Splice. Seal plates may be spliced at the Contractor's convenience and at no cost to the Owner. The Contractor shall not commence work on any seal plate splice until the procedure has been approved by the Engineer.

PART 7A-3 - EXECUTION

A. WORKMANSHIP.

All metal work fabrication and machine work shall comply with the application provisions of Section 7B. All parts shall be properly fabricated, assembled and installed to conform to the shapes, sizes and dimensions indicated on the contract drawings and approved shop drawings.

1. Settlement Reference Bolts. Upon installation of the settlement reference bolts the Contractor shall determine elevations of each bolt and submit his results to the Engineer.

PART 7A-4 - MEASUREMENT AND PAYMENT.

A. METHOD OF MEASUREMENT.

Unless otherwise specified herein, any materials or operations used in conjunction with the installation of metal components or as part of the metal work which is not included in the cost of other items of work listed in the bidding schedule shall not be measured for payment.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement or payment is not specified shall be considered as incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT.

Payment for miscellaneous metal work will be paid for at the lump sum price. Price and payment shall constitute full compensation for furnishing and installing all miscellaneous metal work indicated on the drawings and/or herein specified which is not specified to be paid for under other items of work listed on the bidding schedule.

Payment will be made under:

Pay Item No. 8: Structural Steel Gates, Miscellaneous Metals, and Specialty Items - per Lump Sum.

END OF SECTION

SECTION 7B

METALWORK FABRICATION, MACHINE WORK
AND MISCELLANEOUS PROVISIONS

PART 7B-1 - GENERAL

A. SCOPE.

This section specifies the general workmanship standards applicable to the fabrication, assembly and testing of various items of metalwork and machine work to insure conformance with the specifications and miscellaneous requirements incidental to the work. The requirements are in addition to those contained in the section pertaining to the specific item of work or indicated on the drawings.

B. APPLICABLE PUBLICATIONS.

The following publications (current edition) listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto or as required.

1. American National Standards Institute (ANSI) Specifications

B4.1	Preferred Limits and Fits for Cylindrical Parts
B46.1	Surface Texture (Surface Roughness, Waviness and Lay)

2. American Society for Testing and Materials (ASTM) Standards

A 123	Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip.
A 325	High-Strength Bolts for Structural Steel Joints
A 490	Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints
A 380	Cleaning and Descaling Stainless Steel Parts, Equipment and Systems
A 514	High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding
A 593	Stainless Steel Bolts, Hex Cap, Screws and Studs
F 594	Stainless Steel Nuts

3. American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code.

Section IX	Welding and Brazing Qualifications

4. American Welding Society, Inc. (AWS) Code.

D 1.1	Structural Welding Code

5. Federal Specifications (Fed. Spec.).

FF-S-85C(1)	Screw, Cap, Slotted and Hexagonhead
FF-B-575C	Bolts, Hexagon and Square
TT-P-645A	Primer, Paint, Zinc-Chromate, Alkyd Type
TT-V-119D (2)	Varnish, Spar, Phenolic Resin
FF-W-92 B	Washers, Metal, Flat (Plain)
FF-N-836D(1)	Nuts, Square, Hexagon, Cap Slotted, Castle, Knurled, Welding and Single Ball Seat

6. Military Specification (Mil. Spec.).

MIL-C-18480 B	Coating Compound, Bituminous, Solvent, Coal Tar Base
DOD-P-21035 A	Paint, High Zinc Dust Content, Galvanizing Repair

7. Military Standard (MIL-STD).

MIL-STD-00248B (SHIPS)	Welding and Brazing Procedure and Performance Qualification

8. Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation (RCRBSJ) Specification.

Specification for Structural Joints Using ASTM A 325 or A 490 Bolts

C. QUALITY CONTROL.

1. Tests of Material. The Contractor shall, at his expense, perform analyses and tests to demonstrate that all materials are in conformity with the specifications. Should the Contractor desire to use stock materials not manufactured specifically for the work covered by these specifications, he shall submit evidence, satisfactory to the Engineer, that material conforms

to the requirements of the specifications. Detailed tests of these materials will then not be required, if so approved by the Engineer. Tests, except where modified, shall be made as indicated in the respective detailed specifications or on the drawings and, unless otherwise authorized, in the presence of the Engineer. The Contractor shall furnish the Engineer certified reports in triplicate of all required analyses and tests. The Contractor shall furnish the Engineer upon request, specimens and samples for independent analyses and tests. These specimens and samples shall be properly labeled and prepared for shipment.

2. Special Test Requirements.

   a. Nondestructive Testing. When doubt exists as to the soundness of any material part, such part may be subjected to any form of nondestructive testing as determined by the Engineer. 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 Owner. Any defects will be cause for rejection and the rejected part shall be replaced and retested at the Contractor's expense.

   b. Tests of Machinery and Structural Units. Each complete machinery and structural unit, as required by other sections of these specifications, shall be erected and tested in the shop in the presence of the Engineer, unless otherwise directed by the Engineer. Waiving of tests, however, will not relieve the Contractor of responsibility for any fault in operation, workmanship, or material that may develop before the completion of his contract or guarantee. After being assembled in place at the site, each complete machine or structural unit shall be operated through a sufficient number of complete cycles to demonstrate to the satisfaction of the Engineer that it meets specification operational requirements in all respects. The details for tests on the various machinery and structural units shall conform to the requirements of the particular sections of these specifications.

3. Workmanship.

   a. General. Workmanship shall be of the highest grade in accordance with the best modern practices to conform to the specifications for the item of work being furnished.

b. Quality Control. The Contractor shall establish and maintain a quality control standard to assure compliance with the contract requirements and shall maintain records of his quality control of all operations covered by these specifications.

D. SUBMITTALS.

Contractor submittals shall be in accordance with the specifications and as herein specified.

1. Shop Drawings. Shop drawings shall be submitted for approval in accordance with the Contract Clauses. Drawings shall include catalog cuts, templates, fabrication and assembly details, and type, grade, and class of materials, as appropriate. Elements of fabricated items inadvertently omitted on contract drawings shall be detailed by the fabricator and indicated on the shop drawings.

2. Lists of Materials. The Contractor shall furnish the Engineer 3 copies of all purchase and mill orders, shop orders for materials and work orders, including all new orders placed by Contractors and old orders extended by each supplier. The Contractor, at the time of submittal of shop drawings, shall furnish a list designating the material to be used for each item. Where mill tests are required, the purchase orders shall contain the test site address and the name of the testing agency. The Contractor shall also furnish a shipping bill or memorandum of each shipment of finished pieces or members to the project site, giving the designation mark and weight of each piece, the number of pieces, the total weight, and if shipped by rail in carload lots, the car initial and number.

3. Schedule of Welding Procedure. A complete schedule of welding procedure as described in paragraph 7B-3.D.1.e shall be submitted to the Engineer and approved before fabrication is commenced.

4. Certificates. Certificates for material tests, examinations, and welding procedure and operator qualifications shall be submitted for approval as specified.

PART 7B-2 - PRODUCTS

A. GENERAL.

All nuts shall be equipped with washers where indicated on the drawings. Beveled washers shall be used where bearing faces have a slope of more than 1:20 with respect to a plane normal to the bolt axis.

B. BOLTS, NUTS AND WASHERS. The finished shank of each bolt shall be long enough to provide full bearing and washers shall be used to provide full grip when the nut is tightened.

1. Bolts. Bolts, including anchor bolts, shall conform to the applicable provisions of Federal Specification FF-B-575, Type II, standard thread, size as noted, and carbon steel or ASTM A 325 unless indicated otherwise on the drawings or in other section of the specifications.

2. Nuts. Nuts, shall conform to the applicable provisions of Federal Specification FF-N-836, Type II, Style 4, standard thread, size as noted, and carbon steel or ASTM A 325 unless indicated otherwise on the drawings or in another section of the specifications.

3. Cap Screws. Cap Screws, shall conform to the applicable provisions of Federal Specification FF-S-85, Type II, Style 10p, standard thread unless indicated otherwise on the drawings or in another section of the specifications.

4. Washers. Washers, shall conform to the applicable provisions of Federal Specification FF-W-92, Type A, Grade I, Class A for steel bolts and Class B for CRS bolts, unless indicated otherwise or in another section of specifications.

PART 7B-3 - EXECUTION

A. STRUCTURAL FABRICATION.

1. General. Material must be straight before being laid off or worked. If straightening is necessary, it shall be done by methods that will not impair the metal. Sharp kinks or bends shall be cause for rejection of the material. Material with welds will not be accepted, except where welding is definitely specified, indicated on the drawings, or otherwise approved. Bends, except for minor details, shall be made by approved dies, press brakes, or bending rolls. Where heating is required, precautions shall be taken to avoid overheating the metal, and it shall be allowed to cool in such a manner as not to destroy the original properties of the metal. Flame cutting of material other than structural steel shall be subject to approval and, where proposed, shall be indicated on shop drawings submitted to the Engineer. Shearing shall be accurately done and all portions of the work shall be neatly finished. Corners shall be square and true unless otherwise shown on the drawings. Reentrant cuts shall be filleted to the minimum radius of 3/4-inch unless otherwise approved. Finished members shall be free from twists, bends and open joints. All bolts, nuts and screws shall be tight.

2. Dimensional Tolerances for Structural Work. Dimensions shall be measured by means of an approved calibrated steel tape of approximately the same temperature as the material being measured at the time of measurement. The overall dimensions of an assembled structural unit shall be within the tolerances indicated on the drawings or as specified in the section pertaining to the specific item of work. Except as required to meet the requirements above, an allowable variation of 1/32-inch is permissible in the overall length of individual component members with both ends milled; individual component members without milled ends shall not deviate from the dimensions shown on the drawings by more than 1/16-inch for members 30 feet or less in length and by more than 1/8-inch for members over 30 feet in length.

3. Structural Steel Fabrication. Structural steel may be cut by mechanically guided or hand guided torches provided an accurate profile with a smooth surface which is free from cracks and notches is obtained. Surfaces and edges to be welded shall be prepared in accordance with Article 3.2 of AWS D1.1. Where structural steel is not to be welded, chipping or grinding will not be required except as necessary to remove slag and sharp edges of mechanically guided cuts or hand guided cuts not exposed to view. Hand guided cuts which are to be exposed or visible shall be chipped, ground or machined to sound metal.

B. CASTINGS.

1. General. Each casting shall have the mark number cast or stamped upon it. In addition, each casting weighing more than 500 pounds shall have the heat numbers cast or stamped upon it. Deviations from the dimensions and the thicknesses of casting as shown on the drawings will not be permitted to exceed such amounts as will impair by more than 10 percent the strength of the castings as computed from the dimensions shown. Dimensions of castings shown on approved shop drawings shall be furnished dimensions. Warped or otherwise distorted castings or castings that are oversize to an extent that will interfere with proper fit with other parts of the machinery or structure will be rejected. The structure of the metal in the castings shall be homogeneous and free from excessive nonmetallic inclusions. Excessive segregation of impurities or alloys at critical points in a casting will be cause for its rejection. Repairs to castings shall not be made prior to approval by the Contracting Officer. Minor surface imperfections not affecting the strength of casting may be welded in the "green" if approved by the inspector. Surface imperfections shall be considered minor when 20 percent of the actual wall thickness, but in no case greater than 1-inch. Defects other than minor surface imperfections may be welded only when specifically authorized in accordance with the following requirements:

a. The defects have been entirely removed and are judged not to affect the strength, use, or machinability of the castings when properly welded and stress relieved.

b. The proposed welding procedure, stress relieving and method of examination of the repair work have been submitted and approved.

C. PATTERNS.

In the construction of patterns, care shall be taken to avoid sharp corners or abrupt changes in cross section, and ample fillets shall be used. The Contractor shall add such draft and increases in pattern thicknesses as will conform to his standard foundry practice and as may be necessary to insure that all metal thicknesses of the finished castings will be in accordance with the dimensions shown on the drawings, within the tolerances specified in paragraph 7B-3.B.1. All patterns will remain the property of the Contractor.

D. WELDING.

1. Structural Steel.

a. General. Unless otherwise authorized or specified, welding of structural steel shall be by an electric arc welding process, using a method which excludes the atmosphere from the molten metal. Welding, unless specified otherwise, shall conform to the applicable provisions of Sections 1 thru 7 and Sections 9 and 10 of AWS D1.1.

b. Welding Equipment. All items of welding equipment shall conform to the requirements of AWS D1.1.

c. Filler Metal. The electrode, electrode-flux combination and grade of weld metal shall conform to the appropriate AWS specification for the base metal and welding process being used. Only low hydrogen electrodes shall be used for manual shielded metal-arc welding regardless of the thickness of the steel. The AWS designation of the electrodes to be used shall be included in the schedule of welding procedure to be furnished by the Contractor. To maintain low moisture of low hydrogen electrodes, a controlled temperature storage oven shall be used at the job site as prescribed by Article 4.5 of AWS D1.1.

d. Qualifications of Welders and Welding Operators. Welding operators, welders, and tack welders shall be qualified and, as necessary, requalified for the particular type of work to be done. Qualification shall be in accordance with Section 5 of AWS D1.1, MIL-STD-00248 or Section IX of the ASME Boiler and Pressure Vessel Code. The Contractor shall certify by name to the Engineer the welders and welding operators so qualified including the date of qualification, code and procedures under which qualified. Prior qualification may be accepted provided the welder has performed satisfactory work under the code for which qualified within the preceding three months. The Contractor shall require

the welder or welding operator to repeat the qualifying tests when, in the opinion of the Engineer, his work indicates a reasonable doubt as to his proficiency. In such cases, he shall be recertified, as above, if he successfully passes the retest; otherwise, he shall be disqualified until he has successfully passed a retest. All expenses in connection with qualification and re-qualification shall be borne by the Contractor.

e. Workmanship Requirements.

Welding Procedure. The Contractor shall prepare for submission to the Engineer a complete schedule of welding procedure which shall consist of detailed procedure specifications for each structure to be welded and tables or diagrams showing the procedure to be used for each required joint. The schedule shall conform to the provisions of Sections 2, 3, 4 and 9 and applicable provisions of Section 10 of AWS D1.1, include filler metal requirements, preheat and interpass temperature requirements and any stress relief heat treatment, and show the types and locations of welds designated on the drawings and/or in the specifications to receive nondestructive examination. The procedures shall be such as to minimize residual stresses and distortion of the completed weldment. Procedures shall be qualified by tests as required and prescribed in Section 5 of AWS D1.1 except for prequalified procedures as described in Article 5.1 of AWS D1.1. Properly documented evidence of compliance with all requirements of these specifications for previous qualification tests will establish the joint welding procedure as prequalified. Each procedure shall be clearly identified as being either prequalified or qualified by tests. The test welding and specimen testing must be witnessed and the test report document signed by a representative of the Engineer. The Contractor will be directed or authorized to make any changes in previously approved welding procedures that are deemed necessary or desirable by the Engineer. Approval of any procedure, however, will not relieve the Contractor of the responsibility for producing a finished structure meeting all requirements of these specifications.

Stress Relief Heat Treatment. Where stress relief heat treatment is specified or required on the drawings, it shall be in accordance with the requirements of Article 4.4 of AWS D1.1, unless otherwise authorized or directed by the Engineer.

Preheat and Interpass Temperature. Preheating shall be performed as required by Articles 4.2 and 4.3 of AWS D1.1 or as otherwise specified, except that the temperature of the base metal shall be at least 70°F. The weldments to be preheated shall be slowly and uniformly heated by approved means to the prescribed temperature, held at that temperature until the welding is completed and then permitted to cool slowly in still air.

Temporary Welds. Temporary welds required for fabrication and erection shall be made under the controlled conditions prescribed herein for permanent work. All temporary welds shall be made using low-hydrogen welding electrodes by welds qualified for permanent work as specified elsewhere in these specifications. Preheat furnished for temporary welds shall be as required by AWS D1.1 for permanent welds except that the minimum temperature shall be 120°F in any case. In making temporary welds, arcs shall not be struck in other than weld locations. Each temporary weld shall be removed after serving its purpose and ground flush with adjacent surfaces.

Tack Welds. Tack welds that are to be incorporated into the permanent work shall be subject to the same quality requirements as the permanent welds. Preheating shall be performed as specified for temporary welds above. Such tack welds shall be cleaned and fused thoroughly with the permanent welds. Multiple-pass tack welds shall have cascaded ends. Defective tack welds shall be removed before permanent welding.

f. Inspection.

