



**Alabama State Port Authority**  
**Specification Booklet**

**Project Name**

**Blakeley/Mud Lakes Dike Raising & Weir Boxes**

**Location**

**Mud Lakes DMMA - Mobile AL**

**Project # 11381**

**Task # 03**

**April 2025**

**SPECIFICATIONS AND CONTRACT  
DOCUMENTS  
ISSUED FOR BID**



**Peter W. Kotulak**

**2025.04.04**

**11:05:00-04'00'**



**PORT OF MOBILE**  
ALABAMA PORT AUTHORITY

**John C. Driscoll, Director & CEO**

**Kay Ivey, Governor of Alabama**

**ISSUED BY**

**Engineering Services Department**



**Alabama State Port Authority**  
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**BID DOCUMENTS**

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# Alabama State Port Authority *Specification Booklet*

**Project Name**  
**Location**  
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**Mud Lakes DMMA - Mobile AL**  
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## INVITATION TO BID

Sealed bid proposals will be received via courier to the Alabama State Port Authority, 1400 Alabama State Docks Blvd, Room 216, Administration Building, Mobile, AL 36602 by 1:00 PM, on Wednesday, April 23, 2025. Sealed bid proposals can also be hand delivered from 1:45 PM to 2:00 PM, on Wednesday, April 23, 2025, to the Alabama State Port Authority in the International Trade Center building, 250 North Water Street, 1<sup>st</sup> Floor Killian Room, Mobile, AL. Faxed or electronically submitted bids will not be accepted. Conditional bids will not be accepted.

The work consists principally of providing bonds, plant, labor, materials, equipment, and supervision necessary to furnish and perform the Blakeley/Mud Lakes Confined Disposal Facility (CDF) Dike Raising. The CDF encompasses approximately 220 acres and is generally rectangular in shape with a north-south dimension of 3,500 feet and an east-west dimension of 2,900 feet. The CDF has an exterior perimeter dike approximately 13,000 feet long and is separated into a 100-acre East Cell with a dike 6,700 feet long and a 120-acre West Cell with a dike 6,200 feet long. An interior north-south dike 3,500 feet long separates the two cells. For this project the East Cell dikes and interior north-south dike are designated as the East Cell. The West Cell is defined by the three sides not including the interior north-south dike. The stationing is numbered to reflect these designations. The top of the dike elevations for the east dikes and interior dike have recently been raised to an elevation approximately 58 ft North American Vertical Datum of 1988 (NAVD88). A project has been recently completed to raise the west dikes to elevation 54 ft NAVD88.

In addition, two (2) new weir boxes will be fabricated and installed in each of the CDF cells, east and west. It is required that the Contractor furnish all labor, materials, equipment, tools, transportation, and ancillary items required to complete all work in accordance with the plans, drawings, specifications, and terms of the Contract to deliver a fully functional weir box.

The dike raising will be performed to increase the top elevation of all the dikes to 70 ft NAVD88. The placement of the fill to raise the dikes will be inboard of the existing CDF dikes. Due to weak soil conditions within the interior, geotextile fabrics and granular material will be used for the construction. The granular material will be delivered to the site via dump truck and placed along the dike by others as construction is progressed. A detailed sequence of construction is provided in the drawings and specifications which provides the methodology to perform the construction. The methodology will be to place the geotextile as shown on the drawings, followed by placing the delivered sand in lifts to construct a widened base dike as prescribed. The plan will be to place the granular material in lifts proceeding in a counterclockwise direction around the perimeter and continue until the final elevation is reached. The first lift is three (3) feet thick, and subsequent lifts for the base dike are twelve (12) inches thick. Lift thicknesses for the dike raising above the sand base dike are to be eight (8) inches.

The first component of the dike raising is the Base Dike Widening which will bring the elevation up to the existing dike elevation. The East Cell base dike widening will be constructed first followed by the West Cell base dike widening. Slope inclinometers will be installed by others along the outside of the dikes to monitor whether unacceptable movement occurs. If movement is observed, the dike raising may be stopped until the subsurface soil has gained strength through consolidation before additional fill can be placed. This will be determined by the geotechnical engineer. The East Cell has a low probability for this to occur, However, the West Cell has a moderate to high probability for this to occur. Therefore, Bid Item 0003, Mobilization & Demobilization (Option) is included in the Schedule of Prices



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to account for a pausing of the continuous filling sequence and is to be considered an “Option” for demobilizing and remobilizing for the construction of the West Dike.

If necessary to raise the West Cell Dikes, a Bid Additive would be to clear an area approximately 100 feet wide along the outside slope of the West Cell Dike for a length of approximately 3,000 feet. The clearing would consist of cutting and mulching the trees and shrubs along the slope, leaving the material in place. No grubbing or excavation of the soil would be required. After clearing a geotechnical stability soil berm would be constructed using offsite borrow that will be delivered to the site by others. The height of the berm is five (5) feet, and the width of the berm is eighty-five (85) feet for the 3,000-foot length. Following placement of the fill, the soil will be seeded.

The Project bid documents are available on the Alabama State Port Authority website at <https://www.alports.com/procurement/>. You may contact the project manager, Wesley Jackson for additional information at [Wesley.Jackson@alports.com](mailto:Wesley.Jackson@alports.com). Prospective bidders MUST attend a MANDATORY Pre-bid meeting on Wednesday, April 9, 2025, at 2:00 PM at the Blakeley/Mud Lakes DMMA, Mobile, AL ([30°43'24.37"N, 88° 2'2.46"W](#)). The deadline for prospective bidders to submit questions is ten (10) calendar days prior to bid opening.

A Guarantee will be required with each bid as follows: At least five (5%) percent of the amount bid, but in no event more than Ten Thousand (\$10,000) Dollars, shall be furnished in the form of a certified check or bid bond payable to the Alabama State Port Authority. A Performance Bond in an amount not less than the sum of the bid will be required at the signing of the contract and, in addition, a bond in an amount not less than One Hundred (100%) percent of the contract price, insuring payment of all labor and material.

No bid will be considered unless the bidder, whether resident or non-resident of Alabama, is properly qualified to submit a proposal for this work in accordance with all applicable laws of the State of Alabama. All bidding Contractors must hold a current license from the State Licensing Board for General Contractors, Montgomery, Alabama with one of the following classifications: H/RR: Heavy & Railroad Construction, H/RR-S: Heavy & Railroad Construction – Earthwork, or H/RR-S: Heavy & Railroad Construction – Dredging, Levees, and Dikes. Also, non-residents of the State must show evidence of having qualified with the Secretary of State to do business in AL.

Bids will be publicly opened at 2:00 PM, Wednesday, April 23, 2025, at the Alabama State Port Authority in the International Trade Center building, 250 North Water Street, 1st Floor Killian Room, Mobile, AL. The right is reserved, as the interest of the Alabama State Port Authority may require, to reject any and all bids and to waive informalities in bids received.



# **Alabama State Port Authority**

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### **INSTRUCTIONS TO BIDDERS**

#### **1.0 ADDENDA AND INTERPRETATIONS**

All questions about the meaning or intent of the Contract Documents shall be submitted to the Project Manager in writing. Replies will be issued by Addenda on the Alabama State Port Authority website. All addenda, so issued, shall become part of the Contract Documents. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. Deadline for submitting questions is fourteen (14) calendar days before the bid opening date.

#### **2.0 PREQUALIFICATION OF BIDDERS**

No proposal will be considered from any Contractor unless he is licensed to do work in the State of Alabama and has complied with the requirements of Paragraph SP-04 QUALIFICATION OF BIDDERS contained in the SPECIAL PROVISIONS, DIVISION III.

#### **3.0 SUBMISSION OF PROPOSALS**

Before submitting his proposal, the Contractor shall comply with the following:

- (a) The Proposals shall be filled in ink on the form provided herein and all blank spaces in the form shall be fully filled. The signature shall be in long hand and the complete form shall be without interlineations, alteration, or erasure.
- (b) If the Bidder is a corporation organized in a state other than Alabama, attach to the Proposal a certificate from the Secretary of State showing that the Corporation is qualified to transact business in Alabama.
- (c) Attach a certified check or Bid Bond in the amount of 5% of the Proposal, but not more than \$10,000 made payable to the Alabama State Port Authority.
- (d) Non-resident (out of state) Contractors shall attach all items included by Paragraph SP-06 of the Division III Special Provisions.
- (e) Attach a copy of the State Contractor's License to Proposal.
- (f) An affidavit and Certificate of Compliance with the Beason-Hammon Alabama Taxpayer and Citizen Protection Act (see page I-7) shall be attached to the proposal.

One copy of Items (a) through (f) should be placed in a sealed envelope with the bidder's name, Contractor's License number, the project, and the time and date of bid opening shown on the outside.



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**PROPOSAL**

Proposal of:

Address:

Date:

To: STATE OF ALABAMA, Alabama State Port Authority, Mobile,  
Alabama Gentlemen:

The undersigned, as Bidder, hereby declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the plans and specifications for the work and contractual documents relative thereto, and has read all Special Provisions and Specifications furnished; and that he has satisfied himself relative to all aspects of the work to be performed and especially to those factors affecting cost, progress, or performance.

The Bidder proposes and agrees, if this bid is accepted, to contract with the Owner in the form of contract specified, to furnish all necessary materials, equipment, tools, apparatus, means of transportation, labor, and incidentals to perform in a satisfactory manner, the work described in the Contract Specifications and Drawings for the Alabama State Port Authority, for the prices listed below to complete:

**PROJECT 11381 Task 03**  
**BLAKELEY/MUD LAKES DIKE RAISING & WEIR BOXES**  
**MOBILE, ALABAMA**

In full and complete accordance with the shown noted, described, and reasonable intended requirements of the plans, specifications, and contract documents to the full and entire satisfaction of the Owner with a definite understanding that no money will be allowed for extra work except as set forth in the attached contract documents.

It is agreed that the description under each item, being briefly stated, implies, although it does not mention, all incidentals and that the prices stated are intended to cover all such work materials and incidentals as constitute Bidder's obligation as described in the specifications and any details not specifically mentioned, but evidently included in the contract shall be compensated for the item which most logically includes it.

Bidder agrees that he will commence the work within the time allotted by the Contract Documents with an adequate force, plant, and equipment and that the work will be completed within time schedules outlined in SPECIAL PROVISIONS DIVISION III SP-03 COMMENCEMENT AND COMPLETION.

Bidder accepts the provisions of the Contract Documents as to liquidated damages in the event of failure to complete the work on time.

The Bidder further agrees that, in case of failure on his part to execute the Contract and required bonds within ten (10) calendar days from the date written notice of intent to award if mailed or



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otherwise delivered to the Bidder, the certified check or bid bond accompanying this bid and the monies payable thereon shall be paid into the funds of the Owner not as penalty, but as a liquidation of a reasonable portion of the damages incurred by the Owner due to the Bidder's failure to execute the Contract.

**SCHEDULE OF PRICES (BASE BID)**

Bid Item	Description	Quantity	Unit	Unit Price	Cost
<b>General Items (Dike Raising)</b>					
0001	Bonds & Insurance	1	LS	\$	\$
0002	Mobilization & Demobilization	1	LS	\$	\$
0003	Mobilization & Demobilization (Option)	1	LS	\$	\$
<b>Subtotal – General Items (Dike Raising)</b>					<b>\$</b>
<b>Construction Items (Dike Raising)</b>					
1001	Clear and Grubbing	20	Acres	\$	\$
1003	Erosion & Sediment Control Measures	1	LS	\$	\$
1005	Sand Shaping for Base Dike Widening	540,000	CY	\$	\$
1006	East Cell Dike Construction Using Offsite Borrow Material	225,000	CY	\$	\$
1007	West Cell Dike Construction Using Offsite Borrow Material	170,000	CY	\$	\$
2001	Geotextile Type 1	37,000	SY	\$	\$
2002	Reinforcement Geotextile Type 2	310,000	SY	\$	\$
2003	Geogrid	17,000	SY	\$	\$
2004	Prefabricated Vertical Drainage Wicks	70,000	VLF	\$	\$
3001	Crushed Aggregate Base Course, 6" Compacted Thickness	32,000	SY	\$	\$
3002	Dike Seeding	15	Acres	\$	\$
<b>Subtotal – Construction Bid Items (Dike Raising)</b>					<b>\$</b>
<b>General Items (Weir Boxes)</b>					
0001	Bonds & Insurance	1	LS	\$	\$
0002	Mobilization & Demobilization	1	LS	\$	\$
<b>Subtotal – General Items (Weir Boxes)</b>					<b>\$</b>
<b>Construction Items (Weir Boxes)</b>					
1001	Erosion & Sediment Control Measures	1	LS	\$	\$
1002	Site Demolition	1	LS	\$	\$





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Bid Item	Description	Quantity	Unit	Unit Price	Cost
1003	Trench Excavation and Backfill	1	LS	\$	\$
1004	Weir Box Foundation Concrete	176	CY	\$	\$
1005	Weir Box Steel Framing	63	TN	\$	\$
1006	Pre-Engineered Walkways	2	EA	\$	\$
1007	Weir Box Metal Grating	1,000	SF	\$	\$
1008	Weir Box Timber	21,000	BF	\$	\$
1009	Junction Box Concrete	40	CY	\$	\$
1010	Pre-Engineered Walkway Foundation Concrete	3	CY	\$	\$
3001	36" Diameter HDPE Pipe	402	LF	\$	\$
3002	30" Diameter HDPE Pipe	453	LF	\$	\$
<b>Subtotal – Construction Bid Items (Weir Boxes)</b>					<b>\$</b>
<b>TOTAL BASE BID</b>				<b>\$</b>	

\_\_\_\_\_ Dollars  
 (In Words)

**SCHEDULE OF PRICES (BID ADDITIVE)**

<b>Construction Items (Dike Raising)</b>					
Bid Item	Description	Quantity	Unit	Unit Price	Cost
1002	Tree and Shrub Cutting and Mulching	6	Acres	\$	\$
1004	Erosion & Sediment Control Measures for Geotechnical Stability Berm	1	LS	\$	\$
1008	Geotechnical Stability Berm Construction Using Offsite Borrow Material	56,000	CY	\$	\$
1009	Geotechnical Stability Berm Crushed Aggregate Base Course, 6" Compacted Thickness	1,500	SY	\$	\$
3003	Geotechnical Stability Berm Seeding	6	Acres	\$	\$
<b>TOTAL BID ADDITIVE</b>					<b>\$</b>

I, the undersigned bidder, hereby acknowledge receipt of the following addenda:

ADDENDUM NO. \_\_\_\_\_



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ADDENDUM NO. \_\_\_\_\_

ADDENDUM NO. \_\_\_\_\_

ADDENDUM NO. \_\_\_\_\_

<b>Contractor's Signature:</b> _____		
<b>Contractor Company:</b> _____		
_____	_____	_____
<b>Name</b>	<b>Title</b>	<b>Date</b>



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**BID BOND**

**KNOW ALL MEN BY THESE PRESENTS**, that we, undersigned, \_\_\_\_\_ as Principal, and \_\_\_\_\_ as Surety, are hereby held and bound unto The Alabama State Port Authority as **OWNER** in the Penalsum of \_\_\_\_\_ for the payment of which will and truly be made, we hereby jointly and severally bind ourselves, successors and assigns. Signed, the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

The Condition of the above obligation is such that whereas the Principal has submitted to the Alabama State Port Authority a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the Blakeley/Mud Lakes Dike Raising & Weir Boxes in Mobile, Alabama, Project No. 11381 Task #03.