General. Welding shall be subject to inspection by the Engineer to determine conformance with the requirements of AWS D1.1, the approved welding procedures, and provisions stated elsewhere in these specifications. The Engineer will require nondestructive inspection of designated welds and may require supplemental examination of any joint or coupons to be cut from any location in any joint. The contractor shall maintain an adequate inspection system.

Visual Examination. Prior to any welding, the Contractor shall visually inspect the preparation of material for welding to assure compliance with Section 3 of AWS D1.1. All completed welds shall be cleaned and examined carefully by the Contractor for insufficient throat or leg sizes, cracks, undercutting, overlap, excessive convexity or reinforcement, and other surface defects to insure compliance with the requirements of Section 3 and Section 9, Part D of AWS D1.1. Defects shall be corrected as provided below.

Test Coupons. The Owner reserves the right to require the Contractor to remove coupons from completed work when doubt as to soundness cannot be resolved by nondestructive examination. Should any two coupons cut from the work of any welder show strengths, under test, less than that

specified for the base metal, it will be considered evidence of negligence or incompetence, and such welder shall be removed from the work. When coupons are removed from any part of a structure, the members cut shall be repaired in a neat workmanlike manner with joints of proper type to develop the full strength of the members, with peening as approved or directed to relieve residual stress. The expense for removal and testing of the coupons, repair of the cut members and the performance of nondestructive examination of the repairs shall be assigned to the Owner or the Contractor in accordance with Supplementary Condition SC-24.

Supplemental Examination. The Owner reserves the right to perform supplemental nondestructive examinations as deemed necessary when the soundness of any weld is in doubt and to detect cracking or similar defects that might occur during shipment or erection and before final acceptance by the Owner. The cost of such inspection will be borne by the Owner. The repairs and the reexamination of repairs will be performed by the Contractor at no additional cost to the Owner.

Repairs. Defective weld metal shall be removed by air carbon-arc or oxygen gouging to sound metal. Oxygen gouging shall not be used on ASTM A 514 steel. The surfaces shall be thoroughly cleaned before welding. The resulting cavities shall be rewelded in compliance with article 6.6 of AWS D1.1. When deemed necessary by the Engineer the Contractor shall submit a welding repair plan for approval before repairs are made. Welds that have been repaired shall be retested by the same methods used in the original inspection. All costs of repairs and testing shall be borne by the Contractor, except for repair of members cut to remove test coupons which were found to contain acceptable welds.

g. Oxygen Cutting. In all oxygen cutting, flame shall be so adjusted and manipulated as to avoid cutting beyond the prescribed lines. Cut surfaces and edges shall be left free of slag.

E. STUD WELDING.

1. General. Stud welding, unless otherwise specified, shall conform to the applicable provisions of Section 7, Part F of AWS D1.1.

2. Stud Materials. The type, size and length of studs shall be as indicated on the drawings. The Contractor shall furnish for approval the manufacturer's certified test reports and certification that the studs are in accordance with the applicable provisions of Articles 7.2 and 7.3 of AWS D1.1.

3. Stud Base Qualification Requirements. As a condition of approval, the Contractor shall furnish, from the manufacturer of the stud, a certified report giving data, procedures and results of tests performed in accordance with the provisions of Article 7.6 of AWS D1.1. The test specimens shall be prepared using suitable specimen plates of the same base metal to which the studs are to be welded.

4. Workmanship. The studs shall be welded in accordance with the provisions of Article 7.4 of AWS D1.1. Studs on which a full 360 degree weld fillet is not obtained may, at the option of the Contractor, be repaired by adding a 3/16-inch fillet, using shielded metal arc process with low-hydrogen welding electrodes. If the reduction of the length of studs becomes less than normal as they are welded, welding shall be stopped immediately and not resumed until the cause has been corrected.

5. Inspection. The welding of stud connectors will be subject to visual inspection by the Engineer. Each stud connector that does not show a full 360 degree weld fillet, that has been repaired by welding, or the reduction in length due to welding is less than normal shall be tested in accordance with the requirements for testing of one in every 100 stated in 11.6 below.

6. Testing. Prior to starting welding operation at the beginning of each day's operation, two stud connectors shall be welded in the same general position (flat, vertical, overhead, sloping) to a separate piece of material of similar thickness and composition as the member to which the studs are to be welded. After being allowed to cool, these studs shall be tested by bending to an angle of 30 degree by striking the stud with a hammer. If failure occurs in the weld zone of either stud, the procedure shall be corrected and two successive studs successfully welded and tested before any studs are welded to the member. The foregoing testing shall be performed after any change in the welding procedure. If failure occurs in the stud shank, an investigation shall be made to ascertain and correct the cause before further welds are made. In addition to the foregoing tests at least one stud in every 100 shall be struck with a hammer and bent to an angle of 15 degree or if threaded shall be torque tested with a calibrated torque wrench as indicated in Figure 7.6.6 of AWS D1.1. If the stud fails, two more of the existing studs shall be bent or torque tested. If either of these two studs fails, all of the studs represented by the tests shall be rejected. Studs under testing that crack either in the weld, the base metal, or the shank shall be rejected and replaced by the Contractor at no additional cost to the Owner.

F. BOLTED CONNECTIONS.

1. Structural Steel Connection.

a. General. Bolts, nuts, and washers shall be of the type specified or indicated on the drawings. All nuts shall be equipped with washers except for high strength bolts. Beveled washers shall be used where bearing faces have a slope of more than 1:20 with respect to a plane normal to the bolt axis. Where the use of high strength bolts is specified or indicated on the drawings, the materials, workmanship and installation shall conform to the applicable provisions of the RCRBSJ Specification for Structural Joints Using ASTM A 325 or A 490 Bolts.

b. Bolt Holes. All bolt holes shall be accurately located, smooth, perpendicular to the member and cylindrical.

Holes for regular bolts shall be drilled or subdrilled and reamed in the shop and not more than 1/6-inch larger than the diameter of the bolt.

Holes for high strength bolts shall have diameters of not more than 1/16-inch larger than the bolt diameter. If the thickness of the material is not greater than the diameter of the bolt, the holes may be punched. If the thickness of the material is greater than the diameter of the bolt, the holes will be either drilled full size or shall be subpunched or subdrilled at least 1/8-inch smaller than the diameter of the bolt and then reamed to full size. Poor matching of holes will be cause for rejection. Drifting done during assembly shall not distort the metal or enlarge the holes. For slight mismatching, reaming to a larger diameter for the next standard size bolt will be allowed.

G. SHOP ASSEMBLY.

Unless otherwise specified, each machinery and structural unit furnished shall be assembled in the shop to determine the correctness of the fabrication and matching of the component parts. The tolerances shall not exceed those shown on the drawings and each unit assembled shall be closely checked to insure that all necessary clearances have been provided and that binding does not occur in any moving part. Assembly in the shop shall be in the same position as final installation (closed position) in the field unless otherwise specified. Assembly and disassembly work shall be performed in the presence of the Engineer, unless waived in writing by the Engineer, and any errors or defects disclosed shall be immediately remedied by the Contractor, without cost to the Owner. Before disassembly for shipment, each piece of a machine or structure shall be match-marked to facilitate erection in the field. The location of the match-mark shall be indicated by circling with a ring of white paint after the shop coat of paint has been applied, or as otherwise directed.

H. MACHINE WORK.

1. General. Unless otherwise shown on the shop drawings, all tolerances, allowances, and gages for metal fits between plan, non-threaded, cylindrical parts shall conform to ANSI B4.1 for the class of fit as shown or otherwise required. Where fits are not shown they shall be suitable as determined by the Engineer. Tolerances for machined-finished surfaces designated by non-decimal dimensions shall be within 1/64-inch. Sufficient machining stock shall be allowed on placing pads to insure true surfaces of solid material. Finished contact or bearing surfaces shall be true and exact to secure full contact. Journal surfaces shall be polished and all surfaces shall be finished with sufficient smoothness and accuracy to insure proper operation when assembled. Parts entering any machine shall be carefully and accurately machined and all like parts shall be interchangeable, provided that, where parts are assembled together for drilling and/or reaming of holes or for machining, the parts will not be required to be interchangeable with like parts insofar as the assemble operation is concerned after this operation is completed. All drilled holes for bolts shall be accurately located.

2. Finished Surface.

   a. Where surface finishes are indicated on the drawings or specified herein the symbols used or finishes specified shall be in accordance with ANSI B46.1. Value of roughness height specified are arithmetical average of deviations expressed in micro inches. Roughness specified is the maximum value and any lesser degree will be satisfactory unless otherwise called for on the drawings. Compliance with specified surface shall be determined by sense of feel and by visual inspection of the work compared to Roughness Comparison Specimens, in accordance with the provisions of ANSI B46.1. Values of roughness width and waviness height are not specified, but shall be consistent with the general type of finish specified by roughness height. Flaws such as scratches, ridges, holes, peaks, cracks or checks which will make the part unsuitable for the intended use will be cause for rejection.

   b. Where the finish is not indicated or specified, the type of finish shall be that which is more suitable for the surface to which it applies and shall be consistent with the class of fit required. Surfaces to be machine finished shall be indicated on the shop drawings by symbols which conform to ANSI B46.1.

3. Unfinished Surfaces. So far as practicable, all work shall be laid out to secure proper matching of adjoining unfinished surfaces. Where there is a large discrepancy between adjoining

unfinished surfaces, they shall be chipped and ground smooth, or machined, to secure proper alignment. Unfinished surfaces shall be true to the lines and dimensions shown on the drawings and shall be chipped or ground free of all projections and rough spots. Depressions or holes not affecting the strength or usefulness of the parts shall be filled in a manner approved by Engineer.

4. Pin Holes shall be bored true to gages, smooth and straight, and at right angles to the axis of the member. The boring shall be done after the member is securely fastened in position.

5. Shafting. Unless otherwise specified or authorized, all shafting shall be turned or ground hot-rolled or cold-rolled steel as required. Fillets shall be provided where changes in section occur. Cold-finished shafting may be used where keyseating is the only machine work required.

6. Bearings. Unless otherwise specified or shown on the drawings, bearing may be lined with babbit or bronze. Where the bearing pressure is in excess of 200 pound per square inch, bearings shall be lined with bronze. Unless otherwise required or authorized, pressures on lined bearings shall not exceed 1000 pound per square inch of projected area. Anti-friction bearings of approved types and of sizes not less than those recommended by the bearing manufacturer for the duty intended may be permitted subject to approval. All bearings shall be properly aligned and provided with a suitable means of lubrication. Anti-friction bearings shall be so installed as to provide for retention of the lubricant and to exclude dirt and grit.

I. MISCELLANEOUS PROVISIONS.

1. Metallic Coatings.

   a. Zinc Coatings. Zinc coatings shall be applied in a manner and of the thickness and quality conforming to ASTM A 123. In all cases where zinc coating is destroyed by cutting, welding, or other causes, the affected areas shall be regalvanized by the following methods. Coatings 2 ounces or heavier shall be regalvanized with the 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 regalvanized by a repair compound conforming to DOD 21035.

2. Cleaning of Corrosion-Resisting Steel. After fabrication, oil, paint and other foreign substances shall be removed from corrosion-resisting steel surfaces. Cleaning shall be done by vapor degreasing or by the use of cleaners of the alkaline, emulsion or solvent type. After the surfaces have been cleaned, they shall be given a final rinsing with clean water followed by

a 24-hour period during which the surfaces are intermittently wet with clean water and then allowed to dry for the purpose of inspecting the clean surface. The surfaces shall be visually inspected for evidence of paint, oil, grease, welding slag, heat treatment scale, iron rust or other forms of contamination. If evidence of foreign substance exists, the surface shall be cleaned in accordance with the applicable provisions of Section 6 of ASTM A 380. The proposed method of treatment shall be furnished for approval. Brushes used to remove foreign substances shall utilize only stainless steel or nonmetallic bristles. Any contamination occurring subsequent to the initial cleaning shall be removed by one or more of the methods indicated above.

3. Protection of Finished Work.

a. Machined Surfaces shall be thoroughly cleaned of foreign matter. All finished surfaces shall be protected by suitable means. Unassembled pins and bolts shall be oiled and wrapped with moisture resistant paper or protected by other approved means. Finished surfaces of ferrous metals to be in bolted contact shall be washed with a rust inhibitor and coated with a suitable rust resisting compound for temporary protection during fabrication, shipping, and storage periods. Finished surfaces of metal which will be exposed after installation shall be painted as specified in Section 10 Painting, except painting of corrosion resisting steel or nonferrous metals will not be required.

b. Lubrication. The arrangement and details for lubrications shall be as shown on the drawings. Before erection or assembly, all bearing surfaces shall be thoroughly cleaned and lubricated with an approved lubricant. After assembly, all lubricating systems shall be filled with the lubricant specified and, as required, additional lubricant shall be applied at regular intervals to maintain the equipment in satisfactory condition until acceptance of the work by the Owner.

Threads on screw jacks and gate latches, shall be lubricated with the lubricant specified above and maintained in satisfactory condition until acceptance of the work by the Owner.

J. INSTALLATION.

1. General. All parts to be installed shall be thoroughly cleaned. Packaging compounds, rust, dirt, grit and other foreign matter shall be removed. Holes and grooves for lubrication shall be cleaned. Enclosed chambers or passages shall be examined to make sure that they are free from damaging materials. Where units or items are shipped as assemblies they will be inspected by a representative of the Contracting Officer prior to instal-

lation. Disassembly, cleaning and lubrication will not be required except where there is indication that such work is necessary to place the assembly in a clean and properly lubricated condition. Pipe wrenches, cold chisels, or other tools likely to cause damage to the surfaces of rods, nuts, or other parts shall not be used for the work of assembling and tightening parts. Bolts and screws shall be tightened firmly and uniformly, but care shall be taken not to overstress the threads. When a half nut is used for the purpose of locking a full nut, the half nut shall be placed first and followed by the full nut. Threads of all bolts, except high strength bolts, nuts and screws shall be lubricated by graphite and oil before assembly. Threads of corrosion-resisting steel bolts and nuts shall be coated with a suitable anti-galling compound. Driving and drifting bolts or keys will not be permitted.

2. Alignment and Setting. Each machinery or structural unit shall be accurately aligned by the use of steel shims or other approved methods so that no binding in any moving parts or distortion of any member occurs before it is finally fastened in place. The alignment of all parts with respect to each other shall be true within the respective tolerances required. The machine shall be set true to the elevations shown on the drawings.

3. Blocking and Wedging. All blocking and wedging used for the support, during installation, of parts to be grouted in shall be removed before final grouting, unless otherwise directed by the Engineer. Blocking and wedges left in the foundation with the approval of the Engineer shall be of steel or iron.

4. Foundations and Grouting. Concrete of sub-bases and frames and the final grouting under parts of machines shall be in accordance with good construction practices.

5. Expansion Joint Covers. Expansion joint covers shall be set in formwork before pouring concrete and protected from damage and soil.

6. Pipe Sleeves. Pipe sleeves shall be set in formwork before pouring concrete. Align and space as indicated on the drawings.

PART 7B-4 MEASUREMENT AND PAYMENT.

No separate payment will be made for the material and work covered under this section and all costs in connection therewith shall be included in the applicable contract unit or lump sum prices for items of work to which the work is incidental.

END OF SECTION

SECTION 7C

SWING GATE

PART 7C-1 - GENERAL

A. SCOPE.

The work covered by this section consists of furnishing all plant, shop drawings, equipment, labor and materials for furnishing and installing the swing gates and all auxiliary items required for closing, sealing, latching, operating and storing these gates as indicated on the drawings and specified herein.

B. QUALITY CONTROL.

1. General. The Contractor shall establish and maintain quality control for swing gate operations to assure compliance with contract specifications and maintain records of his quality control for all construction operations including, but not limited to the following:

   a. Insure timely submittal of shop drawings.

   b. Inspection on delivery of fabricated items for damage, defects and conformance with approved shop drawings.

   c. Installation in conformance with manufacturer's recommendations and/or contract requirements.

2. Reporting. The original and two copies of these records and tests, as well as the records of corrective action taken, shall be furnished to the Owner daily.

C. SHOP DRAWINGS.

The Contractor shall prepare and submit for approval of the Engineer complete shop drawings and descriptive literature showing details of the swing gates required as indicated herein and on the contract drawings.