**NOW, THEREFORE,**

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the form of Contract attached hereto (Properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the panel amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its **BOND** shall in no way be impaired or affected by any extension of time within which the **OWNER** may accept such BID; and said Surety does hereby waive notice of any such extension.

**IN WITNESS WHEREOF**, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal	
Surety	
By	

State of \_\_\_\_\_

County of \_\_\_\_\_



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## CERTIFICATE OF COMPLIANCE WITH THE BEASON-HAMMON ALABAMA TAXPAYER AND CITIZEN PROTECTION ACT (ACT 2011-535, as amended by Act 2012-491)

DATE: \_\_\_\_\_

RE Contract/Grant/Incentive (describe by number or subject):

\_\_\_\_\_ by and between  
\_\_\_\_\_ (Contractor/Grantee) and  
\_\_\_\_\_ (State Agency, Department or Public Entity)

The undersigned hereby certifies to the State of Alabama as follows:

1. The undersigned holds the position of \_\_\_\_\_ with the Contractor/Grantee named above, and is authorized to provide representations set out in this Certificate as the official and binding act of that entity, and has knowledge of the provisions of THE BEASON-HAMMON ALABAMA TAXPAYER AND CITIZEN PROTECTION ACT (ACT 2011-535 of the Alabama Legislature, as amended by Act 2012-491) which is described herein as "the Act".
2. Using the following definitions from Section 3 of the Act, select and initial either (a) or (b), below, to describe the Contractor/Grantee's business structure.  
BUSINESS ENTITY. Any person or group of persons employing one or more persons performing or engaging in any activity, enterprise, profession, or occupation for gain, benefit, advantage, or livelihood, whether for profit or not for profit. "Business entity" shall include, but not be limited to the following:
  - a. Self-employed individuals, business entities filing articles of incorporation, partnerships, limited partnerships, limited liability companies, foreign corporations, foreign limited partnerships, foreign limited liability companies authorized to transact business in this state, business trusts, and any business entity that registers with the Secretary of State.
  - b. Any business entity that possesses a business license, permit, certificate, approval, registration, charter, or similar form of authorization issued by the state, any business entity that is exempt by law from obtaining such a business license and any business entity that is operating unlawfully without a business license.EMPLOYER. Any person, firm, corporation, partnership, joint stock association, agent, manager, representative, foreman, or other person having control or custody of any employment, place of employment, or of any employee, including any person or entity employing any person for hire within the State of Alabama, including a public employer. This term shall not include the occupant of a household contracting with another person to perform casual domestic labor within the household.
 

\_\_\_\_ (a) The Contractor/Grantee is a business entity or employer as those terms are defined in Section 3 of the Act.

\_\_\_\_ (b) The Contractor/Grantee is not a business entity or employer as those terms are defined in Section 3 of the Act.
3. As of the date of this Certificate, Contractor/Grantee does not knowingly employ an unauthorized alien within the State of Alabama and hereafter it will not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama;
4. Contractor/Grantee is enrolled in E-Verify unless it is not eligible to enroll because of the rules of that program or other factors beyond its control.

Certified this \_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_\_

\_\_\_\_\_  
Name of Contractor/Grantee/Recipient



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By: \_\_\_\_\_

Its \_\_\_\_\_

The above Certification was signed in my presence by the person whose name appears above,

on this \_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_.

WITNESS:

\_\_\_\_\_

\_\_\_\_\_  
Printed Name of Witness



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**PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS:

That: \_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

\_\_\_\_\_  
(City, State, Zip)

I, a(n) \_\_\_\_\_ corporation, hereinafter called Principal, and  
(state of domicile)

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the Alabama State Port Authority hereinafter called OWNER, in the penal sum of \_\_\_\_\_ DOLLARS, (\$ \_\_\_\_\_) (100% of the Contract Amount) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_, a copy of which is hereto attached and made a part hereof for the construction of:

**BLAKELEY/MUD LAKES DIKE RAISING & WEIR BOXES  
MOBILE, ALABAMA**

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the guaranty period, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may insure in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract of the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_.



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ATTEST:

\_\_\_\_\_  
Principal

\_\_\_\_\_  
(Principal) Secretary  
(SEAL)

\_\_\_\_\_  
(s)

\_\_\_\_\_  
(Witness as to Principal)

\_\_\_\_\_  
(Address)

\_\_\_\_\_

\_\_\_\_\_  
Surety

ATTEST:

\_\_\_\_\_  
(Surety) Secretary  
(SEAL)

\_\_\_\_\_  
Witness as to Surety

BY: \_\_\_\_\_  
Attorney-in-fact

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

\_\_\_\_\_

\_\_\_\_\_

**NOTE: Date of BOND must not be prior to date of CONTRACT.**  
**If CONTRACTOR is Partnership, all partners should execute BOND.**





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**LABOR AND MATERIAL BOND**

KNOW ALL MEN BY THESE PRESENTS:

That: \_\_\_\_\_  
(Name of Contractor)  
\_\_\_\_\_  
(Address of Contractor)  
\_\_\_\_\_  
(City, State, Zip)

I, a(n) \_\_\_\_\_ corporation, hereinafter called Principal, and  
(state of domicile)  
\_\_\_\_\_  
(Name of Surety)  
\_\_\_\_\_  
(Address of Surety)  
\_\_\_\_\_  
(City, State, Zip)

hereinafter called Surety, are held and firmly bound unto the Alabama State Port Authority hereinafter called OWNER, in the penal sum of \_\_\_\_\_ DOLLARS, (\$ \_\_\_\_\_) (100% of the Contract Amount) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that, the Principal entered into a certain contract with the OWNER, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, a copy of which is hereto attached and made a part hereof for the construction of:

**BLAKELEY/MUD LAKES DIKE RAISING & WEIR BOXES**  
**MOBILE, ALABAMA**

NOW, THEREFORE, if the Principal shall promptly make payments to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, fuel, repairs on machinery, equipment and tools, consumer or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract of the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.



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IN WITNESS WHEREOF, this instrument is executed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

ATTEST:

\_\_\_\_\_  
Principal

\_\_\_\_\_  
(Principal) Secretary

BY: \_\_\_\_\_ (S)

(SEAL)

\_\_\_\_\_  
Witness as to Surety Principal

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

\_\_\_\_\_

\_\_\_\_\_  
Surety

ATTEST:

\_\_\_\_\_  
Witness as to Surety

BY: \_\_\_\_\_  
Attorney-In-Fact

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

**NOTE: Date of BOND must not be prior to date of CONTRACT.**  
**If CONTRACTOR is Partnership, all partners should execute BOND.**



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**ACKNOWLEDGEMENT FOR CHANGE ORDERS**

**TO:** ALABAMA STATE PORT AUTHORITY

**RE:** Blakeley/Mud Lakes Dike Raising & Weir Boxes

Gentlemen:

In order to avoid the necessity of extensive amendment to the referenced Contract, the undersigned hereby acknowledges that the following conditions are those for which change orders are allowed under the Bid law:

1. Unusual and difficult circumstances which arise during the course of the execution of the Contract which could not have been reasonably foreseen.
2. Where competitive bidding for the new work will be to the serious detriment of the Owner.
3. Emergencies arising during the course of work.
4. Changes or alterations provided for in the original bid and original Contract.
5. The Contractor also acknowledges that he has read paragraph 50-04 (EXTRA WORK) and 60-17 of the (CLAIMS FOR ADJUSTMENT AND DISPUTES) of the General Provisions and agrees that "If for any reason the Contractor deems that additional compensation is due him for work or materials not clearly provided in the Contract, plans, or specifications or previously authorized as extra work, he shall notify the Engineer in writing of his intention to claim such additional compensation before he begins the work on which he bases his claim."

\_\_\_\_\_  
CONTRACTOR

BY: \_\_\_\_\_

\_\_\_\_\_  
DATE

\_\_\_\_\_  
TITLE



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**CONTRACT**

THIS AGREEMENT, made and executed on this \_\_\_\_\_ day of the month of \_\_\_\_\_, Two Thousand and (20\_\_\_), by and between The Alabama State Port Authority, and (contractor name) Contractor, domiciled in the state of \_\_\_\_\_, Party of the Second Part, and hereinafter designated as "CONTRACTOR," WITNESSETH, that in consideration of the covenants and agreements herein contained, to be performed by the parties hereto and of the payments hereinafter agreed to be made, it is mutually agreed as follows:

The CONTRACTOR shall and will provide and furnish all equipment and labor, and perform the work required to build, construct, and complete in a thorough and workmanlike manner, to the satisfaction of the Alabama State Port Authority:

**Project Name** Blakeley/Mud Lakes Dike Raising & Weir Boxes  
**Project #** 11381 Task 03

Hereinafter called the project, for the base Contract price of \_\_\_\_\_ DOLLARS, (\$\_\_\_\_\_) and all extra work in connection therewith, and in accordance with plans, specifications, and Proposal, which are made a part thereof as fully as is set out herein, and hereby becomes a part of this Contract.

It is agreed and understood that the Alabama State Port Authority shall pay, and the Contractor shall receive, the full compensation for the work performed in accordance with the Specifications.

The project shall commence and will be completed in accordance with Paragraph SP-03 of Division III Special Provisions.

This contract shall become effective immediately upon, and as of the date all necessary parties hereto have approached and signed the same.

By signing this contract, the contracting parties affirm, for the duration of the agreement, that they will not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for all damages resulting therefrom.

IN WITNESS WHEREOF, the parties of these presents have executed this Agreement in the year and day first above written.

WITNESS:

Alabama State Port Authority

\_\_\_\_\_

BY: \_\_\_\_\_

WITNESS:

Contractor Party of the Second Part

\_\_\_\_\_

BY: \_\_\_\_\_



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### **SP-01 DESCRIPTION OF WORK**

The work consists principally of providing bonds, labor, materials, equipment, supervision, insurance and incidentals necessary to raise the dikes of the Blakeley/Mud Lakes Dredged Material Management Area (DMMA) in Mobile, AL. as indicated in the Contract Plans and Specifications.

### **SP-02 PURCHASE OF MATERIALS**

The Alabama State Port Authority will utilize its sales tax exemption status on this project.

The Contractor will be responsible for the purchase of all materials and will be required to apply for a sales and use tax certificate of exemption upon contract award.

Refer also to Section 20-14 (Purchase of Materials) of Division IV General Provisions.

### **SP-03 COMMENCEMENT AND COMPLETION**

The Contractor will be required to commence work under this contract in accordance with DIVISION IV GENERAL PROVISIONS Article 90-02 (NOTICE TO PROCEED), to prosecute said work with faithfulness and energy, and to complete the entire project within 900 calendar days after receipt of Notice to Proceed. The time stated for final completion shall include final clean-up of all work sites. Failure to complete work on schedule shall initiate liquidated damages, which will be assessed in accordance with the provisions of Paragraph 20-13 (LIQUIDATED DAMAGES) of DIVISION IV, GENERAL PROVISIONS. In addition, liquidated damages referenced in DIVISION V, CONSTRUCTION SPECIFICATIONS, shall also be initiated.

### **SP-04 QUALIFICATION OF BIDDERS**

In addition to the requirements of Article 20-01 and 20-03 of Division IV, GENERAL PROVISIONS, the Owner may make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. Conditional bids will not be accepted.

### **SP-05 ACCEPTANCE OR REJECTION OF BIDS**

The Authority reserves the right to accept or reject any or all bids and to waive informalities. All bidders must be licensed to operate as contractors in the State of Alabama. Attention of bidders is directed to Chapter 8 of Title 23 of the Code of Alabama, 1975, and Amendments thereto, relating to the licensing of General Contractors. No bid will be accepted from anyone except a qualified Contractor, licensed by the State Licensing Board for General Contractors. The license must have a classification appropriate for the work to be completed. In addition, non-residents of the State must show evidence of having qualified with the Secretary of State to do business in Alabama.

### **SP-06 NON-RESIDENT (OUT-OF-STATE) CONTRACTORS**

Preference shall be given to resident contractors, and non-resident bidders domiciled in a state having laws granting preference to local contractors shall be awarded Alabama public contracts the same as Alabama contractors bidding under similar circumstances; and resident contractors in Alabama are to



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be granted preference over non-residents in awarding of contracts in the same manner and to the same extent as provided by the laws of the state of domicile of the non-resident.