PART 7C-2 - PRODUCTS

A. MATERIAL GRADES, TYPES AND CLASSES.

1. General. Materials for the gates shall be as indicated on the drawings and as follows:

Part	Material
Girders, ribs, rods, skin plates, structural tubing, gussets, corner protection angles, stiffeners, angles, bars, plates and other structural steel not otherwise indicated or specified	Structural steel as specified in paragraph 7C-2.A.2

Seal plate, seal retaining bars, and hinges for swing gates	Corrosion resisting steel as specified in paragraph 7C-2.A.3.
Auxiliary items	As indicated on drawings or specified in Sections 7A and 9.

2. Structural Steel. Structural steel for the gates shall conform to the applicable provisions of ASTM A 36, standard specifications for "Structural Steel", and shall conform to the shapes and sizes indicated on the drawings. High strength structural steel shall conform to the applicable provisions of ASTM A 572-82, Grade 50.

3. Corrosion Resisting Steel.

   a. Seal Plate and Seal Retaining Bars. The seal plates and seal retaining bars for gates shall be corrosion-resisting steel of the sizes and dimensions indicated on the drawings and shall comply with the provisions of paragraph 7A-2.A.2.b.

   b. Hinges for Swing Gates. The hinges for swing gates shall be corrosion resisting steel of the sizes and types indicated on the drawings.

4. Gate Seals. Gate seals for the gates shall be made to the shapes, sizes and dimensions shown on the drawings and shall be made from rubber.

   a. The rubber seals shall be molded only and the material shall be compounded of natural rubber or a copolymer of butadiene and styrene, or a blend of both and shall contain reinforcing carbon black, zinc oxide, accelerators, antioxidants, vuclanizing agents and plasticizers. Physical characteristics shall meet the following requirements:

Physical Test	Test Value	Test Method Specification
Tensile Strength	3000 psi (min)	Fed. Std. 601 Method No. 4111 or - ASTM D 412
Elongation at Break	450% (min)	Fed. Std. 601, Method No. 4121 or - ASTM D 412
300% Modulus	900 psi (min)	Fed. Std. 601, Method No. 4131 or - ASTM D 412

Durometer Hardness Shore type A	60 to 70	Fed. Std. 601, Method No. 3021 or - ASTM D 2240
Water Absorption	5% by weight (max)	Fed. Std. 601, Method No. 6631 or - ASTM D 471
Compression Set	30% (max)	Fed. Std. 601, Method No. 3311 or - ASTM D 395
Tensile Strength after Oxygen Bombing Agent	80% (min) of tensile strength	Fed. Std. 601, Method No. 7111 or - ASTM D 572

b. All joints in seals shall be spliced as specified for non-metallic waterstops in paragraph 6C-3.A.2.a.

5. Auxiliary Items. Auxiliary items shall be as indicated on the drawings and specified in Section 7A and 9.

PART 7C-3 EXECUTION

A. WORKMANSHIP.

All metalwork fabrication and machine work shall comply with the applicable provisions of Section 7B. All parts shall be properly fabricated, assembled and installed to conform to the shapes, sizes and dimensions indicated on the contract drawings and approved shop drawings.

Prior to gate delivery and installation, the Contractor shall provide the Engineer with his proposed method of delivery, handling, site storage, installation and adjustment for review. All such work shall be accomplished in the presence of the Engineer's representative.

B. TRIAL OPERATION AND TEST.

After erection and before final acceptance, the gates shall be operated back and forth between the stored position and the latched closed (sealed) position a sufficient number of times to demonstrate to the satisfaction of the Engineer that the gates have been properly installed and adjusted as required by the drawings and specifications. The workmanship and adjustments shall be such that when unlatched, the gates will move freely; when latched in the stored position, the gates will be securely fastened against movement in any direction; and when latched in the closed position, the gates will be securely fastened against movement in any direction. Any defects disclosed during testing shall be promptly corrected without additional cost to the Owner and the tests repeated until the gates have satisfactorily

passed the tests. No separate payment will be made for testing and adjusting the gates.

PART 7C-4 MEASUREMENT AND PAYMENT.

A. METHOD OF MEASUREMENT.

No measurement will be made for structural steel.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement or payment is not specified shall be considered as incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT

Payment for structural steel for the gates will be included in the contract lump sum price for "Structural Steel Gates, Miscellaneous Metals and Specialty Items" which payment shall constitute full compensation for furnishing, fabricating, shop and field painting, assembling, and placing the structural steel shown on the drawings or required by these specifications, and testing the operation of the gates. Structural steel for the gates include girders, ribs, skin plates, stiffeners, gussets, bars, shims, angles, plates, seal plates, seal retaining bar, gate seals and miter blocks, and other structural steel not otherwise indicated or specified.

Payment will be made under:

Pay Item No. 8: Structural Steel Gates, Miscellaneous Metals and Specialty Items - per Lump Sum.

END OF SECTION

SECTION 8

CATHODIC PROTECTION

PART 8-1 - GENERAL

A. SCOPE.

The work covered by this section consists of furnishing all plant, labor, material and equipment required to electrically bond the piling as shown on the drawings and as specified herein to permit installation of a cathodic protection system.

B. QUALITY CONTROL.

1. General. The Contractor shall establish and maintain quality control for bonding operations to assure compliance with contract specifications and maintain records of his quality control for all construction operations including but not limited to the following:

   a. Welds connection No. 6 bar.

   b. Installations of flexible jumpers.

2. Reporting. One original and two copies of these records and tests, as well as the records of corrective action taken, shall be furnished the Engineer daily.

PART 8-2 - PRODUCTS

A. BONDING.

1. Reinforcing Bar. A No. 6 reinforcing bar shall be used for electrically bonding sheet piles.

2. Flexible Jumpers. Flexible jumpers shall be No. 1/0 A.W.G. Copper Type USE insulated with a minimum of 95 mils of cross-linked polyethelene insulation.

PART 8-3 - EXECUTION

A. BONDING, I-TYPE FLOODWALL.

The sheet piles shall be electrically bonded together with a No. 6 reinforcing bar welded to the piles as shown on the drawings. Flexible jumpers shall be installed at all monolith joints and shall be welded, using an exothermic type process, to the sheet piling 3" below the bottom of the concrete and shall be of sufficient length to provide an 8" loop.

B. BONDING, T-TYPE FLOODWALL OR GATE MONOLITHS.

The sheet piles shall be electrically bonded together with a No. 6 reinforcing bar and flexible jumpers as indicated in paragraph 8-3.A and paragraph 8-3.C. The sheet pile of the T-type wall shall be bonded to the I-type wall with flexible jumpers.

C. FLEXIBLE JUMPERS.

Flexible jumpers shall be welded to the piling, using an exothermic type process. Welded joints shall be coated with splicing epoxy to obtain a moisture proof joint. The welding process shall be such that the heat of welding will not damage the insulation on the wire. The welding process shall be the Cadweld process of Erico Products, Inc., or equal.

PART 8-4 MEASUREMENT AND PAYMENT.

No separate payment will be made for furnishing and installing the No. 6 reinforcing bars and the flexible jumpers and all costs in connection therewith shall be included in the applicable contract unit or lump sum prices for the items of work to which the work is incidental.

END OF SECTION

SECTION 9

MISCELLANEOUS SPECIALTY ITEMS

PART 9-1 - GENERAL

A. SCOPE.

The work covered by this section consists of furnishing all plant, labor, materials and equipment for miscellaneous specialty items as shown on the drawings and specifications herein and shall include, but is not limited to, the items below.

PART 9-2 - PRODUCTS

A. MATERIALS.

1. Screw Jack. Screw jacks for swing gates shall have a 12-ton rated capacity with a 1-1/2 by 8-inch malleable base, bell bottom, ball-bearing screw jack as manufactured by Duff-Norton Co., Charlotte, NC (11-1/4 inch closed height and 16-1/4 inch extended height) or equal.

2. Chains. Chains for latching devices shall be 3/16" size, not galvanized, Part No. 3592T44, Grade 28 Proof Coil Chain, McMaster-Carr Supply Co., Cat. 91, or equal.

3. Turnbuckles, Clevises and Fitted Bolts.

a. Turnbuckles and clevises shall be furnished in the sizes and to the dimensions indicated on the drawings. Turnbuckles and clevises shall be forged, zinc coated steel with U.N.C. threads and shall conform to dimensions and working loads as indicated in the "Manual of Steel Construction", published by the American Institute of Steel Construction".

b. Fitted bolts shall be as indicated on the drawings and specified in paragraph 7B-3.F. Cotter pins for fitted bolts shall conform to the provisions of Federal Specification FF-P-386D(1), "Pins, Cotter (Split)", Type C, Size 3/8 by 2-1/2 inch. Nuts shall conform to Fed. Spec. FF-N-836D(1) and washers to Fed. Spec. FF-W-92A(1), as indicated in paragraph 7B-2.B.

4. Eye Hook. The eye hook for latching devices shall be 1-1/2 ton (safe working load) as mfg. by Crosby-Laughlin, catalog No. 950-5, Item No. 320A (Alloy Steel), or equal. Eye hook to be "hot dip" galvanized.

5. Grout. The non-shrink grout specified on the drawings shall be EMBECO or equal.

6. Plastic Sealant. This sealant shall conform to the applicable provisions of Federal Specification SS-S-00210 "Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints".

7. Standard Turnbuckles. Standard turnbuckles for latching devices shall be 3/4" x 6", C.R.S., Item No. M-10-ST, by Holloway Louisiana or equal.

8. At Transition from I-Wall to T-Wall. The steel sheet piling slip joint shall be surrounded by 18 gage steel sheet metal, as shown on the drawings. The space between the sheet metal and the steel sheet piling is to be filled with a plastic sealant, as specified in paragraph 9-2.A.6.

PART 9-3 - EXECUTION - (NOT USED)

PART 9-4 MEASUREMENT AND PAYMENT

No separate payment will be made for the material and work covered under this section and all costs in connection therewith shall be included in the applicable contract unit or lump sum prices for the items of work to which the work is incidental.

END OF SECTION

SECTION 10

PAINTING

PART 10-1 - GENERAL

A. SCOPE.

The work covered by this section of the specifications consists of furnishing all plant, labor, equipment, appliances, materials and in performing all operations in connection with preparation of surfaces and application of paint and other specified materials. This work shall be accomplished in complete and strict accordance with the specifications and the applicable drawings and shall be subject to the terms and conditions of the contract.

B. QUALITY CONTROL.

1. General. The Contractor shall establish and maintain quality control for painting operations to assure compliance with contract specifications and maintain records of his quality control for all construction operations including but not limited to the following:

   a. Cleaning and preparation of surfaces.

   b. Paint and formulation.

   c. Number of coats and date of application.

   d. Protection of paint surfaces.

2. Reporting. The original and two copies of these records and tests, as well as the records of corrective action taken, shall be furnished to the Owner daily.

C. DEFINITIONS AND NOMENCLATURE.

1. Paint. The term "paint" as used herein includes emulsions, enamels, paints, stains, varnishes, sealers, and other coatings, organic or inorganic, whether they be used as prime, intermediate, or finish coats. This definition does not include troweled or sprayed-metal coatings.

2. Shop Painting. The term "shop painting" as referred to herein and/or on drawings covers surface preparation and painting operations conducted in a shop, mill, or plant, before shipment operations conducted at the project site.

3. Field Painting. The term "field painting" as referred to herein and/or on the drawings covers surface preparation and painting operations conducted at the project site.

4. Touchup Painting. The term "touchup painting" refers to the application of paint on small areas of painted surfaces to repair mars, scratches, and other defects where the coating has deteriorated in order to restore the coating to an unbroken condition.

5. Repainting. The term "repainting" designates the cleaning and recoating with the same or similar materials originally used on extensive areas on which the existing coatings have deteriorated or otherwise have not provided adequate protection.

6. Surface Not to be Painted. Paint shall not be applied to grease fittings, rubber, corrosion-resisting steel, non-ferrous finishes or machined surfaces.

D. APPLICABLE PUBLICATIONS (Current Edition).

1. American Society for Testing and Materials (ASTM) Publications.

ASTM D 362	Industrial Grade Toluene
ASTM D 520	Zinc Dust (Metallic Zinc Powder)
ASTM D 561	Carbon Black
ASTM D 740	Methyl Ethyl Ketone
ASTM D 846	Ten-Degree Xylene
ASTM D 1153	Methyl Isobutyl Ketone
ASTM D 1200	Viscosity of Paints, Varnishes and Lacquers by Ford Viscosity Cup
ASTM D 1210	Fineness of Dispersion of Pigment-Vehicle Systems
ASTM E 97	45-deg., 0-deg. Directional Reflectance Factor of Opaque Specimens by Broad-Band Filter Reflectometry

2. Compressed Gas Associated, Inc. (CGA).

Pamphlet G-7.1	Commodity Specification for Air Available from: Compressed Gas Assoc., Inc. 500 Fifth Avenue New York, NY 10036

3. Federal Standards (Fed. Std.).

No. 595a & Change Notice 4	Colors

No. 141a & Change Notice 1, 2, 3, 4	Paint, Varnish, Lacquer and Related Material; Methods of Inspection, Sampling and Testing

4. Reserved.

5. Steel Structures Painting Council (SSPC).

SSPC-SP 3	Power Tool Cleaning
SSPC-SP 5	White Metal Blast Cleaning
SSPC-SP 7	Brush-Off Blast Cleaning

6. Special Formulations. Special formulations indicated herein that are not covered by Federal or other nationally recognized standard specifications are specified below in paragraph 10-2.A.

E. SAMPLING AND TESTING

1. General. Batches of paint which the Contractor proposes to use shall be stored in an approved shelter on the project site or segregated at the source of supply sufficiently in advance of need to allow 30 days for sampling and testing. The Contractor shall notify the Engineer when the paint is available for sampling. Sampling of each batch will be witnessed by a representative of the Engineer unless otherwise specified or directed. Samples of paint submitted for approval shall be clearly labeled to indicate formula or specification number and nomenclature, batch number, batch quantity, color, date made and applicable project contract number. Where specifically indicated herein or where indicated in a standard specification for a finished product, separate samples of ingredient 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. Shipment of samples shall be at the Contractor's expense. Testing of paint for compliance with the specifications will be performed in an Owner designated laboratory.

2. Special Paint Formulations Not Covered by Standard Specifications. Except as otherwise indicated, inspection and tests will be performed in accordance with the applicable provisions of Fed. Std. 141a and Change Notices 1, 2, 3, & 4. Test method numbers indicated in paragraph 10-2.A. are, unless otherwise stated, taken from the referenced standard.

   a. Solvents in vinyl and epoxy paints and thinners are subject to analysis by programmed temperature gas chromatographic methods and/or spectrophotometric methods, employing the same techniques which give reproducible results on prepared control samples known to meet the specifications. If the solvent being analyzed is of the type consisting primarily of a single chemical compound (or a mixture of two or more

such solvents) interpretation of the test results shall take cognizance of the degree of purity of the individual solvent as commercially produced for the paint industry.

b. Adhesion Test. All vinyl paints are subject to the following adhesion test. A total thickness of five to seven mils of dry paint film shall be spray applied to a mild steel panel blast cleaned to white metal and primed with 1.5 and 2.5 mils of V-766e. After being air dried for 2 hours at room temperature, the panel shall be dried in a vertical position for 16 hours at 120°F. After cooling for 1 hour, the panel shall be immersed in tap water at 85-90°F for 48-72 hours. Immediately upon removal, the panel shall be dried with a 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-inch 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 ends of the first two. With the tip of the knife blade, the film shall be loosened from the panel from the third cut between parallel cuts for a distance of 1/8-inch to 1/4 inch. With the panel being held horizontal, the free end of the paint film shall be grasped between the thumb and forefinger and pulled vertically so as 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. Upon being removed by this method, the paint film shall either break or elongate a minimum of 10 percent. Paints not intended to be self priming shall exhibit no delamination from the primer.

F. SUBMITTALS.

1. Special Formulation Paints and Thinners. Two 1-quart samples of each batch of each type and color of all other paint and thinners shall be submitted to the Engineer for approval. For ingredient materials submittal requirements, see paragraph 10-2.A.4, Paint Formulations. When the required quantity of any type is 10 gallons or less, samples of the paint and ingredient materials need not be submitted but instead the Contractor shall submit a signed certificate from the paint manufacturer showing the percentage of each ingredient used to produce the material and a statement that the material complies with all of the requirements of the formulation. Each ingredient shall be clearly identified as provided for above.