Non-resident bidders must accompany any written bid documents with a written opinion of any attorney at law licensed to practice law in such non-resident bidders' state of domicile, as to the preferences, if any or none, granted by the law of that state to its own business entities whose principal places of business are in that State in the letting of any or all public contracts.

### **SP-07 INDEMNIFICATION**

To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, the Engineer, and their agents and employees from and against all claims, damages, losses, and expenses, including, but not limited to, attorney's fees arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss, or expense (1) is attributed to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom, and (2) is caused in whole or in part by any negligent act or omission of the Contractor, any subcontractor, anyone directly or indirectly employed by any 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. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity that would otherwise exist as to any party or person described in this Paragraph SP-07.

In any and all claims against the Owner, the Engineer or any of their agents or employees by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification under this Paragraph SP-07, shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers' or workmen's compensation acts, or other employee benefits acts.

### **SP-08 SUPERVISION**

The Contractor shall place a competent superintendent on the Project who shall have experience in the type of work being performed under this Contract. The Contractor shall also submit an organizational chart, which shall clearly show the Contractor's personnel assigned to the Project and the position that they hold. The chart shall also define the persons of contact with the Owner and the Engineer.

The Owner reserves the right to request changes in supervision for incompetent actions or other reasons of due cause. Once the Contractor is notified in writing of a request to replace the superintendent, he shall do so within five (5) calendar days of such request.

The Contractor's assigned superintendent shall have responsibility for the day-to-day operations of the work and shall be the on-site safety officer responsible for implementation of the Contractor's safety program unless another named person is so assigned.

The assigned superintendent shall remain on the Project site while work under the Contract is being performed. In the superintendent's absence from the site, another named person shall be responsible for all aspects of the work. Notification of the name of the individual shall be filed with the Owner and Engineer. The Contractor shall not reassign a superintendent without the acknowledgement and approval of the Owner.



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### **SP-09 CONTRACTOR'S REPRESENTATIVE**

A representative of the Contractor shall be on the site at all times when work is being conducted as required by paragraph 90-01 (SUBLETTING OF CONTRACT) of DIVISION IV. A telephone number should be given to the Engineer where he might contact the Representative after working hours in case of an emergency.

### **SP-10 METHOD OF PAYMENT**

Payment will be made in accordance with the provisions of Paragraph 100-06 (PARTIAL PAYMENT) of DIVISION IV except that there will be no payment for materials on hand. Paragraph 100-07 (PAYMENT FOR MATERIALS ON HAND) is to be deleted in its entirety.

### **SP-11 INSURANCE**

The following shall apply to Section 40 (Indemnification and Insurance Requirements) of Division IV General Provisions:

- 1) Delete 40-04 OWNER'S AND CONTRACTORS' PROTECTIVE LIABILITY
- 2) Delete 40-07 OCEAN MARINE COVERAGE
- 2) Delete 40-08 RAILROAD PROTECTIVE LIABILITY
- 3) Delete 40-09 BUILDER'S RISK or INSTALLATION FLOATER
- 4) Delete 40-10 PROFESSIONAL LIABILITY COVERAGE

### **SP-12 TEMPORARY WATER**

The responsibility shall be upon the Contractor to provide and maintain at his own expense an adequate supply of water of a quality suitable for his use for construction and domestic consumption. At his own expense, he shall install and maintain any necessary water supply connections and piping. However, he shall do so only at such locations and in such workmanship, manner as may be authorized by the OWNER. Before final acceptance, temporary connections and piping installations by the Contractor shall be removed in a workmanship manner to the satisfaction of the OWNER.

### **SP-13 GUARANTEE**

The Contractor shall furnish to the Alabama State Port Authority a two (2) year written guarantee issued from the date of final acceptance. This guarantee shall cover any defective material or workmanship on the entire project.

### **SP-14 PROJECT SCHEDULE**

The Contractor shall prepare a CPM Project Schedule, and the schedule shall show all items of work necessary to bring the project to completion. The Contractor shall submit his Progress Schedule updated monthly to reflect the status of the work. These updates shall be submitted in conjunction with the monthly progress Payment Request.

### **SP-15 PORT ACCESS CREDENTIALS**

The project site is not within the restricted ASPA facilities boundary, therefore individuals performing work on this project are NOT required to possess a TWIC Card, ASPA Badge, or ASPA Vehicle Decal. For information, ASPA's access policy is provided on the ASPA website.





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**SP-16 NOTICE TO BIDDERS REGARDING EMPLOYMENT PRACTICES**

Effective October 1, 2011, the Beason-Hammon Alabama Taxpayer and Citizen Protection Act (“the Act”) requires that any business entity contracting with or providing any grant or incentives to the state, including the Alabama State Port Authority, certify compliance with the Act. All Bidders must certify such compliance by executing the enclosed Certificate of Compliance and returning it to the Alabama State Port Authority along with proof of the bidding company’s enrollment in the E-Verify program with your bid package. The following E-Verify website link is provided for convenience: [Home | E-Verify](#).



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## **SECTION 10 DEFINITIONS OF TERMS**

Whenever the following terms are used in these specifications, in the Contract, in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be interpreted as follows:

### **10-01 AASHTO**

The American Association of State Highway and Transportation Officials, the successor association of AASHTO.

### **10-02 ACCESS ROAD**

The right-of-way, the roadway and all improvements constructed thereon connecting the site of work to a public highway.

### **10-03 ADVERTISEMENT**

A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.

### **10-04 ALDOT SPECS**

The State of Alabama Department of Transportation Standard Specifications for Roads and Bridges, latest edition.

### **10-05 AISC**

The American Institute of Steel Construction.

### **10-06 AREA**

American Railway Engineering Association.

### **10-07 ASA**

American Standards Association.

### **10-08 ASTM**

The American Society for Testing and Materials.

### **10-09 AWARD**

The acceptance, by the OWNER, of the successful bidder's proposal.

### **10-10 AWPI**

American Wood Preservers Institute.

### **10-11 BIDDER**

Any individual, partnership, firm or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

### **10-12 CALENDAR DAY**

Every day shown on the calendar.

### **10-13 CHANGE ORDER**

A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and Contract time adjustment, if any, for the

work affected by such changes. The work, covered by a change order, shall be within the scope of the Contract.

**10-14 COMMERCE**

The prime business of the OWNER, consisting of the transshipping and storage of goods and materials by highway, rail, barge, and ship.

**10-15 CONSTRUCTION MANAGER**

The individual, partnership, firm or corporation duly authorized by the OWNER to be responsible for construction management supervision of the Contract work and acting directly or through an authorized representative.

**10-16 CONTRACT**

The written agreement covering the work to be performed. The awarded Contract shall include, but is not limited to: The Advertisement; The Contract Form; The Proposal; The Performance Bond; The Payment Bond; any required insurance certificates; The Specifications; The Plans; Change Orders and any addenda issued to bidders.

**10-17 CONTRACT ITEM (PAY ITEM)**

A specific unit of work for which a price is provided in the Contract.

**10-18 CONTRACT TIME**

The number of calendar days or working days, stated in the special provisions, allowed for completion of the Contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the Contract shall be completed by that date.

**10-19 CONTRACTOR**

The individual, partnership, firm or corporation primarily liable for the acceptable performance of the work Contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the Contract work.

**10-20 DEPARTMENT**

The Alabama State Port Authority.

**10-21 DIRECTOR**

The Director of the Alabama State Port Authority, as constituted under the laws of Alabama.

**10-22 ENGINEER**

The individual, partnership, firm or corporation duly authorized by the OWNER to be responsible for Engineering supervision of the Contract work and acting directly or through an authorized representative.

**10-23 EQUIPMENT**

All machinery, together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the work.

**10-24 EXTRA WORK**

An item of work not provided for in the awarded Contract is previously modified by change order or supplemental agreement, but which is found by the Engineer to be necessary to complete the work within the intended scope of the Contract as previously modified.

**10-25 FEDERAL SPECIFICATIONS**

The Federal Specifications and Standards, and supplements, amendments and indices thereto are prepared and issued by the General Services Administration of the Federal Government. They may be obtained from the Specifications Activity, Printed Materials Supply Division, Building 197, Naval Weapons Plant, Washington D.C. 20407.

**10-26 FORCE ACCOUNT**

The term used to describe a method of accounting which may be employed as a basis of payment to the Contractor for Extra Work.

**10-27 INSPECTOR**

An authorized representative of the Engineer assigned to make all necessary reviews of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.

**10-28 INTENTION OF TERMS**

Whenever, in these specifications or on the plans, the words "directed", "required", "permitted", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer is intended; and similarly, the words "approved", "acceptable" "satisfactory", or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer, subject to each case to the final determination of the OWNER.

Any reference to a specific requirement of a numbered paragraph of the Contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.

**10-29 LABORATORY**

The official testing laboratories of the OWNER or such other laboratories as may be designated by the Engineer.

**10-30 MAJOR AND MINOR CONTRACT ITEMS**

A major Contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 10 percent of the total amount of the awarded Contract. All other items shall be considered minor Contract items.

**10-31 MATERIALS**

Any substance specified for use in the construction of the Contract work.

**10-32 NOTICE TO PROCEED**

A written notice to the Contractor to begin the actual work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the Contract time begins.

**10-33 OWNER**

The term OWNER shall mean the State of Alabama acting by and through the Alabama State Port Authority.



**10-34 PAYMENT BOND**

The approved form of security furnished by the Contractor and his surety as a guaranty that he will pay in full all bills and accounts for materials and labor used in the construction of the work.

**10-35 PERFORMANCE BOND**

The approved form of security furnished by the Contractor and his surety as a guaranty that the Contractor will complete the work in accordance with the terms of the Contract.

**10-36 PLANS**

The official drawings or exact reproductions, approved by the Engineer, which show the location, character, dimensions and details of the work to be done and which are to be considered as a part of the Contract, supplementary to the specifications.

**10-37 PROJECT**

The agreed scope of work for accomplishing specific development.

**10-38 PROPOSAL**

The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.

**10-39 PROPOSAL FORM**

The approved, prepared form on which the OWNER requires that formal bids be submitted for the work contemplated.

**10-40 PROPOSAL GUARANTY**

The security furnished with a proposal to guarantee that the bidder will enter into a Contract if his proposal is accepted by the OWNER.

**10-41 SPECIAL PROVISIONS**

Specific directions and provisions additional to these GENERAL PROVISIONS and to any CONSTRUCTION SPECIFICATIONS setting forth conditions or requirements of construction which are not satisfactorily covered by these GENERAL PROVISIONS or the CONSTRUCTION SPECIFICATIONS. SPECIAL PROVISIONS shall prevail over the GENERAL PROVISIONS and CONSTRUCTION SPECIFICATIONS because they set forth the final Contractual intent as to the matter involved.

**10-42 SPECIFICATIONS**

A part of the Contract containing the written directions and requirements for completing the Contract work. Standards for specifying materials or testing which are cited in the Contract specifications by reference shall have the same force and effect as if included in the Contract physically.

**10-43 STATE**

The State of Alabama, the Party of the First Part to the Contract, acting by and through the Alabama State Port Authority.

**10-44 STRUCTURES**

Port facilities such as wharves, piers, dolphins, bridges, culverts, catch basins, inlets, retaining walls, cribbing, storm and sanitary sewer lines, water lines, under drains, electrical ducts, manholes, handholes, lighting fixtures and bases, transformers, flexible and rigid pavements,

buildings, vaults, and other man-made features of the port that may be encountered in the work and not otherwise classified herein.

**10-45 SUBCONTRACTOR**

Any properly qualified individual undertaking the performance of any part of the work under the terms of the Contract, by virtue of an agreement between himself and the Contractor, with the approval of the OWNER.

**10-46 SUBGRADE**

The soil which forms the pavement foundation.

**10-47 SUPERINTENDENT**

The Contractor's executive representative who is present on the work site during progress, authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

**10-48 SUPPLEMENTAL AGREEMENT**

A written agreement between the Contractor and the OWNER covering: (1) work that would increase or decrease the total amount of the awarded Contract by not more than 10 percent; or any major Contract item, by more than 25 percent, such increased or decreased work being within the scope of the originally awarded Contract, or (2) work that is not within the scope of the originally awarded Contract.

**10-49 SURETY**

The corporate body, licensed under the laws of Alabama, bound with and for the Contractor for the acceptable performance of the Contract and also for the payment of all claims recoverable under the Contract Bonds.

**10-50 WORK**

The furnishing of all labor, materials, tools, equipment and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the Contract, plans and specifications.

**10-51 WORKING DAY**

A working day shall be any day other than a national legal holiday, Saturday, or Sunday, on which the normal working forces of the Contractor may proceed with regular work for at least 6 hours toward completion of the Contract. Unless work is suspended for causes beyond the Contractor's control, Saturdays, Sundays and national holidays on which the Contractor's forces engage in regular work, requiring the presence of an inspector, will be considered as working days.

## **SECTION 20 PROPOSAL REQUIREMENTS AND CONDITIONS**

### **20-01 PREQUALIFICATION OF BIDDERS**

Proposal forms will be issued only to prospective Bidders who are licensed under the terms of the existing State laws. If the applicant is a corporation organized in a state other than Alabama, it shall furnish a certificate from the Secretary of State showing that it is qualified to transact business in Alabama.

### **20-02 CONTENTS OF PROPOSAL FORMS**

The OWNER shall furnish bidders with proposal forms. All papers bound with or attached to the proposal forms are necessary parts and must not be detached.

The plans, specifications, and other documents designated in the proposal form shall be considered a part of the proposal whether attached or not.

### **20-03 ISSUANCE OF PROPOSAL FORMS**

The OWNER reserves the right to refuse to issue a proposal form to a prospective bidder should such bidder be in default for any of the following reasons:

- (a) Failure to pay, or satisfactorily settle, all bills due for labor and materials on former Contracts in force with the OWNER.
- (b) Contractor default under previous Contracts with the OWNER.
- (c) Proposal withdrawal or Bid Bond forfeiture on previous project with the OWNER.
- (d) Unsatisfactory work on previous Contract with the OWNER.
- (e) Performance failure of manufacturer's product or materials.