G. PACKAGING, LABELING, DELIVERY, AND STORAGE OF PAINTS.

Paints shall be so processed and packaged as to insure that within a period of 1 year from date of manufacture they will not gel, liver, 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 in size with removable friction or lug-type covers. Containers for vinyl-type paints shall be lined

with a coating resistant to the 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 clearly and durably labeled to indicate the purchaser's order number, date of manufacture, manufacturer's batch number, quantity, color, component identification, and the 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.

H. SAFETY PROVISIONS.

The safety provisions contained herein are in addition to those listed in the SPECIAL CLAUSES.

1. Abrasive Blasting.

a. Hoses and Nozzles. Hose of a type to prevent shocks from static electricity shall be used. Hose lengths shall be joined by metal couplings to the outside of the hose to avoid erosion and weakening of the couplings. The couplings shall be fastened together in a way which will prevent accidental disengagement. Nozzles shall be attached to the hose by fittings that will prevent the nozzle from unintentionally becoming disengaged. Nozzle attachments shall be of metal and shall fit onto the hose externally. A dead man control device shall be provided at the nozzle end of the blasting hose to cut off the flow in the event the blaster loses control of the hose. Hoses and all fittings used for abrasive blasting shall be inspected frequently to insure timely replacement before an unsafe amount of wear has occurred.

b. Blasting Helmets. Abrasive blasters under all circumstances shall be protected by air-line fed abrasive blasting helmets of a positive pressure type certified by the National Institute for Occupational Safety and Health (NIOSH) or the Mining Enforcement Safety Administration (MESA). Breathing air, source of supply, and other respirator criteria shall meet the same requirements as set forth in paragraph 10-1.H.6.b below for spray painting.

c. Protective Clothing. The blaster shall be protected against injury from exposure to the blast by appropriate protective clothing including gloves.

d. Workers other than blasters working in areas where unsafe concentrations of abrasive materials and dusts are present, shall be protected by safety goggles and filter type dust respirators. The safety goggles shall be kept clean, fit well, contain lenses of unbreakable glass or plastic, and

allow adequate peripheral as well as straight ahead vision. Persons whose vision requires the use of corrective lenses in spectacles shall wear safety goggles that can be worn over the spectacles without disturbing the adjustment of the spectacles. The filter type dust respirators shall be certified by NIOSH or MESA of dusts not significantly more toxic than lead.

2. Cleaning with Compressed Air. In cleaning with compressed air, the same safety provisions as required for abrasive blasters in paragraph 10-1.H.1 above, including the use of air-line fed abrasive blasting helmets, shall apply.

3. Cleaning with Solvents.

   a. Ventilation. Either natural ventilation or mechanical exhaust ventilation shall be used to remove the vapor at the source and to dilute the concentration of vapors in an enclosed working space for the entire work period.

   b. Work Area without Ventilation. Employees shall be protected against organic vapors in work areas without ventilation by respirators certified by NIOSH or MESA.

   c. Protective Clothing. Exposure of skin and eyes shall be avoided by use of butyl gloves and apron, and safety goggles. The safety goggles shall meet the same requirements as specified above in paragraph 10-1.H.1.

4. Pretreatment of Metals and Concrete with Phosphoric Acid or Similar Type Acids. Workers shall use chemical faceshields and butyl gloves and aprons. An eye lavage and deluge shower shall be provided for shop application. If eyes should be contaminated, copious quantities of water shall be used to irrigate the eyes for at least 15 minutes. Medical attention should be sought.

5. Reserved.

6. Paint Application.

   a. Fire and Explosion Prevention.

      Ventilation. For painting in enclosed spaces with paint made of volatile organic solvents, sufficient exhaust ventilation shall be provided to exchange the air in the enclosed spaces with fresh air at the rate of 5,000 cfm for each spray gun in operation. All parts of enclosed spaces shall be safe at all times from fire and explosion hazards as determined by a calibrated explosimeter or organic vapor analyzer. Exhaust ducts shall discharge clear of working areas and away from sources of possible ignition. Periodic tests shall be made to ensure that the exhausted vapors are not accumulating in other areas. If the ventilation fails,

painting shall be stopped and the compartment shall be evacuated until sufficient exhaust ventilation is provided. Ventilation shall be continued after the completion of painting until the paint film is no longer giving off appreciable amounts of solvent vapors. The final determination as to whether appreciable amounts of solvent vapors are given off shall be made after the ventilating equipment has been shut off for at least ten minutes.

Explosion Proof Equipment. All electrical wiring, lights, and other equipment located in a spraying area where a concentration of solvent vapors may occur shall be of an explosion-proof type approved by the Underwriter's Laboratories for Class I, Division 1, Group D, Hazardous Locations. Electrical wiring, motors, and other equipment outside of, but within 20 feet of any spraying area, shall not produce sparks under normal operating conditions and shall otherwise conform to the provisions for Class I, Division 2, Group D, Hazardous Locations. Electric motors driving exhaust fans shall not be placed inside spraying areas or ducts. Fans shall have nonferrous blades. Portable air ducts shall also be nonferrous materials. All motors and associated control equipment shall be properly maintained and grounded. The metallic parts of air moving devices, spray guns, connecting tubing, and all duct work shall be electrically bonded and the bonded assembly grounded.

Further Precautions. Workers shall wear non-sparking safety shoes. All solvent drums taken into the spraying area shall be placed on non-ferrous surfaces and shall be grounded. Metallic contact shall be maintained between containers and drums when materials are being transferred from one to another. A competent person shall inspect all power and lighting cables to ensure that the insulation is in excellent condition, free of all cracks and worn spots, that there are no connections within fifty (50) feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing. No matches, lighted cigarettes, cigars, or pipes, and no cigarette lighters shall be taken into the area where work is being done. Conspicuous "NO SMOKING" signs shall be posted at all flammable materials spraying areas and storage areas. Suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use.

b. Health Protection.

Respirators. All persons in the area of spray painting operations shall wear an air purifying mask or mouthpiece respirator with chemical cartridge and appropriate filter. Where paint containing high concentrations of volatile organic solvents is being used, continuous flow air-line

respirators certified by NIOSH or MESA shall be used. In enclosed spaces, respirators shall be equipped with a pressure control valve with a quick disconnect feature that activates an automatic shutoff to stop air flow when disconnected, a pressure regulator, and in-line air filters for removal of dusts, mists, fumes, and smokes from the source of air supply. The air line couplings shall be incompatible with outlets for other gas systems.

Breathing Air. Breathing air shall meet the requirements of the specification Grade D breathing air as described in the CGA Pamphlet G-7.1.

Air Compressor. A breathing air type of air compressor shall be used as the source of air supply. If an oil-lubricated compressor is used to provide breathing air for the respirators, it shall be equipped with a high-temperature alarm or carbon monoxide alarm, or both. If only a high temperature alarm is used, frequent testing of the compressor air will be necessary.

Protective Clothing. Workers shall wear cotton work clothes, which cover arms and legs, and gloves.

Protective Program. A respiratory protective program for the use and maintenance of respirators shall be established. The program shall include instructing and training in the proper use and maintenance of respirators and their limitations. The training shall provide the user an opportunity to handle the respirator, have it fitted properly, test its face-piece-to-face-seal, wear it in normal air for a long familiarity period, and finally, to wear it in a test atmosphere. When the user must wear corrective spectacles or corrective lenses as part of the face-piece, they shall be worn so as to provide good vision, comfort, and a gas-tight face-piece-to-face-seal. The maintenance program shall provide for the inspection for defects (including a leak check), cleaning and disinfecting, repair, and storage.

Medical Status. The respirator user's medical status shall be determined by a physician and reviewed periodically (for instance, annually). Persons shall not be assigned to tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and use the equipment and have no illness which may be aggravated by intended painting operations.

PART 10-2 - PRODUCTS

A. SPECIAL PAINT FORMULATIONS NOT COVERED BY STANDARD SPECIFICATIONS.

1. Exceptions. The ingredient materials described in this section are applicable only to the special paint formulations specified

hereinafter and not to those finished-product coatings governed by Federal or other standard specifications.

2. General. Special paints shall have the composition as indicated in the formulas listed herein. Test method numbers indicated herein are, unless otherwise stated, taken from Fed. Std. 141a and Change Notices 1, 2, 3, & 4.

3. Colors and Tints. Colors shall conform to the listed chip of Fed. Std. 595a and Change Notice 4, "Colors". If not specified or otherwise prescribed, the color shall be that naturally obtained from the required pigmentation.

4. Paint Formulations.

   a. Reserved.

   b. Reserved.

   c. Vinyl-Type White (or Gray) Paint.

   Formula V-766e:

Ingredients	Percent of Weight
Vinyl Resin, Type 3	5.6
Vinyl Resin, Type 4	11.6
Titanium Dioxide and (for Gray) Carbon Black	13.0
Di-isodecyl Phthalate	2.9
Methyl Isobutyl Ketone	32.0
Toluene	34.7
Ortho-Phosphoric Acid	0.2
	100.0

   Processing. The dispersion of pigment in this paint 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 of this formulation in steel-lined or steel-ball mills will not be permitted. No grinding aids, anti-settling agents, or any other materials except those shown in the formula will be permitted. The paint shall show the proper proportions of specified solvents when analyzed by chromatographic and/or spectrophotometric methods.

   Phosphoric Acid. The ortho-phosphoric acid shall be measured with great care and diluted with at least four parts of methyl isobutyl ketone to one part of acid. It shall be slowly incorporated into the finished paint with constant and thorough agitation.

   Viscosity. The viscosity of this paint should not exceed 90 seconds using a No. 4 Ford cup (ASTM D 1200).

Adhesion Test. This paint is subject to the adhesion test for vinyl paint outlined previously in paragraph 10-1.E.2.b.

Colors. 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 result in the dry paint film having a reflectance of 20-24 (ASTM E 97). The resulting gray color shall approximate but not necessarily match color 26595 of Fed. Std. 595a and Change Notice 4.

Samples. Except for batches of 10 gallons or less, samples of this paint submitted for approval shall include separate samples of all ingredient materials.

5. Ingredient Materials and Thinners for Special Paint Formulations. The following ingredient materials apply only to those paints whose formulations are shown in the specifications above in detail.

a. Pigments and Suspending Agents.

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

Titanium Dioxide. The titanium dioxide in vinyl paint Formula V-766e shall be one of the following: Titanox 2160, 2201, Titanium Pigment Corp.; Ti-Pure 960, E. I. DuPont de Nemours and Co., Inc.; Unitane OR-650, American Cyanamid Co.; Zopaque R-88S, Glidden Pigments.

b. Resins, Plasticizer and Catalyst.

Di-isodecyl 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 acidity (calculated as acetic acid) of not more than 0.005 percent by weight.

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 the specified formulations, produce results equal to "Vinylite" resin VYHH, as manufactured by the Union Carbide Corporation.

Vinyl Resin, Type 4. Vinyl resin, Type 4 shall be a copolymer of the vinyl chloride-acetate type produced by a solution polymerization process, shall contain (by weight) 1 percent interpolymerized dibasic acid, 84 to 87 percent vinyl chloride, and 12 to 15 percent vinyl acetate. The resin shall have film-forming properties and shall, in the

specified formulations, produce results equal to "Vinylite" resin VMCH as manufactured by the Union Carbide Corporate.

Orthophosphoric Acid shall be a chemically pure 85 percent grade.

c. Solvents and Thinners.

Methyl Ethyl Ketone (MEK) shall conform to ASTM D 740.

Methyl Isobutyl Ketone (MIBK) shall conform to ASTM D 1153.

Toluene shall conform to ASTM D 362.

6. Final Coat. Final paint coats shall be vinyl copolymer paint, Amercoat No. 33 or equal.

PART 10-3 - EXECUTION

A. CLEANING AND PREPARATION OF SURFACES TO BE PAINTED.

1. General. Surfaces to be painted shall be clean before applying paint of surface treatments. The removal of oil and grease shall, in general, be accomplished with mineral spirits of other low toxicity solvents having a flashpoint above 100°F before any mechanical cleaning is started. Solvent cleaning shall be done with clean cloths and clean fluids to avoid leaving a thin film of greasy residue on the surfaces being cleaned. 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. Machinery shall be protected against entry of blast abrasive and dust into working parts. Surfaces to be painted that will be inaccessible after construction, erection, or installation operations are completed shall be painted before they become inaccessible.

2. Ferrous Surfaces. Ferrous surfaces subject to extended periods of immersion or otherwise as required shall be dry blast cleaned to a grade approaching White Metal grade which shall be in accordance with SSPC-SP 5, except that a limited relaxation from the uniform White Metal grade of surface cleanliness will be permitted as described below. The metal shall be cleaned to such a degree that if a large surface were divided approximately into 6-inch squares, at least 75 percent of the subdivisions would meet the White Metal grade of cleanliness and the remaining subdivisions would be randomly distributed. Within these small, randomly distributed areas a minor relaxation from White Metal cleanliness will be permitted, consisting only of very slight

shadows, stains, and discolorations stemming from very thin, adherent, sparsely scattered residues of mill scale and corrosion products. No relaxation from the White Metal grade will be permitted on surface irregularities such as edges, interior angles, welds, rivet lines, and junctions of joining members. The overall blasting effort expended shall be not less than two-thirds (2/3) of that which would be required to accomplish the White Metal grade of cleanliness on the specific surfaces involved, but this limitation shall not be construed as a waiver of any of the requirements above. Weld spatter not dislodged by blasting shall be removed with impact or grinding tools. Surfaces shall be dry at the time of blasting. Blast cleaning to a grade approaching White Metal 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, corrosion, and all ferrous surfaces blast cleaned to a grade approaching White Metal shall be cleaned of dust and abrasive particles by brushing, vacuum cleaning, and/or blowdown with clean, dry compressed air, and given the first coat of paint. All abrasives used in sandblasting operations shall contain less than 1% silica, unless otherwise approved in writing by the Engineer. Compliance with this requirement shall be certified in writing by a qualified testing (analytical) laboratory or by the manufacturers material safety data sheet. Upon written request by the Contractor, the Engineer may authorize mill or shop cleaning of assembled or partially assembled components specified to receive vinyl-type paint systems. The surfaces if shop blasted, shall be shop coated with the first and second coats of the specified paint system. The shop coating shall be maintained in good condition by cleaning and touching up in areas damaged during the construction period. Appearance of pinpoint or general rusting prior to application of field coats will be considered as evidence of poor workmanship, requiring reblasting and repainting at no added cost to the Owner. 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 such a manner as to make them equivalent to adjacent, undamaged paint surfaces.

B. PAINT APPLICATION.

1. General. The finished coating shall be free from holidays, pinholes, bubbles, runs, drops, ridges, waves, laps, unnecessary brush marks, and variations in color, texture, and gloss. Application of initial or subsequent coatings shall not commence until an Engineer's representative has verified that atmospheric conditions and the surfaces to be coated are satisfactory or has waived specific verification. All paint coats shall be applied in such manner as to produce an even, continuous film of uniform thickness. Edges, corners, crevices, seams, joints, welds, and other surface irregularities shall receive special attention to insure that they receive an adequate thickness of paint. Spray equipment shall be equipped with traps and separators and where

appropriate, mechanical agitators, pressure gages, pressure regulators, and screens or filters. Air caps, nozzles, and needles shall be as recommended by the spray equipment shall 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 tips of proper types of orifice sizes.

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 powder stirrers, be incorporated into the vehicle or base paint in such a manner as to produce a smooth, homogeneous mixture, free of lumps and dry particles. Where necessary and with the approval of the Engineer, to suit conditions of surface, temperature, weather, and method of application, the packaged paint may be thinned immediately prior to use by the addition of not more than one pint per gallon of the proper thinner, provided that 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°F before being mixed and thinned, and its temperature in the spray tank or other working container shall not fall below 60°F during the application. Paint that has deteriorated in any manner to such 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 sampled and submitted for testing to determine its suitability for application.

3. Atmospheric and Surface Conditions. Paints shall be applied only to surfaces that are above the dewpoint temperature and that are completely free of moisture as determined by sight and touch. In no case shall any paint 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°F during paint application nor shall paint be applied if the surfaces can be expected to drop to 32°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 temperature and surface dryness requirements prescribed above are maintained. Paint shall not be applied to surfaces heated by direct sunlight of other sources to temperatures that will cause detrimental blistering, pinholes, or porosity of the film. Painting shall be limited to times when wind is not detrimental to the paint application.

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.

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 insuring adequate coverage of edges, corners, crevices, bolts, welds, and similar surface irregularities. Other methods of application to metal surfaces shall be subject to the specific approval of the Engineer. Whenever application of paint by a specific method to a surface is permitted or directed, it is to be understood that all areas inaccessible to that method shall be coated by alternate means.

6. Coverage and Film Thickness. The actual surface area covered per gallon of paint shall not exceed the spreading rates prescribed for specific paints. 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 the base surface and the finish coats shall completely hide undercoats of dissimilar color. 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 on metal practically identical in composition and surface preparation to that being coated and be 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. When calibrating any of the gages for making film measurements of over 3 mils, the calibrating thickness standards (shims) shall be of nonmetallic composition. Where only one thickness is specified, i.e., either a minimum or an average, the calibrating shim's thickness shall closely approximate an average of the two. Calibrating instructions, thickness standards, and in the case of the Mikrotest gage, a calibrating tool, should be obtained from the manufacturer or supplier of the gage. Authorized thickness gages:

General Electric, Type B, General Electric Company
Mikrotest, Elektrophysik - Koln
Elcometer, Elcometer Instruments, Ltd.
Inspector Gage, Elcometer Instruments, Ltd.
Minitector, Elcometer Instruments, Ltd.

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 such 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, 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.

8. Contacting Corrosion Resisting and Clad Metal Surfaces. When 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 off 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 bolted 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.

9. Drying Time Prior to Immersion. Painted surfaces that are to be immersed in water shall be permitted a final drying time as long as practicable, but in any event the following minimum requirements shall be met. Vinyl-type paint systems shall not be immersed until the final coat has dried at least 3 days. Minimum drying periods may be required to be increased up to twofold if the drying temperature is below $65^{\circ}F$ and/or if the immersion exposure involves considerable abrasion.

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 such manner and location as 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.

11. Special Directions for Mixing and Applying Vinyl Paints.

    a. 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. The amount of thinner shall be varied to suit the specific paint

and prevailing temperature and wind conditions, and shall at all times be sufficient to provide a wet spray and avoid deposition of particles that are semi-dry when they strike the surface. Vinyl paints shall not be applied when the temperature of the ambient air and receiving surfaces are higher than 125°F. Each spray coat of vinyl paint contemplated by these specifications shall consist of a preliminary, extra spray pass on edges, corners, interior angles, seams, crevices, junctions of joining members, weld lines and similar surface irregularities followed by an overall double spray coat (single spray coat for glass flake-containing formulas). 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, half-lapped pass at a coverage rate of 255 to 325 square feet per gallon or as otherwise required to provide a dry film thickness of 0.75 mils, followed after drying to at least a near tack-free condition by another spray pass applied at the same coverage rate and where practicable at right angles to the first. Bolts and similar surface projections shall receive sprayed paint from every direction in order to insure 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 practicably consistent with good spraying results. Application of vinyl-type paints by means of hot sprays or airless spray equipment will not be permitted, provided that not more than 2.0 mils (dry film thickness) per double coat is applied, provided the characteristics of the dried coating are not inferior to those of a properly applied conventionally sprayed coating; and provided that airless spray shall be used only on broad, flat or otherwise simply configured surfaces. Under coats shall be dry before recoating and not more than two double spray coats shall be applied in one day.

b. Vinyl Paint (Formula V-766e) is a ready-mixed paint designed to be spray applied over a wide range of ambient temperatures by field thinning with the proper type and amount of thinner. Optional formulations are available which comply with existing air pollution regulations and may be used on projects located in areas where such regulations cannot be circumvented provided "Exempt" (acceptable) field-added thinners are used. For spray application they shall be thinned as necessary up to approximately 25 percent (1 quart per gallon of base paint); when the ambient and steel temperatures are above normal, up to 40 percent thinning may be necessary for satisfactory applications.

C. PAINT SYSTEMS TO BE APPLIED - NUMBER OF COATS AND FORMULAS.

1. General. The required paint systems and the surfaces to which they shall be applied are shown in paragraph 10-3.C.2 below. Supplementary information follows:

a. 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 finished painted in accordance with the manufacturer's standard practice are of acceptable color and are capable of being satisfactorily touched up in the field, and (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.

b. Colors and Tints. Colors and tints shall match the respective color specimens designated by, or shall otherwise be subject to the approval of, the Engineer. Where specified or directed, alternate applications of successive undercoats having the same color shall be tinted with small amounts of lampblack or other approved ingredients, ground in a vehicle compatible with the paint being tinted, in order to insure that all surfaces are properly coated with the specified number of paint coats. Tinting of vinyl type paints shall be done only by the manufacturer.

c. 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 herein before described.

2. Paint Systems and Painting Schedule. See paragraph 10-3.C.3 below for supplementary application instructions pertaining to the following paint systems:

SYSTEM NO. 4

Items or surfaces to be coated: Swing gates, bottom roller gates, screw jacks, corner protection angles, hinges, miscellaneous metal and all ferrous metal not otherwise specified to be painted, except corrosion resistant steel, galvanized steel and padlocks.

SYSTEM NO. 4

Paint Formulas to be Applied

Surface Preparation	1st Coat	2d Coat	3d Coat	4th Coat	5th Coat
Approaching white metal blast cleaning	White Vinyl V-766e (double spray coat)	Gray Vinyl V-766e (double spray coat)	White Vinyl V-766e (double spray coat)	Gray Vinyl V-766e (double spray coat)	Gray Vinyl V-766e (double spray coat)

NOTE: GRAY VINYL PAINT COLOR APPROXIMATES COLOR CHIP 20252 OF FEDERAL (COLOR) STANDARD 59 5A AND CHANGE NOTICE 4.

Sixth and seventh coats consisting of a vinyl copolymer paint, Amercoat No. 33 or equal, shall be applied to all surfaces which received the white or gray vinyl coating. Each coat shall be a blue color approximating color chip 25240 of Federal Standard 595A. The color shall be approved by the Engineer.

3. Supplementary Application Instructions. Surfaces shall be coated with the system indicated in the schedule and/or as noted on the drawings in accordance with the following instructions:

   a. System No. 4. This vinyl paint system shall be spray applied to an average dry film thickness of at least 7.5 mils for the completed system and the thickness at any point shall be not less than 6.0 mils. The specified total film thickness shall be attained in any event and any additional coats needed to do so shall be applied at no additional cost to the Owner. Attainment of the specified film thickness in fewer than the prescribed number of coats or spray passes will be acceptable provided heavier applications do not cause an increase provided that not more than 2.0 mils (dry film thickness) per shall be applied in any agent. See safety provisions and special directions for applying vinyl-type paints.

D. PROTECTION OF NON-PAINTED ITEMS AND CLEAN-UP.

Walls, equipment, fixtures and all other items in the vicinity of the surfaces being painted shall be maintained free of damage by paint or painting activities. Prompt clean-up of any paint spillage and prompt repair of any painting activity damage shall be required.

PART 10-4 MEASUREMENT AND PAYMENT.

No separate payment will be made for painting materials and work furnished under this section, and all costs in connection therewith shall be included in the contract unit or lump sum prices for items of work to which the work is incidental.

END OF SECTION

SECTION 11A

STRUCTURAL EXCAVATION AND BACKFILL

PART 11A-1 - GENERAL

A. SCOPE.

The work covered by this section consists of furnishing all plant, labor, materials, equipment, and performing all operations necessary for structural excavation and backfill for the floodwalls, gates and incidental work as specified herein or as shown on the drawings.

B. QUALITY CONTROL.

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

1. Equipment. Type size, and suitability for construction of the prescribed work.

2. Structural Excavation. Check grade, slopes, and dimensions for compliance with design sections.

3. Grade Tolerances. Check fills to determine if placement conforms to prescribed grade and design section.

4. Construction. Layout, maintaining existing drainage, classification of borrow material, moisture control of fill material, thickness of layers, spreading and compacting.

5. Placing and compacting of structural fill and density tests.

PART 11A-2 - PRODUCTS

A. EQUIPMENT.

1. Sprinkling Equipment. Sprinkling equipment shall be designed to apply water uniformly and in controlled quantities to variable widths of surface.

2. Hand Tampers. Hand Tamping or other approved methods shall be used in the preparation for compaction of fill near structures where vehicular equipment cannot be used. These hand tampers should be power driven hand operated type.

B. Material. Structural backfill shall be material excavated from the existing levee embankment and shall be clay (CL or CH) material.

PART 11A-3 - EXECUTION

A. STRUCTURAL EXCAVATION AND BACKFILL

1. Structural Excavation. The Contractor shall make all excavations required for construction of the floodwall. The Contractor shall design and provide all necessary shoring, bracing, sheeting, underpinning, and/or supports as may be required for the work. The Contractor shall also provide, as necessary, such sumps, pumps, or ditches which may be required to dewater the excavations. Suitable material from required structural excavation shall be used in the structure fill. Unless otherwise specified material classified by the Unified Soil Classification System (as shown on the Soil Boring Legend) as gravels (GW, GP, GM), and sands (SW, SP, SM) shall not be used. Maximum I-wall excavation limits shall not exceed those as shown on the drawings.

2. Structural Backfill. Structural backfill is defined as any soil material which is placed adjacent to the structure constructed in accordance with other sections of these specifications and to the existing levee grade as indicated on the drawings. The Contractor shall fill all excavations to final grades. Structural fill which is placed within 2 feet of the vertical face of piling or I-wall base shall be placed in successive layers not to exceed 8 inches and be semi-compacted, using power hand tampers only. Any other structural backfill shall be placed using power tampers, tamper-type rollers (4 passes each layer), rubber-tired roller (2 passes), and crawler-type tractor (3 passes while not spreading). Material for structural fill shall be obtained from the required structural excavation and borrow area if required and should be free from brick, organics, concrete, rock and other debris. Excess material from the structure excavation shall become the property of the Contractor, and shall be removed from the site at no additional cost. Structural fill shall not be placed against concrete structures for a minimum of 14 days. The Contractor may at his expense place fill sooner if he furnishes and tests cylinders to demonstrate that the concrete has achieved 75 percent of its design capacity. All testing as specified above and all costs associated therewith shall be the responsibility of the Contractor. Material placed as structural backfill shall have a moisture content ranging between the following limits:

	Moisture Content (% Dry Weight)	
Type of Material	Maximum	Minimum
CL	32	18
CH	45	20

If material is too wet, it shall either be stockpiled and allowed to drain before it is placed in the embankment cross section and/or the wet material shall be processed by disking and harrowing, if necessary, until the moisture content is reduced sufficiently. If the material is too dry, it shall either be prewet in the borrow area, or sufficient moisture shall be uniformly distributed in each layer before compaction.

3. Frozen Materials. Under no circumstances shall frozen soil, snow, or ice be placed in any backfill or embankment. The Engineer may require the wasting of frozen material in order that construction may proceed, and such material wasted by written order of the Engineer will be paid for as excavation.

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

5. Dressing. The fill shall be brought to not less than the prescribed design cross section at all points. Unreasonable roughness of surface shall be dressed out to permit fertilizing and seeding operations.

PART 11A-4 - MEASUREMENT AND PAYMENT.

No seperate payment will be made for structural excavation and backfill, and all costs in connection therewith shall be included in the contract unit or lump sum prices for items of work to which the work is incidental.

SECTION 11B

EXCAVATION

PART 11B-1 - GENERAL

A. SCOPE.

The work covered by this section consists of furnishing all plant, labor, materials, equipment, and performing all operations necessary for excavation and disposal of all materials within the construction limits of the access ramps as shown on the Drawings.

PART 11B-2 - PRODUCTS (NOT USED)

Part 11B-3 - EXECUTION

A. EXCAVATION.

1. Excavations shall be completed to the lines and grades shown on the Drawings and shall be finished to reasonably smooth and uniform surfaces.

2. Prior to beginning excavation, all necessary clearing and grubbing and obstruction removals shall have been completed.

3. In preparation of the finished section in a cut area on which fill or base material is to be placed, the Contractor shall attempt all normal earthwork construction methods before undercutting or modifying the soil with additives will be considered by the Engineer. Such construction methods shall include, but are not limited to, the following:

   a. Draining and drying of the surface until the material is within reasonable limits of optimum moisture before compaction is attempted.

   b. Using lighter construction equipment for manipulation, disking, drying and compaction of the material.

   c. Dumping successive loads of material in a uniformly distributed layer of a thickness necessary to support the equipment while placing subsequent layers.

   d. Rerouting heavy construction equipment around the area until the embankment can support such equipment without damage to foundation soils.

4. Unstable materials shall be removed by undercutting, unless otherwise directed, and the areas backfilled to the required section with usable soils as directed.

5. If undercutting is required, the Contractor shall conduct his operations only upon approval of the Engineer and in such manner

that the Engineer can make the necessary measurements before the backfill is placed. Undercut will be paid for as excavation, and the required usable soils for backfilling will be paid for as embankment. Measurement of undercut will be made to the subgrade or original ground line, whichever is lower.

PART 11B-4 - MEASUREMENT AND PAYMENT.

A. METHOD OF MEASUREMENT.

Measurement will be made per cubic yard, computed by the average end area method. The end area will be bounded by (1) the original ground line established by field cross section taken after completion of all required clearing and grubbing and (2) the final grade line shown on the plans or established by the Engineer.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement or payment is not specified shall be considered as incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT.

The accepted quantities will be paid for at contract unit prices, which includes furnishing all equipment, labor and materials necessary to complete this item:

Payment will be made under:

Pay Item No. 9: Excavation - per Cubic Yard.

END OF SECTION

SECTION 12

EMBANKMENT

PART 12-1 - GENERAL

A. SCOPE.

The work covered by this section consists of furnishing all plant, labor, equipment, and materials and performing all operations in connection with foundation preparation and construction of embankments, including new access ramps and other incidental earthwork as may be necessary to complete the embankments as shown on the drawings and as hereinafter specified.

B. QUALITY CONTROL.

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

1. Equipment. Type, size, and suitability for construction of the prescribed work.

2. Foundation Preparation. Breaking surface in advance of embankment construction and during fill placement when necessary, drainage of foundation and partially completed fill.

3. Materials. Suitability.

4. Construction. Layout, maintaining existing drainage, moisture control, thickness of layers, spreading and compacting.

5. Grade and Cross Section. Crown width, crown slope, side slopes, and grades.

6. Roads and Ramps. Location of temporary roads to fields or buildings, location and placement of fills for ramps in accordance with specified dimensions and grades.

7. Grade Tolerances. Check fills to determine if placement conforms to prescribed grade and cross section.

8. Slides. Location and limits; methods and equipment used where remedial work has been directed.

9. Quantity Surveys. Accuracy, timeliness.

10. Moisture Control. Visual soil classification, moisture content and compaction determination to conform with the limits as stated in paragraph 12-3.B.

11. Field Densities. In-place densities of compacted fill and backfill layers will be checked by Owner's Testing Laboratory. The in-place density shall be determined using the Nuclear Gage Method (ASTM D-2922). At least two in-place density tests shall be performed for each lift immediately upon compaction of the lift. Any delays caused by performance of such tests or delays caused by failures of such tests shall be considered incidental to the work. No additional payments will be made for such delays.

12. Settlement Plate Monitoring. The Contractor shall periodically check the elevations of the five existing settlement plates located about the project site as shown on the project drawings and immediately provide such information to the Engineer. The first readings shall be taken prior placment of piling and subsequent to the completion thereof, prior to construction of any embankment, upon the completion of embankment constuction and then every two weeks thereafter through the end of the project. Prior to construction of the gate monoliths, the Contractor shall provide updated readings to the Engineer and shall not proceed with gate monolith construction without approval of the Engineer.

PART 12-2 - MATERIALS AND EQUIPMENT

A. EQUIPMENT.

1. Tractor-Drawn Tamping Rollers. Tractor-drawn tamping rollers shall consist of one or more units. Each unit shall consist of a cylindrical drum not less than 48 inches in length and not less than 40 inches in diameter. Each drum shall have staggered feet uniformly spaced over the cylindrical surfaces so as to provide approximately 3 tamping feet for each 2 square feet of drum surface. The tamping feet shall be 7 to 11 inches in clear projection from the cylindrical surface of the roller, and shall have a face area of not less than 5 or more than 10 square inches. The drums shall be water or sand and water ballasted. The weight of the roller when fully loaded shall not be less than 1150 pounds per linear foot of drum length and when empty shall not be more than 675 pounds per foot of drum length. The Contractor will be required to vary the amount of ballast in the drums to obtain optimum compactive effort for the material being compacted. The roller shall be equipped with cleaning devices so designed and attached as to prevent the accumulation of material between the tamping feet. These cleaning devices shall be maintained at their full length and correct alignment throughout the periods of use of the roller. The rolling units of multiple-type tamping rollers shall be pivoted on the main frame in a manner which will permit the units to adapt themselves to uneven ground surfaces and to rotate independently. The roller shall be pulled by a tractor at a speed not to exceed 3.5 miles per hour.