### **20-04 INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES**

An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the Contract. The OWNER does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as hereinafter provided in the subsection titled 50-02 ALTERATION OF WORK AND QUANTITIES of Division IV, without in any way invalidating the unit bid prices.

### **20-05 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE**

The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and Contract forms. He shall satisfy himself as to the character, quality, and quantities of work to be performed, materials to be furnished, and as to the requirements of the proposed Contract. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the proposed Contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests are available for inspection of bidders. It is understood and agreed that such subsurface information, whether included in the plans, specifications, or otherwise made available to the bidder, was obtained, and is intended for the OWNER's design and estimating purposes only. Such information has been made available for the convenience of all bidders. It is further understood and agreed that each

bidder is solely responsible for all assumptions, deductions, or conclusions which he may make or obtain from his examination of the boring logs and other records of subsurface investigations and tests that are furnished by the OWNER.

#### **20-06 PREPARATION OF PROPOSAL**

The bidder shall submit his proposal on the forms furnished by the OWNER. All blank spaces in the proposal forms must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals for which he proposed to do each pay item furnished in the proposal. The Department will check the gross sum given in the proposal and in case of error or discrepancy, the gross sum obtained by adding the products of the unit prices and the various estimated quantities listed in the proposal shall prevail and this shall be the Contract Bid Price. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

The bidder shall sign his proposal correctly and in ink. If the proposal is made by an individual, his name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation the person signing the proposal shall give the name of the State under the laws of which the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of his authority to do so and that the signature is binding upon the firm or corporation.

#### **20-07 IRREGULAR PROPOSALS**

Proposals shall be considered irregular for the following reasons:

- (a) If the proposal is on a form other than that furnished by the OWNER, if the OWNER's form is altered, or if any part of the proposal form is detached.
- (b) If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind which make the proposal incomplete, indefinite, or otherwise ambiguous.
- (c) If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.
- (d) If the proposal contains unit prices that are obviously unbalanced.
- (e) If the proposal is not accompanied by the bid bond specified by the OWNER.

The OWNER reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the OWNER and conforms to laws and ordinances pertaining to the letting of construction Contracts.

#### **20-08 PROPOSAL GUARANTY**

Each separate proposal shall be accompanied by a certified check, or other specified acceptable collateral, in the amount of 5% of the bid price, but not more than \$10,000. Such check, or collateral, shall be made payable to the Alabama State Port Authority.

#### **20-09 DELIVERY OF PROPOSAL**

Each proposal submitted shall be placed in a sealed envelope plainly marked on the outside with the project description, Bidder's name and address, Contractor's License number, Contractor's Classification of License, and the time and date of bid opening. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement before the time specified for opening all bids.

Proposals received after the bid opening time shall be returned to the bidder unopened.

**20-10 WITHDRAWAL OR REVISION OF PROPOSALS**

A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the OWNER in writing or by telegram before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

**20-11 PUBLIC OPENING OF PROPOSALS**

Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend.

Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

**20-12 DISQUALIFICATION OF BIDDERS**

A bidder shall be considered disqualified for any of the following reasons:

- (a) Submitting more than one proposal from the same partnership, firm or corporation under the same or different name.
- (b) Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the OWNER.
- (c) If the bidder is considered to be in "default" for any reason specified in the paragraph titled ISSUANCE OF PROPOSAL FORMS of this subsection.
- (d) If the bidder has not complied with the provisions of the Laws of the State of Alabama concerning licensing of Contractors.
- (e) If an out-of-state bidder has not qualified with the Secretary of State to do business in Alabama.

**20-13 LIQUIDATED DAMAGES**

Time is an essential element in the Contract. As the prosecution of the Work will inconvenience the public, obstruct traffic, and interfere with business, it is important that the work be pressed vigorously to completion. Also, the cost to the Department of the administration of the Contract, supervision, inspection, engineering, and in some cases maintenance of detours around or over the work under construction will be increased or decreased as the time occupied in the Work is lengthened or shortened. Therefore, exclusive of Sundays, national holidays, and other exceptions and extensions as detailed elsewhere in these Specifications for each day that the Work remains incomplete after the time specified in the Contract, or additional time that may be allowed by the Engineer for the completion of the work when extra or additional work is ordered by the Engineer, the amount specified in the following schedule shall be paid by the Contractor to the Department as liquidated damages for the loss sustained by the State because of failure of the Contractor to complete the work within the specified time.

## SCHEDULE OF LIQUIDATED DAMAGES

<b>Contract Bid Price</b>	<b>Amount of Liquidated Damages per Day</b>
\$100,000 and less	\$100.00
More than \$100,000 and less than \$250,000	150.00
\$250,000 and less than \$600,000	200.00
\$600,000 or more	0.033% of Contract amount

### **20-14 PURCHASE OF MATERIALS**

**20-14.1** In accordance with the State of Alabama Statutes for **Sales Tax exemptions for a State Agency**, it is the intent of this Contract for the Alabama State Port Authority (Owner) to reduce sales tax.

20-14.1.1 The Owner reserves the right to purchase all of the required materials or equipment to be used on this project which will become part of the realty.

20-14.1.2 The cost of the Materials and Equipment which will become part of the realty is to be included in the Bid Price. Sales taxes, which will become part of the realty in accordance with the Alabama Statutes, are not to be included.

### **20-14.2 Materials and Equipment Responsibility**

20-14.6.1 The General Contractor shall retain as part of his Bid and Fee the following responsibilities for care, custody and control of the purchased Materials and Equipment.

- .1 Insure that all Materials and Equipment purchased by the Owner are in complete accordance with the plans and specifications.
- .2 Shop drawings and submittals.
- .3 Scheduling.
- .4 Shipment, receipt, unloading, inspection, storage and handling.
- .5 Return of damaged Materials and Equipment.
- .6 Filing of freight claims.
- .7 Installation as required.
- .8 Startup and testing as required per specifications.
- .9 Warranty and maintenance as required per specifications.
- .10 Training as required per specifications.
- .11 Spare parts. Special tools and additional stock as required by the specifications.
- .12 In the event the Contractor orders non-specified, wrong size or dimensioned Material or Equipment it will be his responsibility to replace such at no cost to the Owner.

## **SECTION 30 AWARD AND EXECUTION OF CONTRACT**

### **30-01 CONSIDERATION OF PROPOSALS**

After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit price written in words shall govern.

Until the award of the Contract is made, the OWNER reserves the right to reject a bidder's proposal for any of the following reasons:

- (a) If the proposal is irregular as specified in the subsection titled IRREGULAR PROPOSALS of Subsection 20.
- (b) If the bidder is disqualified for any of the reasons specified in the subsection titled DISQUALIFICATION OF BIDDERS of Subsection 20.

In addition, until the award of a Contract is made, the OWNER reserves the right to reject any or all proposals; waive technicalities, if such waiver is in the best interest of the OWNER and is in conformance with applicable laws or regulations pertaining to the letting of construction Contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the OWNER's best interests.

### **30-02 AWARD OF CONTRACT**

The award of a Contract, if it is to be awarded, shall be made within 60 calendar days of the date specified for publicly opening proposals.

Award of the Contract shall be made by the OWNER to the lowest qualified bidder whose proposal conforms to the cited requirements of the OWNER.

### **30-03 CANCELLATION OF AWARD**

The OWNER reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a Contract has been fully executed by all parties and is approved by the OWNER in accordance with the paragraph titled APPROVAL OF CONTRACT of this subsection.

### **30-04 RETURN OF PROPOSAL GUARANTY**

All proposal guaranties, except those of the three lowest bidders, will be returned immediately after the OWNER has made a comparison of bids as hereinbefore specified in the paragraph titled CONSIDERATION OF PROPOSALS of this subsection. Proposal guaranties of the two lowest bidders will be retained by the OWNER until such time as an award is made, at which time, the unsuccessful bidders' proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the OWNER receives the contract bonds as specified in the paragraph titled "REQUIREMENTS OF CONTRACT BONDS" of the subsection.

### **30-05 REQUIREMENTS OF CONTRACT BONDS**

In order to insure the faithful performance of each and every condition, stipulation, and requirement of the Contract and to indemnify and save harmless the OWNER from any and all damages, either directly or indirectly, (arising out of any failure to perform same), the successful Bidder to whom the Contract is awarded shall, within ten (10) days from the date of award, furnish at his expense and file with the OWNER an acceptable Surety Bond in an amount equal to one hundred percent (100%) of the Contract Bid Price of the Contract as awarded. Said Bond shall be made on the approved bond form, shall be furnished by a reputable surety company authorized to do business in the State of Alabama, shall be counter-signed by an authorized

agent resident in the State who is qualified for the execution of such instruments, and shall be attached thereto power of attorney of the signing agent.

In case of default on the part of the Contractor, all expenses incident to ascertaining and collecting losses suffered by the OWNER under the Bond, including both Engineering and legal services, shall lie against the Contract Bond for Performance of the Work.

In addition thereto, the successful Bidder to whom the Contract is awarded shall, within ten (10) days, furnish at his expense and file with the OWNER an acceptable Surety Bond for Payment of Labor, Materials, and Supplies payable to the OWNER in an amount not less than one hundred percent (100%) of the Contract price with the obligation that the Contractor shall promptly make payment to all persons furnishing him or them with labor, materials, foodstuffs, or supplies for, or in, prosecution of the work including the payment of reasonable attorney's fees, incurred by successful claimants or plaintiffs in suits on said bond.

No surety bonds from any insurance company or bonding company which has a lower rating, in the Best Key Rating Guide, than A will be accepted.

### **30-06 EXECUTION OF CONTRACT**

The successful bidder shall sign (execute) the necessary agreements for entering into the Contract and return such signed Contract to the OWNER, along with the fully executed surety bond or bonds specified in the paragraph titled REQUIREMENT OF CONTRACT BONDS of this subsection, within 10 calendar days from the date mailed or otherwise delivered to the successful bidder.

### **30-07 APPROVAL OF CONTRACT**

Upon receipt of the Contract and Contract bond or bonds that have been executed by the successful bidder, the OWNER shall complete the execution of the Contract and return the fully executed Contract to the Contractor. Delivery of the fully executed Contract to the Contractor shall constitute the OWNER's approval to be bound by the successful bidder's proposal and the terms of the Contract.

### **30-08 FAILURE TO EXECUTE CONTRACT**

Failure of the successful bidder to execute the Contract and furnish an acceptable surety bond or bonds within the 10 calendar day period specified in the paragraph titled "REQUIREMENTS OF CONTRACT BONDS" of this subsection shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidation of damages to the OWNER. The award may then be made to the next lowest qualified Bidder or the work may be re-advertised, or otherwise contracted as the Director may decide.



## **SECTION 40 INDEMNIFICATION AND INSURANCE REQUIREMENTS**

### **40-01 INDEMNIFICATION**

The Contractor shall assume all liability for and shall indemnify and save harmless the State of Alabama, the Alabama State Port Authority and its officers and employees, and Engineer from all damages and liability for injury to any person or persons, and injury to or destruction of property, including the loss of use thereof, by reason of an accident or occurrence arising from operations under the Contract, whether such operations are performed by himself or by any subcontractor or by anyone directly or indirectly employed by either of them, occurring on or about the premises, or the ways and means adjacent, during the term of the Contract, or any extension thereof, and shall also assume the liability for injury and/or damages to adjacent or neighboring property by reason of work done under the Contract.

### **40-02 CONTRACTOR COVERAGE**

The Contractor shall not commence work under the Contract until he has obtained all insurance required under the following paragraphs and until such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar applicable insurance required of the subcontractor has been obtained and approved. If the subcontractor does not take out insurance in his own name, then the principal Contractor shall provide such insurance protection for subcontractor and his employees by endorsement to the Contractor's policies or by taking out separate policies in the name of the subcontractor. The Contractor shall provide, at his expense, insurance in accordance with the following:

#### **GENERAL REQUIREMENTS**

All policies of insurance must be written with companies acceptable to ASD. The Contractor shall furnish to ASD certificates of insurance, signed by the licensed agent evidencing required coverages. ASD reserves the right to require certified copies of any and all policies. Each policy of insurance shall provide, either in body of the policy or by endorsement, that such policy cannot be substantially altered or cancelled without thirty (30) days' written notice to ASD and to the insured. Except for Workers Compensation, said policies will identify Alabama State Port Authority, its officers, officials, agents, servants and employees as Primary and Non-contributory Additional Insureds in connection with work performed for, on behalf of, or on the property of ASD, including a waiver of all rights of subrogation.

### **40-03 GENERAL LIABILITY**

The Contractor shall take out and maintain during the life of the Contract Commercial General Liability insurance, including Blanket Contractual and Completed Operations coverage, in an amount not less than **\$5,000,000** for any one occurrence for bodily injury, including death, and property damage liability. Policy shall include endorsement identifying the Owner and Engineer as Primary and Non-contributory Additional Insureds as respects the Contractor's work for the Owner, to the extent required by written Contract, including a waiver of all rights of subrogation.

### **40-04 OWNER'S AND CONTRACTOR'S PROTECTIVE LIABILITY**

The Contractor shall take out and maintain during the life of the Contract a separate Owner's and Contractor's Protective Liability policy in the names of the Owner and Engineer in an amount not less than \$2,000,000. Policy shall be delivered to the Owner.

### **40-05 BUSINESS AUTOMOBILE LIABILITY**

The Contractor shall take out and maintain during the life of the contract Business Automobile Liability insurance covering any auto in an amount not less than \$1,000,000 for any one occurrence for bodily injury, including death, and property damage liability.

### **40-06 WORKERS COMPENSATION**

The Contractor shall take out and maintain during the life of the Contract Workers Compensation and Employers Liability insurance providing coverage under the Alabama Workers Compensation Act in an amount not less than that required by Alabama Law.