2. Self-Propelled Tamping Rollers. At the option of the Contractor, self-propelled tamping rollers may be used in lieu of tractor-drawn tamping rollers provided these rollers conform to the towed roller requirements for the length and spacing of tamping feet, the empty

weight per foot of drum, and cleaning devices. However, self-propelled rollers exceeding the empty weight requirement may be used provided that by substitution of tamping feet having a face area not exceeding 14 square inches, the nominal foot pressure on the tamping feet of the self-propelled roller can be adjusted to approximate the foot pressure of the towed roller for the particular working conditions. Self-propelled rollers conforming to the above requirements but with tamping feet exceeding the 14 square inch maximum face area may be approved for use provided the Contractor demonstrates to the satisfaction of the Engineer by field tests performed in accordance with the provisions of paragraph 12-2.A.5 that the roller can properly compact the fill. For the self-propelled rollers in which steering is accomplished through the use of rubber-tired wheels, the tire pressures shall not exceed 40 pounds per square inch. The roller shall be operated at a speed of not more than 3.5 miles per hour.

3. Rubber Tired Rollers. Rubber-tired rollers shall have a minimum of four wheels equipped with pneumatic tires. The tires shall be of such size and ply as to be capable of being operated at tire pressures between 80 and 100 pounds per square inch at a 25,000-pound wheel load. The roller wheels shall be located abreast and so designed that each wheel will carry approximately equal load in traversing uneven ground. The spacing of the wheels shall be such that the distance between the nearest edges of adjacent tires is not greater than 50 percent of the rated tire width of a single tire. The roller shall have a rigid steel frame provided with a body suitable for ballast loading so that the load per wheel may be varied, as directed by the Engineer, from 18,000 to 25,000 pounds. The roller shall be towed at speeds not to exceed 5 miles per hour.

4. Crawler-Type Tractors. Crawler-type tractors used for spreading or compaction shall weigh not less than 20,000 pounds, shall exert a unit tread pressure of not less than 6 pounds per square inch, and shall be operated at speeds not to exceed 3.5 miles per hour.

5. Alternative Compaction Equipment. The Contractor may propose for use alternative types of compaction equipment not included in these specifications. The suitability of the alternative equipment must be demonstrated to the Engineer by a field test conducted by and at the expense of the Contractor. The alternative compaction equipment must be capable of properly compacting the soil. The field test shall consist of compacting a minimum of three layers of an area of embankment with the alternative type equipment. Testing and inspection of the area shall then be performed by the Contractor at no additional cost to the Owner. Procedures for constructing and testing the area will be provided by the Engineer. Each proposed alternative type of equipment must be capable of compacting a layer of soil not less than 12-inches thick. A minimum of four complete passes over each layer of the test fill will be required for each type of alternative equipment that is allowed for use, unless in the course of constructing the test fill the Contractor is able to demonstrate that proper compaction can be obtained with fewer passes. Alternative type equipment shall be operated at speeds not

to exceed 3.5 miles per hour. If sufficient previous testing has been performed on the alternative compaction equipment proposed by the Contractor to verify the suitability of the equipment to the Engineer's satisfaction, the Engineer may determine that the above-specified field test is not required.

6. Miscellaneous Equipment. Scarifiers, disks, spring-tooth or spike-tooth harrows, spreaders, power tampers, and other equipment shall be types suitable for construction of embankment and berms.

7. Sprinkling Equipment. Sprinkling equipment shall consist of tank trucks, pressure distributors, or other equipment designed to apply water uniformly and in controlled quantities to variable widths of surface.

B. EMBANKMENT MATERIALS.

1. General. The select material to be used for fill shall be clay as specified in paragraph 11A-2.B, and shall be free from roots, concrete or other objectionable matter as described below and shall be obtained from borrow pits furnished by the Contractor and must be approved by the Engineer prior to hauling any material to the job site. Unless otherwise specified, material classified by the Unified Soil Classification System (as shown on the Soil Boring Legend) as gravels (GW, GP, GM) and sands (SW, SP, SM) shall not be used unless suitably blended with less pervious material.

2. Unsuitable Materials. Materials which are classified as unsuitable for embankment material are defined as masses of organic matter, sticks, branches, roots, and other debris. As earth from the designated borrow area (areas) may contain excessive amounts of wood, isolated pieces of wood will not be considered objectionable in the embankment provided their length does not exceed 1 foot, their cross-sectional area is less than 4 sq in. and they are distributed throughout the fill. Not more than 1 percent (by volume) of objectionable material shall be contained in the earth material placed in each cubic yard of the ramp section. Pockets and/or zones of the wood shall not be placed in the embankment.

3. Frozen Materials. Under no circumstances shall frozen earth, snow, or ice be placed in an embankment.

PART 12-3 - EXECUTION

A. EMBANKMENT FOUNDATION PREPARATION.

After clearing and grubbing and any required excavation of the embankment foundation, test pits and other similar cavities and depressions shall be broken down, where so directed, to flatten out the slopes. The entire earth surface on or against which fill is to be placed, shall be thoroughly broken to a depth of 6 inches. If for any cause, this broken surface becomes compacted in such a manner that, in the opinion of the Engineer, a plane of seepage or weakness might be induced, it shall again be adequately scarified before depositing

material thereon. All scarifying and breaking of ground surface shall be done parallel to the centerline of the ramp. All of the foregoing work shall be completed in advance of the embankment construction.

The foundation receiving fill and all partially completed fill shall be kept thoroughly drained. Furthermore, no fill shall be placed upon frozen ground.

B. EMBANKMENT CONSTRUCTION.

1. General. The embankment shall be constructed and compacted using equipment specified in paragraph 12-2.A of the Specifications. Fill shall not be placed in water. The materials for compacted fill shall be placed or spread in layers, the first layer not more than 6 inches in thickness and the succeeding layers of 8 to 10 inches in thickness prior to compaction. Layers shall be started full out to the slope stakes and shall be carried substantially horizontal and parallel to the levee centerline with sufficient crown or slope to provide satisfactory drainage during construction. When the surface of any compacted layer is too smooth to bond properly with the succeeding layer, it shall be adequately scarified before the next layer is placed thereon.

2. Soil Compaction Requirements. The Contractor shall place and compact the embankment material to 95% of maximum density at optimum moisture content in accordance with ASTM D698.

3. Method of Compaction

a. Tamper-Type Roller. A sufficient number of complete passes over each layer to obtain the specified compaction will be required. If tampering rollers are used in tandem, not more than two rows will be permitted, and in such case, one trip of the tandem rollers over any surface will be considered as two passes. When tamping rollers are used in tandem, the tamper foot spacing shall be offset so that the circumferential rows on the rear drums are in line with the midpoint of the circumferential rows of the forward drums. Each pass of the tamping roller shall overlap the preceding or adjacent pass by not less than 1.0 foot.

b. Rubber-Tired Roller. A sufficient number of complete passes over each layer to obtain the specified compaction will be required.

c. Crawler-Type Tractor. A sufficient number of complete passes over each layer to obtain the specified compaction will be required. The tractor will not be considered to be compacting while spreading materials.

d. Definition of Pass. A pass shall consist of one complete coverage of the surface of a layer by the treads of the roller, tractor, or other compacting equipment. Portions of the embankment which the compacting equipment cannot reach for any

reason shall be compacted by an approved method to the density at least equal to that of the surrounding embankment.

e. Additional Compaction. If, in the opinion of the Engineer, the desired compaction of any portion of the embankment cannot be secured by the minimum number of passes specified, additional complete passes shall be made over the surface area of such designated portion until the desired compaction has been obtained.

4. Dressing. The entire embankment including topsoil where specified, shall be brought to not less than the prescribed cross section at all points. Unreasonable roughness of surface shall be dressed out to permit turfing operations.

5. Dust Control. Contractor shall wet as required his embankments and stockpiled area to prevent dust from blowing away from the project site.

C. CROSS SECTIONS AND ZONING OF MATERIALS.

1. Embankment Sections. Unless otherwise specified, the dimensions and slopes shall conform to the applicable cross sections shown on the drawings.

2. Zoning of Materials for Ramp Construction In general, the ramp section shall be homogeneous; however, where materials of varying permeabilities are encountered in the borrow areas, the more impervious material shall be placed near the outside of the section, and the more pervious material near the inside center.

D. SLIDES.

Should sliding occur in any part of the embankment during its construction, or after its completion, but prior to its acceptance, the Contractor shall, upon written order of the Engineer, either cut out and remove the slide from the embankment and then rebuild that portion of the embankment, or construct a stability berm of such dimensions, and placed in such manner, as the Engineer shall prescribe. In case the slide is caused through fault of the Contractor, the foregoing operations shall be performed at no additional cost to the Owner. In case the slide is caused through no fault of the Contractor, the Contractor shall be fully compensated for material removed and replaced. Fill material for stability berms will be paid for as specified in paragraph 12-4 in addition to any payment due the Contractor for materials previously placed. The method of slide correction will be determined by the Engineer.

PART 12-4 - MEASUREMENT AND PAYMENT.

A. METHOD OF MEASUREMENT.

Unless otherwise specified, compacted fill will be measured for payment by the cubic yard, and quantities will be determined by the average end

area method of the compacted gross in-place levee section. The basis for the measurement will be cross sections of the areas to be filled taken prior to clearing including the vegetation removal work specified in Section 3, and grubbing, and the theoretical gross cross sections from the grades, side slopes, cross widths, and other dimensions shown on the drawings or specified herein.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement or payment is not specified shall be considered as incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT.

Payment of all compacted material placed and compacted as required to construct the access ramps and gate berms will be made at the contract price per cubic yard for "Embankment-Compacted" which price and payment shall constitute full compensation for furnishing all plant, labor, equipment and material and performing all operations necessary for the foundation preparation, placing and compacting the material and moisture control as well as settlement plate monitoring. Any excavation required for ramp construction shall be incidental to this work.

Payment will be made under:

Pay Item No. 10: Embankment - Compacted - per Cubic Yard.

END OF SECTION

SECTION 13

ACCESS RAMP PAVEMENT AND BASE

PART 13-1 - GENERAL

A. GENERAL.

All work associated with the access ramps pavement and base under this contract, including but not limited to all materials therefore, construction requirements, method of measurement and basis of payment, shall be in accorance with the "Louisiana Standard Specifications for Roads and Bridges - 1982 edition", Louisiana Department of Transportation and Development, Office of Highways, Baton Rouge, Louisiana.

Copies of the "Louisiana Standard Specifications for Roads and Bridges" are available for a cost of $10.00 from:

Louisiana Department of Transportation and Development
Headquarters Administration Building - Room 100
Capitol Access Road
Baton Rouge, LA

The following specifications are referenced throughout these specifications and are considered as much a part of these specifications as if fully described therein.

"Manual on Uniform Traffic Control Devices". Available through purchase from the Louisiana Department of Transportation and Development, Baton Rouge, Louisiana.

"ASTM" is defined as "American Society for Testing and Materials", including revisions.

"ACI" is defined as "American Concrete Institute Standard Building Code Requirements", including revisions.

"AASHTO" is defined as "American Association of State Highway and Transportation Standard Specifications", including revisions.

B. SUBMITTALS. Contractor shall be required to design and submit the job mix formula for review and approval of the Engineer.

PART 13-2 - PRODUCTS

A. Materials used in the construction of the access ramp pavement and base shall be in accordance with the Drawings and as specified in the "Louisiana Standard Specifications for Roads and Bridges - 1982 Edition".

B. The Contractor shall supply Mirafi 500X geotextile fabric as manufactured by Mirafi Inc. or approved equal.

PART 13-3 - EXECUTION

A. Construction requirements for Marshall stability, aggregate gradation, pavement density and surface tolerance shall be in accordance with Section 501 of the "Louisiana Standard Specifications for Roads and Bridges - 1982 Edition".

B. The Contractor shall be required to install the geotextile fabric as shown on the drawings and in accordance with the manufacturer's installation guidelines.

PART 13-4 - MEASUREMENT AND PAYMENT.

A. METHOD OF MEASUREMENT.

Asphaltic concrete wearing course and base course shall be measured per ton. Sand-shell base shall be measured per square yard. The work shall include furnishing all plant, labor, materials and equipment and performing all operations as shown or indicated in the Drawings and Specifications.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement or payment is not specified shall be considered as incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT.

Payment for this work will be paid for under:

Pay Item No. 11	Asphaltic Concrete Wearing Course (Type 1) per Ton
Pay Item No. 12	Asphaltic Concrete Base Course (Type 1) per Ton
Pay Item No. 13	Sand-Shell Base (6") - per Square Yard
Pay Item No. 14	Geotextile Fabric - per Square Yard

END OF SECTION

SECTION 14

FERTILIZING, SEEDING AND MULCHING

PART 14-1 - GENERAL

A. SCOPE.

The work provided for herein consists of furnishing all plant, labor, equipment, materials, and performing all operations necessary for finished dressing, fertilizing, seeding, and mulching areas as specified herein. Areas to be fertilized, seeded, and mulched include all embankments and all areas cleared and grubbed. The establishment of turf shall be performed upon completion of embankment construction. The period of the year in which the establishment of turf is done on a particular length of embankment will determine the method indicated in Table I which shall be followed for that particular length of embankment. Only one of the methods listed in Table I will be required for that particular length of embankment.

B. SAMPLING AND TESTING.

1. General. Sampling and testing shall be the responsibility of the Contractor and shall be performed at no additional cost. Sampling and testing shall be performed by a recognized commercial testing laboratory or may be performed by the Contractor. Tests shall be performed in sufficient number to insure that materials meet the specified requirements. Signed copies of the test results shall be furnished to the Engineer.

2. Material Testing.

a. Fertilizer: Duplicate signed copies of invoices from suppliers shall be furnished. Invoices shall show quantities and percentage of nitrogen, phosphorous, and potassium for the preplanting fertilizer and percentage of nitrogen for the preplanting fertilizer. Upon completion of the project, a final check of the total quantity of fertilizer used will be made against total area treated, and if minimum rates of application have not been met, an additional quantity of material sufficient to make up the minimum application rate shall be distributed as directed.

b. Seed: The Engineer shall be furnished duplicate signed copies of statements certifying that each container of seed delivered is labeled in accordance with the Federal Seed Act and is at least equal to the requirements specified in paragraph 14-2.A.4. This certification shall be obtained from the supplier and shall be furnished on or with all copies of seed invoices.

c. Mulch: Representative samples of the materials proposed for use shall be submitted for approval.

C. INSPECTION AND ACCEPTANCE.

Final acceptance will be made on completion of the contract. Acceptance of the established turf will be determined by visual inspection. Existence of erosion problems or dead or dying turf will not be acceptable. Payment will not be made until turf is in an acceptable condition.

PART 14-2 - PRODUCTS

A. MATERIALS.

1. Fertilizing During Mulching Operations. The Contractor will be required to supply representative samples of levee material to the Louisiana Cooperative Extension Service to determine the quantity of fertilizer and lime to be used. This service will take a period of three weeks to obtain results.

   Fertilizer shall be uniform in composition and free-flowing. The fertilizer may be delivered to the site in bags or other convenient containers or delivered in bulk. If delivered in bags or containers, the fertilizer shall be fully labeled in accordance with the applicable State fertilizer laws and shall bear the name, tradename or trademark, and warranty of the producer. The fertilizer shall meet the requirements for commercial fertilizer and shall contain a minimum of 100 pounds of available nitrogen per acre, a minimum of 100 pounds of available phosphorus per acre, and a minimum of 100 pounds of available potassium per acre, or the amount determined by the Louisiana Cooperative Extension Service. Should the commercial fertilizer be furnished in bulk, the Contractor shall furnish certified weight tickets and a certified quantitative analysis report, in triplicate, from a recognized testing laboratory certifying the nutrient ratio of the materials. In the event the commercial mixture is delivered to the job site in the original containers, unopened, the analysis report will not be required.

2. Fertilizer, Postplanning. The fertilizer shall meet all of the requirements of 14.4.1 above except it shall contain a minimum of 50 pounds of available nitrogen per acre, or the amount determined by the Louisiana Cooperative Extension Service.

3. Soil for Repairs. For fill of areas to be repaired, soil shall be of a quality at least equal to that which exists in areas adjacent to the area to be repaired. Soil used shall be free from roots, stones, and other materials that hinder grading, planting, and maintenance operations and shall be free from objectionable weed seeds and toxic substances.

4. Seed. Seed labeled in accordance with U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act shall be furnished by the Contractor. Seed shall be furnished in sealed, standard containers unless written exception is granted. Seed that is wet or moldy or that has been otherwise damaged in transit or storage will not be acceptable. The specifications for seeds shall conform to the following and shall be seeded at the following rates:

TABLE 1

Seeding Period Grasses top be Used	Minimum Purity %	Minimum Germination %	Minimum Rate lbs./Acre
2 March - 14 September			
Hulled common Bermuda grass	95	87	40
14 September - 31 December			
Unhulled common Bermuda grass	95	87	60
Rye grass	95	86	70
1 January - 1 March			
Unhulled common Bermuda grass	95	87	30
Hulled common Bermuda grass	95	87	30
Rye grass	97	82	55

5. Water. Water shall be free from oil, acid, alkali, salt, and other substances harmful to growth of grass. Lake Pontchartrain water is not acceptable.

6. Mulch. Wood fiber mulch shall be furnished and applied by the Contractor. Materials that contain noxious grass or weed seeds that might be detrimental to the turfing being established or to adjacent farmland will not be acceptable.

7. Wood Cellulose Fiber Mulch. Wood cellulose fiber mulch for use with hydraulic application equipment shall consist of specially prepared wood cellulose fiber mixed with a non-toxic, organic tackifier. It shall be processed to contain no growth or germination inhibiting factors, and dyed an appropriate color to facilitate visual metering of application of materials. The mulch material shall be supplied in packages having a net weight not in excess of 100 pounds. The wood cellulose fiber shall contain not in excess of 10 percent moisture, air dry weight basis. The wood cellulose fiber shall be manufactured so that after addition and agitation in slurry tanks, with fertilizer, grass seed, water, and any other additives, the fibers in the material will become uniformly suspended to form a homogeneous slurry; and that when hydraulically sprayed on the ground, the material will form a blotter-like ground cover which, after application, will allow the the absorption of moisture and allow rainfall or mechanical watering to percolate to the underlying soil. The Contractor shall be prepared to submit, on

request, certification from the supplier that laboratory and field testing of the product has been accomplished, and that the product meets the foregoing requirements.

B. SPECIAL EQUIPMENT.

1. Wood Cellulose Fiber Mulch Spreader. Hydraulic equipment used for the application of slurry that contains fertilizer, grass seed, and wood cellulose fiber shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry containing up to 300 pounds of fiber plus an amount of fertilizer and grass seeds to supply the rates specified in paragraph 14-2.A.1 and paragraph 14-2.A.4 repsectively, for each 1,000 gallons of water. The slurry distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with hydraulic spray nozzles that will provide even distribution of the slurry on the various slopes to be mulched. The slurry tank shall have a minimum capacity of 1,000 gallons and shall be mounted on a traveling unit, which may be either self-propelled or drawn by a separate unit, that will place the slurry tank and spray nozzles near the areas to be mulched so as to provide uniform distribution without waste. The Engineer may authorize equipment with a smaller tank capacity provided that the equipment has the necessary agitation system and sufficient pump capacity to spray the slurry in a uniform coat over the surface of the area to be mulched.

PART 14-3 - EXECUTION

A. AREAS TO BE TREATED.

Turf shall be established on all disturbed areas within the construction limits and on all newly constructed embankments as indicated on the drawings.

B. COMMENCEMENT, PROSECUTION AND COMPLETION.

1. General. Preparation of the ground surface, fertilizing, seeding and mulching operations shall be accomplished during the applicable growing season as specified in Table 1.

2. Sequence of Work. The sequence of operations for work prescribed in this section, except mowing, shall be as follows:

a. Preparation of Ground Surface
b. Preparation of slurry consisting of fertilizer, seed, and wood cellulose fiber mulch.
c. Application of slurry
d. Watering
e. Post-fertilizing

C. PREPARATION OF GROUND SURFACE.

1. General. Equipment, in good condition, shall be provided for the proper preparation of the ground and for handling and placing all

materials. Equipment shall be approved by the Engineer before work is started.

2. Clearing. Prior to grading and tilling, vegetation and debris that may interfere with turfing operations shall be mowed, grubbed, raked and disposed of off the site.

3. Grading. Previously established grades and/or slopes shall be maintained in a true and even condition on the areas to be turfed. Necessary repairs to previously graded areas shall be with suitable material placed as prescribed in embankment section.

4. Tillage. After the areas required to be turfed have been brought to the specified grades, the soil shall be tilled to a depth of at least 2 inches by plowing, disking, harrowing, or other approved operations until the condition of the soil is acceptable. The work shall be performed only during periods when, in the opinion of the Engineer, beneficial results are likely to be obtained. When drought, excessive moisture, or other unsatisfactory conditions prevail, the work shall be stopped when directed. Undulations or irregularities in the surface to be turfed shall be dressed before the next specified operation.

D. APPLICATION OF FERTILIZER.

1. Fertilization of Areas to be Wood Cellulose Fiber Mulch. Fertilizer meeting the requirements of paragraph 14-2.A.2 shall be distributed uniformly and applied simultaneously with the grass seed and wood cellulose fiber mulch.

2. Postplanting Fertilization. From 30 to 60 days after fertilizing, seeding and mulching, fertilizer meeting the requirements of 14.4.2 shall be applied uniformly over areas fertilized, seeded and wood cellulose fiber mulched. Fertilizer shall be applied when grass blades are dry to minimize burning.

E. SEEDING.

1. General. The application seed shall be sown at the rate and time as indicated on Table I, unless otherwise directed in writing. A satisfactory method of sowing shall be employed, using approved hydraulic seeders or other approved methods. When delays in operations extend the work beyond the most favorable planting season for the species designated, or when conditions are such by reason of drought, high winds, excessive moisture, or other factors that satisfactory results are not likely to be obtained, work shall be haulted as directed and resumed only when conditions are favorable or when approved alternative or corrective measures and procedures have been effected. If inspection either during seeding operations or after there is a show of green indicates that strips wider than the space between rows planted have been left unplanted or other areas have been skipped, additional seed fertilizer and/or mulch shall be applied if so directed.

2. Hydraulic Seeding. Seeding shall be combined with fertilizer and wood cellulose fiber mulch and applied uniformly with equipment meeting the requirements of paragraph 14-2.B.1

3. Damage to Seeding. The Contractor shall be fully responsible for any damage to the seeded areas caused by his operations. Areas that become damaged as a result of poor workmanship or failure to meet the requirements of the specifications may be ordered to be repaired and reseeded and/or mulched to specification requirements, without additional cost to the Owner.

F. APPLYING AND ANCHORING MULCH.

The application of the wood cellulose fiber mulch slurry shall be made with the hydraulic equipment specified in paragraph 14-2.B.1. The mulch shall be applied at the rate of 2,200 pounds per acre in combination with water, fertilizer, and grass seed, and shall be sprayed uniformly over the areas to be mulched and seeded.

G. WATERING.

The Contractor will be required to water the area planted sufficiently to promote growth. Relying solely on rainfall will not be an acceptable method of watering.

H. MOWING.

The seeded areas shall be mowed with approved mowing equipment to a height of 3 to 4 inches whenever the height of vegetation becomes 6 to 8 inches. When the amount of grass is heavy, it shall be removed to prevent destruction of the underlying turf. The Contractor shall be responsible for mowing until the physical completion of all items of the contract.

I. MAINTENANCE.

Maintenance shall consist of watering and mowing as specified in paragraph 14-2.G and 14-2.H and any other work incidental to proper maintenance. Maintenance will be required until the contract is completed.

J. REPAIR.

When the surface to be turfed becomes gullied or otherwise damaged or when previously placed turfing is damaged, the affected area shall be repaired to re-establish the condition prior to injury, as directed. Repair work required because of faulty operations or negligence on the part of the Contractor shall be performed without additional cost.

PART 12-4 - MEASUREMENT AND PAYMENT.

A. METHOD OF MEASUREMENT. The establishment of turf by fertilizing, seeding, mulching and post fertilizing shall be measured per acre based on the surface areas computed from the theoretical gross cross section of embankments. Units will be computed to the nearest one-hundredth of an acre.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement or payment is not specified shall be considered as incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT.

This work will be paid for at the contract unit price per acre.

Prices thus paid shall be full compensation for completing the work specified. Materials and equipment for work which are necessary to complete the Work under this section shall be furnished or performed and shall be considered incidental to the completed construction.

Payment will be made under:

Pay Item No. 15: Fertilizing, Seeding and Mulching - per Acre.

END OF SECTION

SECTION 15

TREE RELOCATION

PART 15-1 - GENERAL

A. SCOPE.

The work covered by this section consists of furnishing all plant, labor, equipment, and materials and performing all operations for relocating trees that are designated on the Drawings to be relocated.

B. QUALITY CONTROL.

The Contractor shall establish and maintain quality control for relocating trees to assure compliance with contract requirements, and maintain records of his quality control for all related operations including but not limited to the following:

1. Tree Removal. Method of removal; ball size; wrapping; location, number, and type of tree removed.

2. Pruning. Method; percentage of buds removed.

3. Transporting. Method.

4. Planting Materials. Soil mixture; mulch; fertilizer.

5. Planting Tree. Excavating pit; grade and alignment; backfilling; guying; and watering.

6. Tree Maintenance. Fertilizing; watering and cultivating.

PART 15-2 - PRODUCTS

A. PLANTING MATERIALS.

1. Topsoil Mixture. The material which is used for tamping around the balls and roots of all trees shall be three parts sand and one part peat moss (Canadian Sphagnum, German Sphagnum, or California Hypnum).

2. Mulch. Coarse bagasse or shredded pine bark for tree planting mulch shall be approved by the Owner.

3. Fertilizer for Trees. Fertilizer shall be an organic base (cotton seed), complete plant food (all purpose), 6-10-4, and commercial root stimulant fertilizer, as approved by the Owner. Fertilizer shall be delivered mixed as specified, in standard size, unopened containers, showing weight, analysis, and name of manufacturer.

4. Water. The water used shall be free of injurious quantities of oil, acid, alkali, salt, and other substances harmful to the growth of trees.

PART 15-3 - EXECUTION

A. GENERAL REQUIREMENTS.

The work to be performed under this section shall be done in accordance with industry standards as generally prescribed by the America Association of Nurserymen and Associated Landscape Contractors of America.

B. LOCATION.

The trees to be relocated are within the project area. The trees that are relocated shall be relocated in accordance with the drawings or as directed by the Engineer and/or Owner.

C. UNHEALTHY TREES.

Existing trees, designated for relocation, which are not healthy, as judged by the Engineer, shall be removed and disposed of as directed by the Engineer.

D. TIME OF PLANTING AND RELOCATION.

1. All trees removed with mechanical equipment shall be replanted the same day they are removed. Any trees which are removed by balling shall also be replanted the same day if possible; if not possible, the Contractor shall protect these plants from sun or drying winds. Plants that cannot be replanted immediately shall be kept in the shade, well watered and protected until replanting is possible.

2. If a relocated tree dies after transplanting and prior to final acceptance of the Work, the Contractor shall replace each dead tree as follows:

   a. For Oak, palm and other trees, replace with a tree of like kind and size;
   b. As an alternate for oak and other trees, they may be replaced at a ratio of 10:1 (live:dead) of 4" to 5" diameter trees of a like kind.

E. REMOVAL OF TREES.

1. General. Removal of trees that are to be replanted shall be dug either by hand or by a mechanical device especially designed to remove a ball of proper size.

2. Ball Dimensions. The depth and diameter of balls dug shall be in proportion to the tree size according to the following table.

Oak Tree Caliper	Ball Diameter (minimum)
1" to 4"	12"/1" of caliper
4.1" to 12"	10"/1" of caliper
12.1" to 24"	8"/1" of caliper

Ball diameter of Palm trees shall be 2 feet larger than the tree caliper. For all relocated trees the ball depth shall be a minimum of 1/2 the ball diameter.

3. Wrapping and Support of Ball. The tree balls shall be wrapped with burlap between the earth ball and the ball supporting device to hold the ball rigid.

4. Pruning. The trees that are to be replanted shall be pruned prior to their movement to facilitate transportation. Final pruning shall be done after trees are planted to bring out their best form and to remove and treat broken branches.

F. TRANSPORTING TREES.

The Contractor shall employ equipment of a size capable to lift and move trees for planting without damage to the trees. Tree trunks shall be protected in such a way that slings used to lift trees will not cut into or damage bark in any way.

G. PLANTING TREES.

1. Planting Hole. The Contractor shall dig the planting hole about 12" wider and only 4" to 6" deeper than the root ball. Trees dug with a tree spade should not be planted in a hole dug by a tree spade. Soil dug from the planting hole may be placed in the hole resulting from tree removal or shall be disposed of by the Contractor.

2. Fertilizing. A commercial root stimulant fertilizer shall be mixed according to manufacturers' recommendations and applied to the bottom of the planting hole immediately prior to the planting of the tree, fertilization (complete plant food) shall be placed at the rate of two pounds of fertilizer per one-inch of tree caliper. This fertilizer shall be placed on a one foot wide strip on the inside edge of the soil ring around the tree.

3. Alignment. The trees shall be set to proper alignment and grade so that when settled they bear the same relationship to the finished grade as they did before transplanting.

4. Backfilling. After trees are properly set, the hole shall be backfilled gradually with topsoil mixture while tamping and watering throughly to avoid leaving air pockets and adequately support the tree. The top three or four inches backfill, including one inch over the top of the root ball, shall be left loose as an earth mulch. No fill is permitted around the tree trunk or stem. No tamping shall be done after watering. The Contractor shall form a ring of soil around the tree to sufficient size to hold an 8" depth of water, and mulch the ringed area immediately with three to four inches of bagasse or approved shredded Pine Bark. The ring shall be refilled with water at least once a week for the next 4 weeks and again when the complete plant food fertilizer is applied.

Excavated material from the planting hole may be used to construct the ring around the tree.

5. Guying. Immediately after planting, the trees shall be supported by guying.

H. TREE MAINTENANCE.

The relocated and newly planted trees shall be watered after final fertilizing at two week intervals for the duration of the contract period. The watering shall consist of refilling the soil ring with an 8" depth of water. For any period when the trees receive 2-inches or more of rain fall in a two week period, the Engineer may suspend watering operations for that period.

PART 15-4 - MEASUREMENT AND PAYMENT.

A. METHOD OF MEASUREMENT.

Tree relocation shall be measured as a lump sum item. The Work shall include furnishing all plant, labor, materials and equipment and performing all operations necessary for the relocation of trees specified herein or indicated on the Drawings.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement or payment is not specified shall be considered as incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT.

This work will be paid for at the lump sum price.

Prices thus paid shall be full compensation for completing the work specified. Materials and equipment for work which are necessary to complete the Work under this section shall be furnished or performed and shall be considered incidental to the completed construction.

Payment will be made under:

Pay Item No. 16: Tree Relocation - per Lump Sum

END OF SECTION

SECTION 16

UTILITIES

PART 16-1 - GENERAL

A. SCOPE.

The work covered by this section consists of furnishing all plant, labor, equipment and materials and performing all operations where indicated in connection with the construction of water system facilities as indicated on the drawings and as specified herein. In addition to the above, specific requirements for the water system include:

Water System. Work shall include clearing, grubbing, trenching, sheeting and bracing, bedding, piping, pipe laying, backfilling, pipe fittings, and all incidental items necessary for the installation of new water lines, the testing and disinfection of the completed water line and any other work shown on the drawings or as herein specified. Also a section of existing water main shall be removed from the site. All workmanship and materials shall conform with the General Specifications of the Sewerage and Water Board of New Orleans except as noted herein.

B. SUBMITTALS.

The Contractor shall submit shop drawings and catalog cuts for the Engineer's approval on all pipe, fittings, and related materials. Manufacturer's test certificates and material certification for pipe and fittings shall also be furnished to Engineer at the time of delivery.

C. STANDARD DRAWINGS.

Sewerage and Water Board standard drawings shall include but not be limited to the standard drawing included in this Section of the specifications.