Where applicable, Contractor shall take out and maintain during the life of the Contract insurance providing coverage as required by Federal statute, including but not limited to U.S. Longshoremen and Harbor Workers Compensation Act (LHWCA), Jones Act, and Railroad Federal Employers Liability Act (FELA).

#### **40-07 OCEAN MARINE COVERAGE**

In the event work involves the use of watercraft in the completion of the Contract, the Contractor shall provide Protection and Indemnity coverage, including crew, in an amount not less than \$2,000,000 for each loss.

*Only the Contractor and/or Subcontractor using watercraft in the completion of its work shall be required to provide evidence of this coverage. In the event the Contractor subcontracts for this portion of the work, the Contractor shall not allow the subcontractor to commence work until such coverage has first been obtained by the subcontractor and approved by the Owner.*

#### **40-08 RAILROAD PROTECTIVE LIABILITY**

In any case where the Contract involves work within 50 feet of an operating railroad track, the Contractor shall provide a Railroad Protective Liability policy in the name of the railroad whose right of way is involved. The limits of the policy shall be not less than \$2,000,000 per occurrence with \$6,000,000 aggregate.

NOTE #1: With the written approval of the Owner, in lieu of the Railroad Protective Liability policy, the Contractor may cause to be attached to its Commercial General Liability policy standard ISO endorsement, "Contractual Liability – Railroads" (CG 24 17). The railroad must be identified as an Additional Insured.

NOTE #2: *Only the Contractor and/or Subcontractor performing the work within 50 feet of the railroad track shall be required to provide evidence of this coverage. In the event the Contractor subcontracts for this portion of the work, the Contractor shall not allow the subcontractor to commence work until such coverage has first been obtained by the subcontractor and approved by the Owner.*

#### **40-09 BUILDER'S RISK or INSTALLATION FLOATER**

The Contractor shall take out and maintain during the life of the Contract Builder's Risk insurance or Installation Floater, written on an "All Risk" basis, insuring the work included in the Contract against all physical loss. The amount of insurance shall at all times be at least equal to the amount of the Contract. The policy shall be in the names of the Owner, Engineer, Contractor and "all Subcontractors," as their interests appear. Policy shall be provided to the Owner prior to commencement of work.

#### **40-10 PROFESSIONAL LIABILITY COVERAGE**

The Contractor shall take out and maintain during the life of the contract Professional Liability insurance including design with limits not less than \$2,000,000 per occurrence.

#### **40-11 PROOF OF CARRIAGE OF INSURANCE**

The Contractor shall furnish to the Owner, in triplicate, Certificates of Insurance, signed by the licensed agent, evidencing the required coverage, along with letter of transmittal giving date of delivery. A copy of this letter shall also be delivered to the Engineer. The Owner reserves the right to require certified copies of any and all policies.

All coverage and bonds shall be provided by companies acceptable to the Owner. Each policy of insurance shall provide, either in body of the policy or by endorsement, that such policy cannot

be substantially altered or cancelled without thirty (30) days' written notice to the Owner and insured.

## **SECTION 50 SCOPE OF WORK**

### **50-01 INTENT OF CONTRACT**

The intent of the Contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, drawings, specifications, and terms of the Contract.

### **50-02 ALTERATION OF WORK AND QUANTITIES**

The OWNER reserves and shall have the right to make such alterations in the work as may be necessary or desirable to complete the work originally intended in an acceptable manner.

Unless otherwise specified herein, the Engineer shall be and is hereby authorized to make such alterations in the work as may increase or decrease the originally awarded Contract quantities, provided that the aggregate of such alterations does not change the total Contract cost by more than 10% or the total cost of any major Contract item by more than 25 percent (total cost being based on the unit prices and estimated quantities in the awarded Contract). Alterations which do not exceed the 25 percent limitation shall not invalidate the Contract nor release the surety, and the Contractor agrees to accept payment for such alteration as if the altered work had been a part of the original Contract. These alterations, which are for work within the general scope of the Contract shall be covered by "Change Orders" issued by the Engineer. Change orders for altered work shall include extensions of Contract time where, in the Engineer's opinion, such extensions are commensurate with the amount and difficulty of added work.

Should the aggregate amount of altered work exceed the 25 percent limitation hereinbefore specified, such excess altered work shall be covered by supplemental agreement. If the OWNER and the Contractor are unable to agree on a unit adjustment for any Contract item that requires a supplemental agreement, the OWNER reserves the right to terminate the Contract with respect to the item and make other arrangement for its completion.

All supplemental agreements shall require consent of the Contractor's surety and separate performance and payment bonds.

### **50-03 OMITTED ITEMS**

The Engineer may, in the OWNER's best interest, omit from the work any Contract item, except major Contract items. Major Contract items may be omitted by a supplemental agreement.

Such omission of Contract items shall not invalidate any other Contract provision or requirement.

Should a Contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with the paragraph titled PAYMENT FOR OMITTED ITEMS of Subsection 100.

### **50-04 EXTRA WORK**

Should acceptable completion of the Contract require the Contractor to perform an item of work for which no basis of payment has been provided in the original Contract or previously issued change orders or supplemental agreements, the same shall be called Extra Work. Extra work that is within the general scope of the Contract shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order and shall contain any adjustment to the Contract time that, in the Engineer's opinion, is necessary for completion of such extra work.

When determined by the Engineer to be in the OWNER's best interest, he may order the Contractor to proceed with extra work by force account as provided in the paragraph titled PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK of Subsection 100.

Extra work that is necessary for acceptable completion of the project but is not within the general scope of the work covered by the original Contract shall be covered by a Supplemental Agreement as hereinbefore defined in the paragraph titled SUPPLEMENTAL AGREEMENT of Subsection 10.

Any claim for payment of extra work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the OWNER.

#### **50-05 MAINTENANCE OF COMMERCE**

It is the explicit intention of the Contract that the safety of workers and vessels, as well as the Contractor's equipment and personnel, is the most important consideration.

It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of vessels in the waterfront areas of the port with respect to his own operations and the operations of all his Subcontractors as specified in the paragraph titled LIMITATION OF OPERATIONS of Subsection 90.

With respect to his own operations and the operations of all his Subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying: personnel; equipment; vehicles; storage areas; and any work area or condition that may be hazardous to the operation of fire rescue equipment, or maintenance vehicles at the port.

When the Contract requires the maintenance of vehicular traffic on an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the Contract, plans, and specifications, the Contractor shall keep such road, street, or highway open to all traffic and shall provide such maintenance as may be required to accommodate traffic.

The Contractor shall furnish, erect, and maintain barricades, warning signs, flagmen, and other traffic control devices in reasonable conformity with the manual of Uniform Traffic Control Devices for Streets and Highway (published by the United States Government Printing Office), unless otherwise specified herein. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets, or highways.

The Contractor shall make his own estimate of all labor, materials, equipment, and incidentals necessary for providing the maintenance of commerce and vehicular traffic as specified in this subsection.

The cost of maintaining the commerce and vehicular traffic specified in this subsection shall not be measured or paid for directly but shall be included in the various Contract items.

#### **50-06 REMOVAL OF EXISTING STRUCTURES**

All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly but shall be included in the various Contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plan, the Engineer shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the Engineer in accordance with the provisions of the Contract.

Except as provided in the subsection titled RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK of this subsection, it is intended that all existing materials or structures that may be

encountered (within the lines, grades, or grading sections established for completion of the work) shall be utilized in the work as otherwise provided for in the Contract and shall remain the property of the OWNER when so utilized in the work.

#### **50-07 RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK**

Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the Contract to be either embankment or waste, he may at his option either:

- (a) Use such material in another Contract item, providing such use is approved by the OWNER and Engineer and is in conformance with the Contract specifications applicable to such use; or
- (b) Remove such material from the site, upon written approval of the Engineer; or
- (c) Use such material for his own temporary construction on site; or
- (d) Use such material as intended by the terms of the Contract.

Should the Engineer approve the Contractor's wish to exercise option (a), (b), or (c), the Contractor shall be paid for the excavation or removal of such material at the applicable Contract price. The Contractor shall replace, at his own expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the Contract work. The Contractor shall not be charged for the use of such material so used in the work or removed from the site.

Should the Engineer approve the Contractor's exercise of option (a), the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the Contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of his exercise of option (a), (b), or (c).

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the Contract, plans, or specifications.

#### **50-08 FINAL CLEANING UP**

Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. He shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily unless the Contractor has obtained the written permission of such property OWNER.

## **SECTION 60 CONTROL OF WORK**

### **60-01 AUTHORITY OF THE ENGINEER**

The Engineer shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, and as to the manner of performance and rate of progress of the work. He shall decide all questions which may arise as to the interpretation of the specifications or plans relating to the work, the fulfillment of the Contract on the part of the Contractor, and the rights of different Contractors on the project. The Engineer shall determine the amount and quality of the several kinds of work performed and materials furnished which are to be paid for under the Contract.

### **60-02 CONFORMITY WITH PLANS AND SPECIFICATIONS**

All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the Contract, plans, or specifications.

If the Engineer finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications but that the portion of the work affected will, in his opinion, result in a finished product having a level of economy, durability, and workmanship acceptable to the OWNER, he will advise the OWNER of his determination that the affected work be accepted and remain in place.

In this event, the Engineer will document his determination and recommend to the OWNER a basis of acceptance which will provide for an adjustment in the Contract price for the affected portion of the work. The Engineer's determination and recommended Contract price adjustments will be based on good Engineering judgment and such tests or retests of the affected work as are, in his opinion, needed. Changes in the Contract price shall be covered by Contract modifications (change order or supplemental agreement) as applicable.

If the Engineer finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by any at the expense of the Contractor in accordance with the Engineer's written orders.

For the purpose of this subsection, the term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the Contract, plans and specifications. The term shall not be construed as waiving the Engineer's right to insist on strict compliance with the requirements of the Contract, plans, and specifications during the Contractor's prosecution of the work, when, in the Engineer's opinion, such compliance is essential to provide an acceptable finished portion of the work.

For the purpose of this subsection, the term "reasonably close conformity" is also intended to provide the Engineer with the authority to use good Engineering judgment in his determinations as to acceptance of work that is not in strict conformity but will provide a finished product equal to or better than that intended by the requirements of the Contract, plans and specifications.

### **60-03 COORDINATION OF CONTRACT, PLANS AND SPECIFICATIONS**

The Contract, plans, specifications, and all referenced standards cited are essential parts of the Contract requirements. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; special provisions shall govern over plans, Contract construction specifications, Contract general

provisions, cited specifications, and cited testing standards; plans shall govern over Contract construction specifications, Contract general provisions, and cited testing standards; Contract construction specification shall govern over Contract general provisions, and cited testing standards; Contract general provisions shall govern over cited testing standards. The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, he shall immediately call upon the Engineer for his interpretation and decision, and such decision shall be final.

#### **60-04 COOPERATION OF THE CONTRACTOR**

The Contractor will be supplied with five (5) copies of each of the plans and specifications. He shall have available on the work at all times, one copy of each of the plans and specifications. Additional copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor will give constant attention to the work to facilitate the progress thereof, and he shall cooperate with the Engineer and his inspectors and with other Contractors in every way possible. The Engineer shall allocate the work and designate the sequence of construction in case of controversy between Contractors. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as his agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the Engineer or his authorized representative.

#### **60-05 COOPERATION BETWEEN CONTRACTORS**

The OWNER reserves the right to Contract for and perform other or additional work on or near the work covered by this Contract.

When separate Contracts are let within the limits of any one project, Each Contractor shall conduct his work so as not to interfere with or hinder the progress or completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with his Contract and shall protect and save harmless the OWNER from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced by him because of the presence and operations or other Contractors working within the limits of the same project.

The Contractor shall arrange his work and shall place and dispose of the materials being used so as not to interfere with the operations of the other Contractors within the limits of the same project. He shall join his work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

#### **60-06 CONSTRUCTION LAYOUT AND STAKES**

The Engineer will establish horizontal and vertical control only and the Contractor must furnish all additional stakes for the layout and construction of the work. The Engineer will also furnish any additional information, upon request of the Contractor, needed to layout and construct the work. The Contractor shall satisfy himself as to the accuracy of all measurements before constructing any permanent structure and shall not take advantage of any errors which may have been made in laying out the work. Such stakes and markings as the Engineer may set for either his own or the Contractor's guidance shall be scrupulously preserved by the Contractor. In case of negligence on the part of the Contractor, or his employees, resulting in the destruction of such stakes or markings, an amount equal to the cost of replacing the same may be deducted from subsequent estimates due to the Contractor at the discretion of the OWNER.



**60-07 AUTOMATICALLY CONTROLLED EQUIPMENT**

Whenever batching or mixing plant equipment is required to be operated automatically under the Contract and a breakdown or malfunction of the automatic controls occurs, the equipment may be operated manually or by other methods for a period of 48 hours following the breakdown or malfunction, provided this method of operations will produce results which conform to all other requirements of the Contract.

**60-08 AUTHORITY AND DUTIES OF INSPECTORS**

Inspectors employed by the OWNER shall be authorized to inspect work done and all materials furnished. Such inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. Inspectors are not authorized to revoke, alter, or waive any provision of the Contract. Inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

Inspectors employed by the OWNER are authorized to notify the Contractor or his representatives of any failure of the work or materials to conform to the requirements of the Contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the Engineer for his decision.

**60-09 INSPECTION OF THE WORK**

All materials and each part or detail of the work shall be subject to review by the Engineer. The Engineer shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed.

After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Any work done or materials used without supervision or inspection by an authorized representative of the OWNER may be ordered removed and replaced at the Contractor's expense unless the OWNER's representative failed to inspect after having been given reasonable notice in writing that the work was to be performed.