PART 16-2 - PRODUCTS

A. SHELL.

Shell used as bedding materials for pipe and related items may be either clam or reef shell. Clam shells shall be small dead shells known locally as "clam shells". They may be bank run but must be free from sand, clay or other foreign matter. Reef shells shall be dead oyster shells from shell banks with finely broken shells permitted. The use of fresh shells will not be permitted.

B. LUMBER.

Lumber for use as foundation for pipes shall be Southern Pine Association No. 2 short leaf yellow pine. Foundation lumber, if any, shall be pressure treated. Timber for thrust blocks shall be pressure treated with creosote.

C. RESTRAINED JOINT DUCTILE IRON PIPE AND FITTINGS.

That portion of the new water main that approaches and crosses the new levee embankment as shown on the drawings shall be AWWA/ANSI, C 151 A21.51, Ductile Iron Class 52. All joints shall be of the restrained boltless type i.e., "Lock Tite" by American Pipe Co. or "Field Lock Gasket System" by U.S. Pipe Co., or equal. The ductile iron pipe shall have cement-mortar lining as specified in ANSI A 21.51 Section 51-8.2. A tubular polyethylene wrap, 8 mil thickness, shall be applied to all buried iron pipe. An air vent cock shall be installed directly atop the waterline and shall be buried in the levee crown with a minimum 6 inch cover.

D. FITTINGS.

Fittings for connections between new mains and existing mains and pipes shall be specifically designed for interconnection of the lines being joined and will be subject to the approval of the Engineer.

E. BOLTS, STUDS, NUTS, GASKETS AND PLUGS.

All bolts, studs and nuts shall be stainless steel 18-8 hexagonal conforming to Type 316, ASTM A 276, and Amercian National form right hand machine cut thread.

F. WATER SERVICE CONNECTION.

Where noted on the drawings, water service lines 2 inches in diameter and smaller shall be polybutylene SDR-11 pipe conforming to ASTM D-3309. Fittings shall be copper or brass insert type with copper crimp rings.

PART 16-3 - EXECUTION

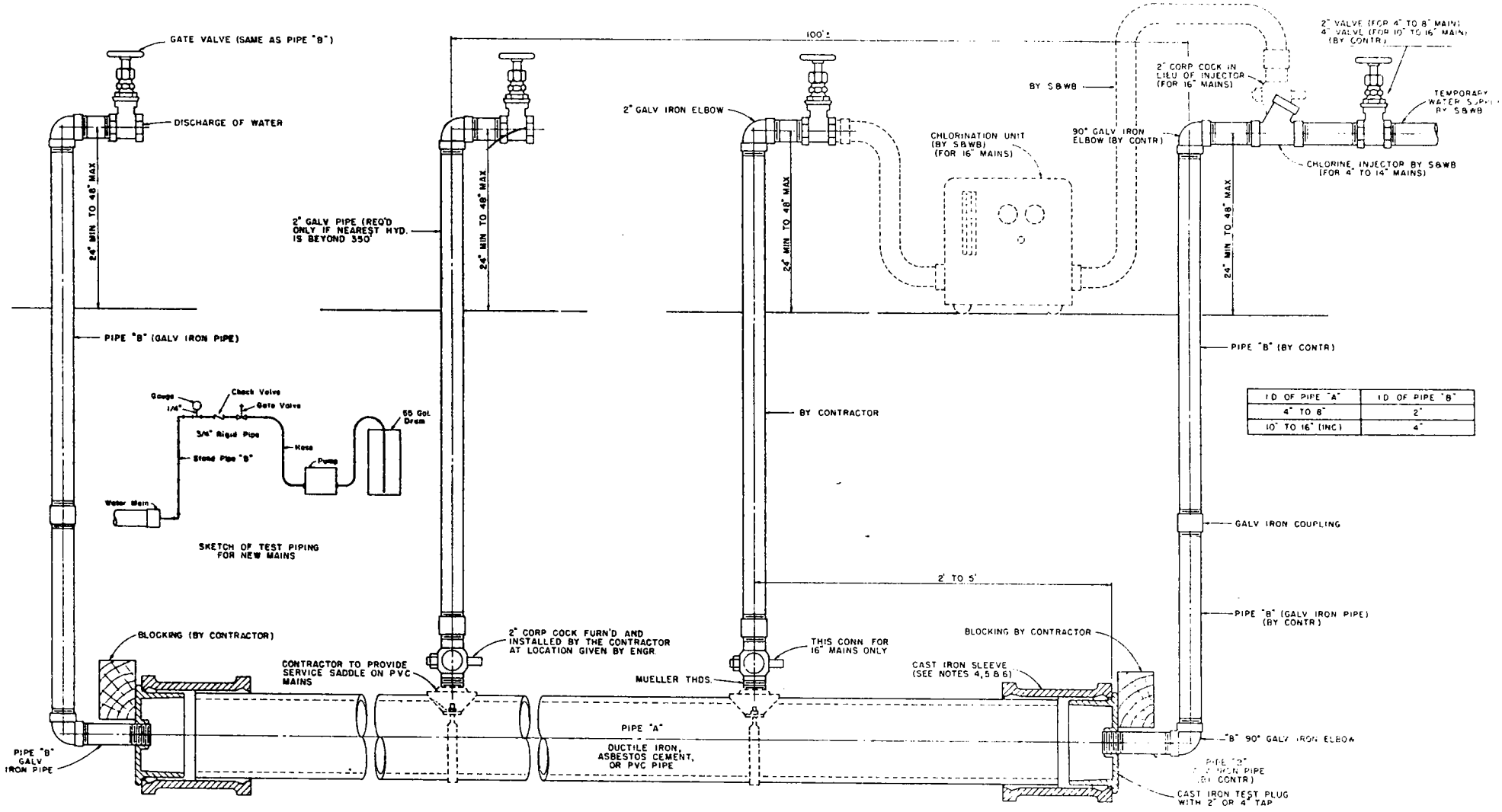
A. EXECUTION - WATER SYSTEM.

1. General. Prior to the start of work the Contractor shall notify the following: Chief of Networks, Sewerage and Water Board and N.O.S.&W.B. field inspector.

   All tie-ins to the existing water mains shall be made by the Contractor upon approval of the S.&W.B. field inspector. The Sewerage and Water Board forces shall assist in closing of the valves, witnessing of the tests and chlorinating the water mains.

   The existing mains shall remain in service until the new main has been tested and chlorinated.

2. Installation. Installation of new ductile iron water mains over the levee shall be done in accordance with the applicable Section F requirements of the Sewerage and Water Board General Specifications and with the drawings. A section of existing 12" ø PVC watermain shall be removed to allow the required restrained ductile iron pipe to be installed.



I.D. OF PIPE "A"	I.D. OF PIPE "B"
4" TO 8"	2"
10" TO 16" (INC.)	4"

NOTES:

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL THE FOLLOWING:
   A 2" MIN TEMPORARY WATER SUPPLY (4" SUPPLY ON 10" TO 16" SIZES), AS SHOWN.
   B 2" CORP COCK FOR INJECTION OF CHLORINE IN MAINS 16" ONLY
   C TEMPORARY STAND PIPES ON ALL VENT COCKS IN THE SYSTEM EXTENDING 2' TO 4' ABOVE GRADE AND TERMINATING WITH AN ELBOW AND VALVE.
2. THE CONTRACTOR SHALL OPEN AND CLOSE ALL VALVES TO EXPEL THE AIR AND SHALL REMOVE THE VENT PIPES AND CLOSE THE COCKS WHEN ADVISED BY THE ENGINEER
3. ALL TEMPORARY PIPING FURNISHED BY THE CONTRACTOR WILL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE CHLORINATION AND TIE-INS ARE COMPLETED.
4. FOR ASBESTOS CEMENT PIPE THE CONTRACTOR MAY USE A COLLAR WITH RING TITE TAP PLUG (2").
5. FOR DUCTILE IRON PIPE USE CAST IRON SLEEVE AND TAP PLUG (2" OR 4" AS SHOWN) OR FITTINGS AS SPECIFIED FOR PVC PIPE (SEE NOTE 6)
6. FOR PVC PIPE USE A CAST IRON CAP WITH RUBBER RING GASKET, FOLLOWER GLAND, NUTS AND BOLTS
7. ALL MATERIALS AND LABOR REQUIRED FOR TEST, TO BE FURNISHED BY CONTRACTOR
8. ALL CORP. COCK TAPS SHALL BE MUELLER THREADS
9. ALL CORP COCKS SHALL BE BRONZE

REV.	DATE	DESCRIPTION	BY
1	8-25-83	TEST CONN. REVISED	SHP

SEWERAGE AND WATER BOARD OF NEW ORLEANS

TEST CONNECTION ON NEW WATER MAINS (4" TO 16") FLUSHING AND CHLORINATION

DWG. No. 7004-W

16-3

3. Testing and Chlorination. The Contractor shall conduct the Hydrostatic Test according to Sewerage and Water Board specifications in the presence of a Sewerage and Water Board representative. The Sewerage and Water Board will perform chlorination of the completed water system. Refer to the Sewerage and Water Board Drawing No. 7004-W.

4. Connections to Existing Mains. Connections to the existing water mains as shown on the drawings shall be made only after the new main has been installed, tested and chlorinated. Connections shall be made under the direct supervision of a representative from the Sewerage and Water Board. The Sewerage and Water Board shall determine the time at which these connections shall be made and shall assist in the operation of all valves on the existing system.

   The Contractor shall at no time operate any valve on the existing system except with the direct authorization of the Sewerage and Water Board.

   Where a tie-in is to be made to an existing pipe or fitting, the Contractor shall excavate and expose the existing fitting or main in order to ascertain its correct location and elevation. This excavation can then be backfilled until the tie-in is made. The cost of this work shall be included in the other items of work.

5. Water Service Connection. Contractor shall install a polybutylene water service pipe with fittings as indicated on the drawings.

PART 16-4 - MEASUREMENT AND PAYMENT.

A. METHOD OF MEASUREMENT.

Water lines of the size specified will be measured in place by length in linear feet along the centerline of each line from center to center of intersecting lines or to the farthest extent of terminal fittings with no deductions for fittings, etc. Excavation, dewatering, blocking, bedding, backfilling, pressure testing and chlorination for water lines will not be measured separately but shall be considered as incidental to the work required for installing the water lines.

Appurtenances, specified as pay items, will be measured by the unit indicated. All necessary appurtenances not listed as pay items will not be measured for separate payment.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement or payment is not specified shall be considered as incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT.

This work will be paid for at the contract unit prices per each per linear foot or per pound as applicable.

The prices thus paid shall be full compensation for completing the work specified. Materials or work for which a pay item is not included and are necessary to complete the work under this section shall be furnished or performed and shall be considered incidental to the completed construction.

Payment will be made under:

Pay Item No. 17	12" ø Restrained Joint Ductile Iron Pipe, Class 52 - per Linear Foot.
Pay Item No. 18	Fittings (Cast Iron) - per Pound.
Pay Item No. 19	1-1/2" ø Polybutylene Water Service - per Linear Foot.

END OF SECTION

SECTION 17

SHELL ACCESS ROAD

PART 17-1 - GENERAL

A. SCOPE

Furnish all labor, material, tools, and equipment necessary to construct and maintain during construction a new shell access road to the construction site and its subsequent removal as shown on the drawings, should one be necessary, as well as to maintain the existing shell access road. All work shall be in conformity with the lines, grades, thickness and typical cross-sections as shown on the Drawings or as established by the Engineer.

B. GENERAL REQUIREMENTS.

The work to be performed under this section shall be done in accordance with the "Louisiana Standard Specifications for Roads and Bridges - 1982 edition", Louisiana Department of Transportation and Development, Office of Highways, Baton Rouge, Louisiana, and constructed to the thickness, cross-section and materials shown on the drawings and in accordance with these specifications.

1. Construction. A general location of the access road is shown on the drawings. Contractor shall use unimproved access road unless loading requires improvement to the road. Contractor shall construct shell surface along access road upon Engineer's approval of Contractor's request. Maintenance of shell access road will be at no additional pay.

2. Removal. Contractor shall remove the improved shell access road, if it is constructed, at end of contract and replace it with white beach sand at no direct pay.

3. Existing Shell Access Road. A general location of the existing shell access road is shown on the plans. This shell road shall be maintained under this Contract at no additional pay. This work is required regardless of the requirements for construction and removal of the new access road.

PART 17-2 - PRODUCTS

A. Shells shall consist of reef shell, clam shell, bank shell, mud shell or other commercial shell, free from worm holes, marks of deterioration or disintegration. Steamed shells shall not be allowed. Not less than seventy (70) per cent by volume of shell, when dry and shaken to refusal shall be retained on a No. 4 Sieve. The above requirements as to worm holes, marks of deterioration or disintegration shall not directly apply to the brand of shells commercially known as "dead reef shells" in which on account of the character of material a certain amount of disintegration has already taken place. Dead reef shells, however, shall be

subject to inspection and approval of the Engineer and may be rejected by him on account of the excess amount of worm holes or disintegration to such an extent as in his opinion shall make the material unsuitable for road building purposes. The clam shell surfacing material hereinafter required for green oyster shells will not be required for dead reef shells. No blanket course will be required with dead reef shells.

PART 17-3 - EXECUTION

A. The material shall be spread by hand from dumping boards or by approved spreading devices, attached to or forming part of the equipment in which the material is hauled. It shall be spread in at least two courses and each course shall be graded, sprinkled and rolled with a self-propelled roller weighing not less than three (3) tons as required to give the maximum degree of compaction. Side gauge boards shall be used in order to secure the thickness of material required. Center gauge blocks shall be used, if so directed by the Engineer. If green oyster shells are used, a surface layer of clam shell or other approved shell, not less than one (1) inch thick shall be spread and rolled in order to reduce the surface voids.

PART 17-4 - MEASUREMENT AND PAYMENT

A. METHOD OF MEASUREMENT AND PAYMENT

No separate payment will be made for the shell access road as it shall be provided by the Contractor should he so elect upon the Engineer's approval for the Contractor's own convenience. All labor, materials, tools, and equipment, including hauling, spreading, grading, blading, sprinkling, rolling, maintenance of shell road during entire construction phase and other items necessary to complete the roadway as herein specified shall be considered incidental to the shell access road.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement of payment is not specified shall be considered as incidental to the various pay items and no payment will be made therefore.

END OF SECTION

SECTION 18

FENCES AND GATES

PART 18-1 - GENERAL

A. SCOPE

Under this section of the specifications, the Contractor shall furnish all labor, material, tools and equipment necessary to construct the fences and gates as specified herein and as shown on the project drawings.

PART 18-2 - MATERIALS

A. WOOD FENCE

All materials used for installing wood fences and gates shall be those stored at the site. Only when the stored material supply is depleated and upon approval of the Engineer, shall the Contractor install new wood fence. New wood fence shall match existing wood fence.

B. CHAIN LINK FENCE

Materials for installing chain link fence shall be materials that match existing chain link fence with barbed-wire strands above.

PART 18-3 - EXECUTION

A. GENERAL

Fences and gates shall be installed at the locations shown on the drawings or as directed by the Engineer. New wood fences shall be painted to match existing fences where existing fences are painted along the top and bottom runners. Fence post spacing shall match the existing fence installations. The Contractor shall be responsible for determining the type and sizes of materials and for their proper installation.

PART 18-4 - MEASUREMENT AND PAYMENT

A. METHOD OF MEASUREMENT

Reinstalled wood fences and gates, new wood fences, and chain link fences shall be paid for by the linear foot and chain link and wood gates shall be paid for each at the price bid in the proposal for that item. Said unit price per linear foot or each bid in the proposal shall include all labor, materials, tools and equipment, including installation, painting and other items incidental and necessary to complete the fencing and gates as herein specified.

Any additional items or elements of work shown on the plans or specified herein for which a specific measurement of payment is not specified shall be considered incidental to the various pay items and no payment will be made therefore.

B. BASIS OF PAYMENT

This work will be paid for at the Contract unit prices per linear foot and per each, as applicable. Prices thus paid shall be full compensation for completing the work specified. Materials and equipment for work which are necessary to complete the work under this section shall be furnished or performed and shall be considered incidental to the completed construction.

Payment will be made under:

Pay Item No. 21: Reinstall Existing Wood Fence and Gate - per Linear Foot.

Pay Item No. 22: Chain Link Fence - per Linear Foot.

Pay Item No. 23: Wood Fence - per Linear Foot.

Pay Item No. 24: Chain Link Gate (12') - per Each.

Pay Item No. 25: Wood Gate (12') - per Each.

END OF SECTION