Should the Contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (Contract) OWNER, authorized representatives of the owners of such facilities shall have the right to inspect such work. Such inspection shall in no sense make any facility owner a party to the Contract and shall in no way interfere with the rights of the parties to this Contract.

**60-10 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK**

All work which does not conform to the requirements of the Contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the OWNER as provided in the paragraph titled CONFORMITY WITH PLANS AND SPECIFICATIONS of this subsection.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the

provisions of the paragraph titled CONTRACTOR'S RESPONSIBILITY FOR WORK of Subsection 80.

No work shall be done without lines and grades having been established by the Contractor and subsequently approved by the Engineer. Work done contrary to the instructions of the Engineer, work done beyond the lines shown on the plans or as given, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the Contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply forthwith with any order of the Engineer made under the provisions of this subsection, the Engineer will have authority to cause unacceptable work to be remedied, or removed and replaced, and unauthorized work to be removed, and to deduct the costs (incurred by the OWNER) from any monies due or to become due the Contractor.

### **60-11 LOAD RESTRICTIONS**

The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage which may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. The hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor shall be responsible for all damage done by his hauling equipment and shall correct such damage at his own expense.

### **60-12 MAINTENANCE DURING CONSTRUCTION**

The Contractor shall maintain the work during construction and until the work is accepted. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various Contract items, and the Contractor will not be paid an additional amount for such work.

### **60-13 FAILURE TO MAINTAIN THE WORK**

Should the Contractor at any time fail to maintain the work as provided in the paragraph titled MAINTENANCE DURING CONSTRUCTION of this subsection, the Engineer shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the urgency that exists.

Should the Contractor fail to respond to the OWNER's notification, the OWNER may suspend any work necessary for the OWNER to correct such unsatisfactory maintenance condition, depending on the urgency that exists. Any maintenance cost incurred by the OWNER, shall be deducted from monies due or to become due the Contractor.

### **60-14 PARTIAL ACCEPTANCE**

If at any time during the prosecution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the OWNER, he may request the Engineer to make final inspection of that unit. If the Engineer finds upon inspection

that the unit has been satisfactorily completed in compliance with the Contract, he may accept it as being completed, and the Contractor may be relieved of further responsibility for that unit.

Such partial acceptance and beneficial occupancy by the OWNER shall not void or alter any provision of the Contract or warranty.

#### **60-15 FINAL CONSTRUCTION INSPECTION**

Whenever the Engineer considers the work provided and contemplated by the Contract is nearing completion, or within ten (10) days after being notified by the Contractor that the work is completed, the Engineer will inspect all the work included in the Contract. If the Engineer finds that the work has not been satisfactorily completed at the time of such inspection, he shall inform the Contractor in writing as to the work to be done or the particular defects to be remedied to place the work in condition satisfactory for Final Construction Inspection. After the work has been satisfactorily completed the Engineer shall make the Final Construction Inspection.

#### **60-16 FINAL ACCEPTANCE**

Upon due notice from the Contractor of presumptive completion of the entire project, the Engineer and OWNER will make an inspection. If all construction provided for and contemplated by the Contract is found to be completed in accordance with the Contract, plans and specifications, such inspection shall constitute the final inspection. The Engineer shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction of same, and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the OWNER will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

#### **60-17 CLAIMS FOR ADJUSTMENT AND DISPUTES**

If for any reason the Contractor deems that additional compensation is due him for work or materials not clearly provided for in the Contract, plans, or specifications or previously authorized as extra work, he shall notify the Engineer in writing of his intention to claim such additional compensation before he begins the work on which he bases the claim. If such notification is not given or the Engineer is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the OWNER has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional

compensation is based has been completed, the Contractor shall, within 10 calendar days, submit his written claim to the Engineer, who will present it to the OWNER for consideration.

Nothing in this subsection shall be construed as a waiver of the Contractor's right to dispute the final payment based on differences in measurements or computations.

## **SECTION 70 CONTROL OF MATERIALS**

### **70-01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS**

The materials used on the work shall conform to the requirements of the Contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish complete statements to the OWNER as to the origin, composition, and manufacture of all materials to be used in the work. Such statements shall be furnished promptly after execution of the Contract, but, in all cases, prior to delivery of such materials.

At the OWNER's option, materials may be approved at the source of supply before delivery is started. If it is found after trial sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

### **70-02 SAMPLES, TESTS, AND CITED SPECIFICATIONS**

All materials used in the work shall be inspected, tested, and approved by the Engineer before incorporation in the work. Any work in which untested materials are used without approval or written permission of the Engineer shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the Engineer, shall be removed at the Contractor's expense. Unless otherwise designated, tests in accordance with the cited standard methods of AASHTO or ASTM which are current on the date of advertisement for bids will be made by and at the expense of the OWNER. Samples will be taken by a qualified representative of the OWNER. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at his request.

### **70-03 CERTIFICATION OF COMPLIANCE**

The Engineer may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's certificates of compliance stating that such materials or assemblies fully comply with the requirements of the Contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with Contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the Engineer.

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "brand name", the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify Each lot delivered and shall certify as to:

- (a) Conformance to the specified performance, testing, quality or dimensional requirements; and
- (b) Suitability of the material or assembly for the use intended in the Contract work.

Should the Contractor propose to furnish an "or equal" material or assembly, he shall furnish the manufacturer's certificates of compliance as hereinbefore described for the specified brand name material or assembly. However, the Engineer shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

**70-04 PLANT INSPECTION**

The Engineer or his authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for his acceptance of the material or assembly.

Should the Engineer conduct plant inspections, the following conditions shall exist:

- (a) The Engineer shall have the cooperation and assistance of the Contractor and the producer with whom he has contracted the materials.
- (b) The Engineer shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.
- (c) If required by the Engineer, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Office or working space should be conveniently located with respect to the plant.

It is understood and agreed that the OWNER shall have the right to retest any material which has been tested and approved at the source of supply after it has been delivered to the site. The Engineer shall have the right to reject only material which, when retested, does not meet the requirements of the Contract, plans, or specifications.

**70-05 ENGINEER'S FIELD OFFICE AND LABORATORY**

When specified and provided for as a Contract item, the Contractor shall furnish a building for the exclusive use of the Engineer as a field office and field testing laboratory. The building shall be furnished and maintained by the Contractor, as specified herein, and shall become property of the Contractor when the Contract work is completed.

**70-06 STORAGE OF MATERIALS**

Materials shall be stored as to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be located so as to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the Engineer. Materials to be stored on OWNER's property shall not create an obstruction to commerce nor shall they interfere with the free and unobstructed movement of traffic. Unless otherwise shown on the plans, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the Engineer. Private property shall not be used for storage purposes without written permission of the owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the Engineer a copy of the property owner's permission.

All storage sites on private or owner's property shall be restored to their original condition by the Contractor at his entire expense, except as otherwise agreed to (in writing) by the owner or lessee of the property.

**70-07 UNACCEPTABLE MATERIALS**

Any material or assembly that does not conform to the requirements of the Contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the Engineer.

No rejected material or assembly, the defects of which have been corrected by the Contractor, shall be returned to the site of the work until such time as the Engineer has approved its use in the work.

**70-08 OWNER-FURNISHED MATERIAL**

The Contractor shall furnish all materials required to complete the work, except those specified herein (if any) to be furnished by the OWNER. OWNER-furnished materials shall be made available to the Contractor at the location specified herein.

All cost of handling, transportation from the specified location to the site of work, storage, and installing OWNER-furnished materials shall be included in the unit price bid for the Contract item in which such OWNER-furnished material is used.

After any OWNER-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies which may occur during the Contractor's handling, storage, or use of such OWNER-furnished material. The OWNER will deduct from any monies due or to become due the Contractor any cost incurred by the OWNER in making good such loss due to the Contractor's handling, storage, or use of OWNER-furnished materials.

**70-09 RECEIVING MATERIALS AND EQUIPMENT**

The Contractor shall be responsible for clerical salaries, office space and equipment rental, incidentals to receiving incoming shipments and deliveries of all materials and equipment. All material which must be protected from the elements will be properly and orderly stored in shelters provided by the Contractor. All goods and materials stored out of doors will be properly and orderly supported. The Contractor will be responsible for safeguarding all such goods and materials against loss due to damage and theft.

## **SECTION 80 LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC**

### **80-01 LAWS TO BE OBSERVED**

The Contractor shall keep fully informed of all Federal and State laws, and local ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the OWNER and all his officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees.

### **80-02 PERMITS, LICENSES, AND TAXES**

The Contractor shall procure all permits and licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

### **80-03 PATENTED DEVICES, MATERIALS AND PROCESSES**

If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner, or a third party, from any and all claims for infringement by reason of the use of any such patented design, device, materials or process, or any trademark or copyright, and shall indemnify the OWNER for such costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the prosecution or after the completion of the work.

### **80-04 RESTORATION OF SURFACES DISTURBED BY OTHERS**

The OWNER reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, or a utility service of another government agency at any time during the process of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the OWNER, such authorized work (by others) is noted in the plans.

Except as noted on the plans, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the Engineer.

Should the owner of public or private utility service, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the process of the work, the Contractor shall cooperate with such owners by arranging and performing the work in this Contract so as to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is noted on the plans. When ordered as extra work by the Engineer, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the Contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

### **80-05 SANITARY, HEALTH, AND SAFETY PROVISIONS**

The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements of the State and Local Board of Health, or of other bodies or tribunals having jurisdiction.

Attention is directed to Federal, State, and local laws, rules and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work

in surroundings or under conditions which are unsanitary, hazardous, or dangerous to his health or safety.

#### **80-06 PUBLIC CONVENIENCE AND SAFETY**

The Contractor shall control his operations and those of his Subcontractors and all suppliers, to assure the least inconvenience to the public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of commerce and vehicular traffic with respect to his own operations and those of his Subcontractors and all suppliers in accordance with the paragraph titled MAINTENANCE OF COMMERCE of subsection 50, hereinbefore specified and shall limit such operations for the convenience and safety of the public, as specified in the paragraph titled LIMITATION OF OPERATIONS of subsection 90, hereinafter.

#### **80-07 BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS**

The Contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work. When used during periods of darkness, such barricades, warning signs and hazard markings shall be suitably illuminated.

For vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights and other traffic control devices in reasonable conformity with the Manual of Uniform Traffic Control Devices for Streets and Highways (published by the United States Government Printing Office).

The Contractor shall furnish, erect, and maintain markings and associated lighting of open trenches, excavations, temporary stockpiles, and his parked construction equipment that may be hazardous to the operation of emergency fire rescue or maintenance vehicles.

The Contractor shall furnish and erect all barricades, warning signs, and markings for hazards prior to commencing work which requires such erection and shall maintain the barricades, warning signs, and markings for hazards until their dismantling is directed by the Engineer.

Open-flame type lights shall not be permitted.

#### **80-08 USE OF EXPLOSIVES**

When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property, including new work. The Contractor shall be responsible for all damage resulting from the use of explosives.

All explosives shall be stored in a secure manner in compliance with all laws and ordinances, and all such storage places shall be clearly marked. Where no local laws or ordinances apply, storage shall be provided satisfactory to the Engineer and, in general, not closer than 1,000 feet from the work or from any building, road, or other place of human occupancy.

The Contractor shall notify Each property owner and public utility company having structures or facilities in proximity to the site of the work of his intention to use explosives. Such notice shall be given sufficiently in advance to enable them to take such steps as they may deem necessary to protect their property from injury.

#### **80-09 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE**

The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property marks until the Engineer has witnessed or otherwise referenced their location and shall not move them until directed.



The Contractor shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing the work, or at any time due to defective work or materials, and said responsibility will not be released until the project shall have been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work or in consequence of the nonexecution thereof by the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or he shall make good such damage or injury in any acceptable manner.

#### **80-10 RESPONSIBILITY FOR DAMAGE CLAIMS**

The Contractor shall indemnify and save harmless the Engineer and the OWNER and their officers, and employees from all suits, actions, or claims of any character brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or because of any act or through use of unacceptable materials in constructing the work; or because of any claims or amount recovered from any infringements of patent, trademark, or copyright; or from any claims or amount arising or recovered under the "Workman's Compensation Act" or any other law, ordinance, order or decree.

Money due the Contractor under and by virtue of his Contract as may be considered necessary by the OWNER for such purpose may be retained for the use of the OWNER or, in case no money is due, his surety may be held until such suit or suits, action or actions, claim or claims for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the OWNER, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he is adequately protected by public liability and property damage insurance.

#### **80-11 THIRD PARTY BENEFICIARY CLAUSE**

It is specifically agreed between the parties executing the Contract that it is not intended by any of the provisions of any part of the Contract to create the public or any member thereof a third party beneficiary or to authorize anyone not a party to the Contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the Contract.

#### **80-12 OPENING SECTIONS OF THE WORK FOR OCCUPANCY**

Should it be necessary for the Contractor to complete portions of the Contract work for the beneficial occupancy of the OWNER prior to completion of the entire Contract, such "phasing" of the work shall be as specified herein, and indicated on the plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified. The Contractor shall make his own estimate of the difficulties involved in arranging his work to permit such beneficial occupancy by the OWNER as described elsewhere in these specifications.

Upon completion of any portion of the work so described, such portion shall be accepted by the OWNER in accordance with the paragraph titled PARTIAL ACCEPTANCE of Subsection 60.

No portion of the work may be opened by the Contractor for use until ordered by the Engineer in writing. Should it become necessary to open a portion of the work to Docks traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the Engineer, such portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of any provision of

the Contract. Any damage to the portion of the work so opened that is not attributable to traffic which is permitted by the OWNER shall be repaired by the Contractor at his expense.

The Contractor shall make his own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the Contract work.

#### **80-13 CONTRACTOR'S RESPONSIBILITY FOR WORK**

Until the Engineer's final written acceptance of the entire completed work excepting only those portions of the work accepted in accordance with the paragraph titled PARTIAL ACCEPTANCE of Subsection 60, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the nonexecution of the work. The Contractor shall rebuild, repair, store, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof.

If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at his expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seedings, and sodding, furnished under his Contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

#### **80-14 CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS**

As provided in the paragraph titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this subsection, the Contractor shall cooperate with the owner of any public or private utility service, or a utility service of another government agency that may be authorized by the OWNER to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control his operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, or utility services of another governmental agency are known to exist within the limits of the Contract work, the approximate locations have been indicated on the plans.

It is understood and agreed that the OWNER does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of his responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the Contract, notify the owners of all utility services or other facilities of his plan of operations. Such notification shall be in writing. In addition to the general written notifications hereinbefore provided, it shall be the responsibility of the Contractor to keep such individual owners advised of changes in his plan of operations that would affect such owners.

Prior to commencing the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify Each such owner of his plan or operation. If, in the Contractor's opinion, the owner's assistance is needed to locate the utility service or facility or the presence of a representative of the owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to

reach the utility owner no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the Engineer.

The Contractor's failure to give the two days' notice hereinabove provided shall be cause for the Engineer to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use excavation methods acceptable to the Engineer within three (3) feet of such outside limits at such points as may be required to insure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operations of a utility service or facility by accident or otherwise, he shall immediately notify the proper authority and the Engineer and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the Engineer continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to his operations whether or not due to negligence or accident. The OWNER reserves the right to deduct such costs from any monies due or which may become due the Contractor, or his surety.

#### **80-15 FURNISHING RIGHTS-OF-WAY**

The OWNER will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

#### **80-16 PERSONAL LIABILITY OF PUBLIC OFFICIALS**

In carrying out any of the Contract provisions or in exercising any power or authority granted to him by this Contract, there shall be no liability upon the Engineer, his authorized representatives, or any official of the OWNER either personally or as an official of the OWNER. It is understood that in such a manner they act solely as agents and representatives of the OWNER.

#### **80-17 NO WAIVER OF LEGAL RIGHTS**

Upon completion of the work, the OWNER will expeditiously make a final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the OWNER from correcting any measurement, estimate or certificate made before or after completion of the work, nor shall the OWNER be precluded or stopped from recovering from the Contractor or his surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill his obligations under the Contract. A waiver on the part of the OWNER of any breach of any part of the Contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the Contract, shall be liable to the OWNER for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the OWNER's rights under any warranty or guaranty.

#### **80-18 ENVIRONMENTAL PROTECTION**

The Contractor shall comply with all Federal, State and local laws and regulations controlling pollution of the environment. He shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with silt runoff, fuels, oils, bitumen, chemicals, or other

harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

#### **80-19 ARCHAEOLOGICAL AND HISTORICAL FINDINGS**

Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during his operations, any building, part of a building, structure, or object which is incongruous with its surroundings, he shall immediately cease operations in that location and notify the Engineer. The Engineer will immediately investigate the Contractor's finding and will direct the Contractor to either resume his operations or to suspend operations as directed.

Should the Engineer order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate Contract modification (change order or supplemental agreement) as provided in the paragraph titled EXTRA WORK AND FORCE ACCOUNT WORK of Subsection 100. If appropriate, the Contract modification shall include an extension of Contract time in accordance with the paragraph titled DETERMINATION AND EXTENSION OF CONTRACT TIME of Subsection 90.

## **SECTION 90 PROSECUTION AND PROGRESS**

### **90-01 SUBLETTING OF CONTRACT**

The OWNER will not recognize any Subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Engineer.

Should the Contractor elect to assign his Contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the OWNER. In case of approval, the Contractor shall file copies of all Subcontractors with the Engineer.

### **90-02 NOTICE TO PROCEED**

The notice to proceed shall state the date on which it is expected the Contractor will begin the construction and from which date Contract time will be charged. If no such date is stated in the notice to proceed, Contract time will start on the date the notice to proceed is issued. The Contractor shall begin the work to be performed under the Contract within 10 days of the date set by the Engineer in the written notice to proceed, but in any event the Contractor shall notify the Engineer at least 24 hours in advance of the time actual construction operations will begin.

### **90-03 PROSECUTION AND PROGRESS**

Unless otherwise specified, the Contractor shall submit his progress schedule for the Engineer's approval within 10 days after the effective day of the notice to proceed. The Contractor's progress schedule, when approved by the Engineer, may be used to establish major construction operations and to check on the progress of the work. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the contract.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the Engineer's request, submit a revised schedule for completion of the work within the Contract time and modify his operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the prosecution of the work be discontinued for any reason, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations.

### **90-04 LIMITATION OF OPERATIONS**

The Contractor shall control his operations and the operations of his Subcontractors and all suppliers so as to provide for the free and unobstructed movement of commerce in those areas adjacent to the work.

### **90-05 CHARACTER OF WORKERS, METHODS AND EQUIPMENT**

The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the Contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any persons employed by the Contractor or by any Subcontractor who, in the opinion of the Engineer, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the Engineer, be removed forthwith by the Contractor

or Subcontractor employing such person, and shall not be employed again in any portion of the work without the approval of the Engineer.

Should the Contractor fail to remove such person or persons or fail to furnish suitable and sufficient personnel for the proper prosecution of the work, the Engineer may suspend the work by written notice until compliance with such orders is ascertained.

All equipment which is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet the requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall be such that no injury to previously completed work, adjacent property, or existing facilities will result from its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the Contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the Contract, plans and specifications.

When the Contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless others are authorized by the Engineer. If the Contractor desires to use a method or type of equipment other than specified in the Contract, he may request authority from the Engineer to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing the work in conformity with Contract requirements. If, after trial use on the substituted methods or equipment, the Engineer determines that the work produced does not meet Contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality or take such other corrective action as the Engineer may direct. No change will be made in basis of payment for the Contract items involved or in Contract time as a result of authorizing a change in methods or equipment under this subsection.

#### **90-06 TEMPORARY SUSPENSION OF THE WORK**

The Engineer shall have the authority to suspend the work wholly, or in part, for such period or periods as he may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the prosecution of the work, or for such time as is necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the Contract.

In the event that the Contractor is ordered by the Engineer, in writing, to suspend work for some unforeseen cause not otherwise provided for in the Contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the Engineer's order to suspend work to the effective date of the Engineer's order to resume the work. Claims for such compensation shall be filed with the Engineer within the time period stated in the Engineer's order to resume work. The Contractor shall submit with his claim information substantiating the amount shown on the claim. The Engineer will forward the Contractor's claim to the OWNER for consideration. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather, for suspensions made at the request of the Contractor, or for any other delay provided for in the Contract, plans, or specifications.

If it should become necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. He shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the site.

**90-07 DETERMINATION AND EXTENSION OF CONTRACT TIME**

The number of calendar or working days allowed for completion of the work shall be stated in the proposal and Contract and shall be known as the CONTRACT TIME.

Should the CONTRACT TIME require extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

(a) CONTRACT TIME based on WORKING DAYS shall be calculated weekly by the Engineer. The Engineer will furnish the Contractor a copy of his weekly statement of the number of working days charged against the CONTRACT TIME during the week and the number of working days currently specified for completion of the Contract (the original CONTRACT TIME plus the number of working days, if any, that have been included in approved CHANGE ORDERS, or SUPPLEMENTAL AGREEMENTS covering EXTRA WORK).

The Engineer shall base his weekly statement of CONTRACT TIME charges on the following considerations:

- (1) No time shall be charged for days on which the Contractor is unable to proceed with the principal item of work under construction at the time for at least 6 hours with the normal work force employed on such principal item. Should the normal work force be on a triple shift, 18 hours shall apply. Conditions beyond the Contractor's control such as strikes, lockouts, unusual delays in transportation, temporary suspension of the principal item of work under construction or temporary suspension of the entire work which have been ordered by the Engineer for reasons not the fault of the Contractor, shall not be charged against the CONTRACT TIME.
- (2) The Engineer will not make charges against the CONTRACT TIME prior to the effective date of the notice to proceed.
- (3) The Engineer will begin charges against the CONTRACT TIME on the first working day after the effective date of the notice to proceed.
- (4) The Engineer will not make charges against the CONTRACT TIME after the date of final acceptance as defined in the paragraph titled FINAL ACCEPTANCE of Subsection 60.
- (5) The Contractor will be allowed one week in which to file a written protest setting forth his objections to the Engineer's weekly statement. If no objection is filed within such specified time, the weekly statement shall be considered as acceptable to the Contractor.
- (6) The CONTRACT TIME (state in the proposal) is based on the originally estimated quantities as described in the paragraph titled INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES of Subsection 20. Should the satisfactory completion of the Contract require performance of work in greater quantities than those estimated in the proposal, the CONTRACT TIME shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in CONTRACT TIME shall not consider either the cost of work or the extension of CONTRACT TIME that has been covered by change order or supplemental agreement and shall be made at the time of final payment.

(b) CONTRACT TIME based on CALENDAR DAYS shall consist of the number of calendar days stated in the Contract counting from the effective date of the notice to proceed and including all Saturdays, Sundays, holidays, and no work days. All calendar days elapsing between the effective dates of the Engineer's orders to suspend and resume all work, due to causes not the fault of the Contract, shall be excluded.

At the time of final payment, the CONTRACT TIME shall be increased in the same proportion as the cost that the actually completed quantities bear to the cost of the

originally estimated quantities in the proposal. Such increase in the CONTRACT TIME shall not consider either the cost of work of the extension of CONTRACT TIME that has been covered by a change order or supplemental agreement. Charges against the CONTRACT TIME will cease as of the date of final agreement.

(c) When the CONTRACT TIME is a specified completion date, it shall be the date on which all Contract work shall be substantially completed.

If the Contractor finds it impossible for reasons beyond his control to complete the work within the Contract time as specified, or as extended in accordance with the provisions of this subsection, he may, at any time prior to the expiration of the CONTRACT TIME as extended, make a written request to the Engineer for an extension of time setting forth the reasons which he believes will justify the granting of his request. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Engineer finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, he may extend the time for completion in such amount as the conditions justify. The extended time for completion shall then be in full force and effect, the same as though it were the original time for completion.

#### **90-08 FAILURE TO COMPLETE ON TIME**

For each calendar day or working day, as specified in the Contract, that any work remains incomplete after the CONTRACT TIME (including all extensions and adjustments as provided in the paragraph titled DETERMINATION AND EXTENSION OF CONTRACT TIME of this Subsection) the sum specified in the Contract and proposal as liquidated damages will be deducted from any money due or to become due the Contractor or his surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages that will be incurred by the OWNER should the Contractor fail to complete the work in the time provided in his Contract.

The Contractor will not be charged with liquidated damages when delay in completion of the work is due to acts of the public enemy, acts of the OWNER, acts of another Contractor in the performance of a Contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, or freight embargoes.

Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the OWNER of any rights under the Contract.

#### **90-09 CONTRACT DEFAULT**

The Contractor shall be considered in default of his Contract and such default will be considered as cause for the OWNER to terminate the Contract for any of the following reasons if the Contractor:

- (a) Fails to begin the work under the Contract within the time specified in the "Notice to Proceed"; or
- (b) Fails to perform the work or fails to provide sufficient workers, equipment or materials to assure completion of work in accordance with the terms of the Contract; or
- (c) Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable; or
- (d) Discontinues the prosecution of the work; or
- (e) Fails to resume work which has been discontinued within a reasonable time after notice to do so; or
- (f) Becomes insolvent or is declared bankrupt, or commits an act of bankruptcy or insolvency; or



- (g) Allows any final judgment to stand against him unsatisfied for a period of 10 days; or
- (h) Makes an assignment for the benefit of creditors; or
- (i) For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Engineer consider the Contractor in default of the Contract for any reason hereinbefore, he shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the construction in default and the OWNER's intentions to terminate the Contract.

If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the OWNER will, upon written notification from the Engineer of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the Contract, to take the prosecution of the work out of the hands of the Contractor. The OWNER may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are 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 the opinion of the Engineer will be required for the completion of said Contract in an acceptable manner.

All costs and charges incurred by the OWNER, together with the cost of completing the work under Contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the Contract, then the Contractor and the surety shall be liable and shall pay to the OWNER the amount of such excess.

#### **90-10 CONTRACT TERMINATION**

The Owner may terminate the Contract, or any portion hereof, for just cause by written notice to the Contractor.

When the Contract, or any portion thereof, is terminated before completion of all items of work in the Contract, payment will be made for the actual number of units or items of work completed or started. No claims for loss of anticipated profits shall be considered.

Acceptable materials both in quantity and quality obtained or ordered by the Contractor that are not incorporated into the work shall, at the option of the Contractor, be purchased by the Owner at actual cost as shown by receipted bills and actual cost records. Delivery of the materials will be performed as designated by the Engineer.

Termination of the Contract, or a portion thereof, shall neither relieve the Contractor of his responsibilities for the completed work nor relieve his surety of its obligation for and concerning any just claim arising out of the work performed.

The costs incurred by the Contractor for mobilization, if applicable, shall be itemized and presented to the Owner. Rebates and refunds that are applicable shall be itemized, and the amount paid the Contractor shall be adjusted to reflect actual cost as shown by receipted bills and actual cost records.

The cost of demobilization of Contractor's equipment and other items pertaining to the expense of moving off the job site shall be itemized and supported by actual cost records and presented for payment. Demobilization as a percentage of the Contract amount, or portion thereof, shall not be paid.

Reimbursement for organization of the work and overhead expenses (when not otherwise included in the Contract) will be considered, the intent being that an equitable settlement will be made with the Contractor.

All of the above are subject to audit as specified by the Right to Audit, Paragraph 100-11.

## **SECTION 100 MEASUREMENT AND PAYMENT**

### **100-01 MEASUREMENT OF QUANTITIES**

All work completed under the Contract will be measured by the Engineer, or his authorized representatives, using United States Customary Units of Measurement.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the Contract will be those methods generally recognized as conforming to good Engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet or less. Unless otherwise specified, transverse measurements for area computations will be the near dimensions shown on the plans or ordered in writing by the Engineer.

Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.

Unless otherwise specified, all Contract items which are measured by the Linear Foot such as electrical ducts, conduits, pipe culverts, underdrains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

In computing volumes of excavation the average end area method or other acceptable methods will be used. Acceptability of another method will be decided by the Engineer.

The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fractions of inches.

The term "ton" will mean the short ton consisting of 2,000 pounds avoirdupois. All materials which are measured or proportioned by weights shall be weighed on accurate, approved scales by competent, qualified personnel at locations designated by the Engineer. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for materials to be passed through mixing plants. Trucks used to haul materials being paid for by weight shall be weighed empty daily at such times as the Engineer directs, and each truck shall bear the plainly legible identification mark.

Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable to the Engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity and all loads shall be leveled when the vehicles arrive at the point of delivery.

When requested by the Contractor and approved by the OWNER in writing, material specified to be measured by the Cubic Yard may be weighed and such weights will be converted to Cubic Yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Bituminous materials will be measured by the gallon or ton. When measured by volume, such volumes will be measured at 60 degrees F, or will be corrected to the volume at 60 degrees F using ASTM D1250 for asphalt or ASTM D633 for tars.

Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when bituminous material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work.

When bituminous materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, may be used for computing quantities.

Lumber will be measured by the thousand feet board measure (M.F.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

The term "Lump Sum" when used as an item of payment will mean complete payment for the work described in the Contract.

When a complete structure or structural unit (in effect, "Lump Sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered by the Engineer in connection with force account work will be measured as agreed in the change order or supplemental agreement authorizing such force account work as provided in the paragraph titled PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK of this section.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gage, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or by certified permanently installed commercial scales.

Scales shall be accurate within one-half percent of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the inspector before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed one tenth of one percent of the nominal rated capacity of the scale, but not less than one pound. The use of spring balances will not be permitted.

Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and inspector can safely and conveniently view them.

Scale installation shall have available, ten standard fifty pound weights for testing the weighing equipment or suitable weights and devices for other approved equipment.

Scales must be tested for accuracy and serviced before use at a new site. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.

Scales "overweighing" (indicating more than correct weight) will not be permitted to operate, and all materials received subsequent to the last previous correct weighing-accuracy-test will be reduced by the percentage of error in excess of one-half of one percent.

In the event inspection reveals the scales have been "underweighing" (indicating less than correct weight) they shall be adjusted and no additional payment to the Contractor will be allowed for materials previously weighed and recorded.

All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for the weighing of materials for proportioning, or payment, shall be included in the unit Contract prices for the various items of the project.

When the estimated quantities for a specific portion of the work are designated as the pay quantities in the Contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portion of the work shown on the plans are revised by the Engineer. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

#### **100-02 SCOPE OF PAYMENT**

The Contractor shall receive and accept compensation provided for in the Contract as full payment for furnishing all materials, for performing all work under the Contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the prosecution thereof, subject to the provisions of the paragraph titled NO WAIVER OF LEGAL RIGHTS of Subsection 80.

When the "basis of payment" subsection of a technical specification requires that the Contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other Contract item which may appear elsewhere in the Contract, plans, or specifications.

#### **100-03 COMPENSATION FOR ALTERED QUANTITIES**

When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as Contract items are concerned, payment at the original Contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in the paragraph titled ALTERATION OF WORK AND QUANTITIES of Subsection 50 will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from his unbalanced allocation of overhead and profit among the Contract items, or from any other cause.

#### **100-04 PAYMENT FOR OMITTED ITEMS**

As specified in the paragraph titled OMITTED ITEMS of Subsection 50, the Engineer shall have the right to omit from the work (order nonperformance) any Contract item, except major Contract items, in the best interest of the OWNER.

Should the Engineer omit or order nonperformance of a Contract item or portion of such item from the work, the Contractor shall accept payment in full at the Contract prices for any work actually completed and acceptable prior to the Engineer's order to omit or not perform such Contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the OWNER's order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the OWNER.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted Contract item prior to the date of the Engineer's order. Such additional costs incurred by the Contractor must be directly related to the deleted Contract item and shall be supported by certified statements by the Contractor as to the nature and amount of such costs.

#### **100-05 PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK**

Extra work, performed in accordance with the paragraph titled EXTRA WORK of Subsection 50, will be paid for at the Contract prices or agreed prices specified in the change order or supplemental agreement authorizing such extra work. When the change order or supplemental

agreement authorizing the extra work requires that it be done by force account, such force account shall be measured and paid for as follows:

(a) Labor: For all labor (skilled and unskilled) and foremen in direct charge of a specific force account item, the Contractor shall receive the rate of wage (or scale) for every hour that such laborer or foreman is actually engaged in the specified force account work. Such wage (or scale) shall be agreed upon in writing before beginning the work.

The Contractor shall receive the actual costs paid to, or in behalf of, workers by reason of subsistence and travel allowances, health and welfare benefits, pension funds benefits or other benefits, when such amounts are required by collective bargaining agreement or other employment Contract generally applicable to the classes of labor employed on the work.

An amount equal to fifteen percent (15%) of the sum of the above items will also be paid the Contractor.

(b) Insurance and Taxes: For property damage, liability, and workmen's compensation insurance premiums, unemployment insurance contributions, and social security taxes on the force account work, the Contractor shall receive the actual cost, and to this cost (sum) 5 percent will be added. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such insurance and taxes.

(c) Materials: For materials accepted by the Engineer and used, the Contractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth), to which cost (sum) 10 percent will be added.

(d) Equipment: For any machinery or special equipment (other than small tools) including fuel and lubricants, plus transportation costs, the use of which has been authorized by the Engineer, the Contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is committed to the work.

(e) Miscellaneous: No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

(f) Comparison of Records: The Contractor and the Engineer shall compare records of the cost of force account work at the end of each day. Agreement shall be indicated by signature of the Contractor and Engineer or their duly authorized representatives.

(g) Statements: No payment will be made for work performing on a force account basis until the Contractor has furnished the Engineer with the duplicate itemized statements of the cost of such force account work detailed as follows:

(7) Name, classification, date, daily hours, total hours, rate and extension for each laborer and foreman.

(8) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

(9) Quantities of materials, prices, and extensions.

(10) Transportation of materials.

(11) Cost of property damage, liability and workmen's compensation insurance premiums, unemployment insurance contributions, and social security tax.

Statements shall be accompanied and supported by receipted invoice for all materials used and transportation charges. However, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the

invoices the Contractor shall furnish an affidavit certifying that such materials were taken from his stock, that the quantity claimed, was actually used, and that the price and transportation claimed represent the actual cost provided above shall constitute full compensation for such work.

#### **100-06 PARTIAL PAYMENT**

Partial payments will be made once each month as the work progresses. Said payments will be based upon estimates prepared by the Engineer of the value of the work performed and materials complete in place in accordance with the Contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with the subsection titled PAYMENT FOR MATERIALS ON HAND of this subsection.

No partial payment will be made when the amount due the Contractor since the last estimate is less than five hundred dollars.

From the total of the amount determined to be payable on a partial payment, 10 percent of such total amount will be deducted and retained by the OWNER until the final payment is made. The balance (90 percent) of the amount payable, less all previous payments, shall be certified for payment.

When not less than 95% of the work has been completed the Engineer may, at his discretion and without the consent of the surety, prepare an estimate from which will be retained an amount not less than twice the Contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities or work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the Engineer to be a part of the final quantity for the item of work in question.

No partial payment shall bind the OWNER to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in the paragraph titled FINAL PAYMENT of this subsection.

#### **100-07 PAYMENT FOR MATERIALS ON HAND**

Partial payments, for projects which do not utilize the OWNER'S tax-exempt status, may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the Contract, plans, and specifications and are delivered to acceptable sites on the OWNER's property or at other sites in the vicinity that are acceptable to the OWNER. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

- (a) The material has been stored or stockpiled in a manner acceptable to the Engineer at or on an approved site.
- (b) The Contractor has furnished the Engineer with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
- (c) The Contractor has furnished the Engineer with satisfactory evidence that the material and transportation costs have been paid.
- (d) The Contractor has furnished the OWNER legal title (free of liens or encumbrances of any kind) to the material so stored or stockpiled.

- (e) The Contractor has furnished the OWNER evidence that the material so stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the OWNER's payment for such stored or stockpiled materials shall in no way relieve the Contractor of his responsibility for furnishing and placing such materials in accordance with the requirements of the Contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the Contract price for such materials or the Contract price for the Contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this subsection.

### **100-08 CONTRACT CLOSE-OUT**

Subsequent to the final acceptance of this project by the Engineer, the following requirements must be satisfied by the Contractor before final payment can be made.

- (a) The Contractor must publicly advertise the NOTICE OF COMPLETION furnished by the Engineer in accordance with Title 39, Code of Alabama, 1975.
- (b) The Contractor must execute copies of CONTRACTOR'S AFFIDAVIT OF PAYMENT OF CLAIMS AND DEBTS on the form furnished by the Engineer.
- (c) The Contractor must have his surety execute copies of CONSENT OF SURETY TO FINAL PAYMENT on the form furnished by the Engineer.
- (d) The Contractor must furnish a letter on his letterhead acknowledging that acceptance of final payment by the Contractor constitutes a waiver of all claims, present or future, in connection with this project.
- (e) The Contractor must furnish a written guarantee on his letterhead covering all defects in material and workmanship for a period of one (1) year commencing on the date of final acceptance.
- (f) If any purchased items have been incorporated in the work, the Contractor must furnish a letter on his letterhead assigning those warranties to the OWNER. Copies of said warranties shall be bound in one binder and submitted along with the letter assignment.
- (g) The Contractor must keep track of "as built" information and at the contract closeout provide one complete set of reproducible "as built" covering all earthwork, utility routing, structural, mechanical, and electrical aspects of the work, including wiring schematics.

### **100-09 WITHHOLDING FOR CLAIMS AND LITIGATION**

If at the time of Contract close-out, the project is subject to a claim or the Contractor is involved in litigation concerning the project, the OWNER reserves the right to:

- (a) Refuse to close out the Contract retaining all monies unpaid until such time as all claims are dropped and litigation is resolved, or
- (b) Refuse to close out the Contract, retaining enough money to cover the total of all outstanding claims and amounts claimed by litigation until such time as all claims are dropped and litigation is resolved, or
- (c) Require the Contractor to post a letter of credit to each individual claimant or litigant and satisfactory to the claimant or litigant. Once such letters of credit have been posted

and the OWNER is in receipt of written agreement from each individual claimant or litigant, the OWNER will proceed with Contract close-out and release of retainage in the normal manner.

#### **100-10 FINAL PAYMENT**

When the Contract work has been accepted in accordance with the requirements of the paragraph titled FINAL ACCEPTANCE of Subsection 60, and the paragraph titled Contract CLOSE-OUT above, the Engineer will prepare the final estimate of the items of work actually performed. The Contractor shall approve the Engineer's final estimate or advise the Engineer of his objections to the final estimate, which are based on disputes in measurements or computations of the final quantities to be paid under the Contract, as amended by change order or supplemental agreement. The Contractor and Engineer shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the Engineer's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the Engineer's estimate under protest of the quantities in dispute and such disputed quantities shall be considered by the OWNER as a claim in accordance with the paragraph titled CLAIMS FOR ADJUSTMENT AND DISPUTES of Subsection 60.

After the Contractor has approved, or approved under protest, the Engineer's final estimate, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the Contract.

If the Contractor has filed a claim for additional compensation under the provisions of the paragraph titled CLAIMS FOR ADJUSTMENTS AND DISPUTES of Subsection 60 or under the provisions of this subsection, such claims will be considered by the OWNER in accordance with State laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

#### **100-11 RIGHT OF AUDIT**

Contractor's records which shall include but not be limited to accounting records (hard copy, as well as computer readable data if it can be made available), written policies and procedures; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.); original estimates; estimating work sheets; correspondence; change order files (including documentation covering negotiated settlements); backcharge logs and supporting documentation; general ledger entries detailing cash and trade discounts earned, insurance policies, rebates and dividends; and any other supporting evidence deemed necessary by the Owner to substantiate charges related to this Contract (all foregoing hereinafter referred to as "records") shall be open to inspection and subject to audit and/or reproduction by Owner's agent or its authorized representative to the extent necessary to adequately permit evaluation and verification of (a) Contractor compliance with Contract requirements, (b) compliance with Owner's business ethics policies, and (c) compliance with provisions for pricing change orders, payment or claims submitted by the Contractor or any of their payees.

Such audits may require inspection and copying from time to time and at reasonable times and places of any and all information, materials and data of every kind and character, including without limitation, records, books, papers, documents, subscriptions, recordings, agreements, purchase orders, leases, Contracts, commitments, arrangements, notes, daily diaries, superintendent reports, drawings, receipts, vouchers and memoranda, and any and all other agreements, sources of information and matters that may in Owner's judgment have any bearing on or pertain to any matters, rights, duties or obligations under or covered by any Contract Document. Such records subject to audit shall also include, but not be limited to, those records necessary to evaluate and verify direct and indirect costs, (including overhead allocations) as they may apply to costs associated with this Contract.



The Owner or its designee shall be afforded access to all of the Contractor's records and shall be allowed to interview any of the Contractor's employees, pursuant to the provisions of this article throughout the term of this Contract and for a period of three (3) years after final payment or longer if required by law.

Contractor shall require all subcontractors, insurance agents, and material suppliers (payees) to comply with the provisions of this article by insertion of the requirements hereof in a written Contract agreement between Contractor and payee. Such requirements will also apply to Subcontractors and Sub-Subcontractors, etc. Contractor will cooperate fully and will cause all Related Parties and all of Contractor's subcontractors (including those entering into Lump Sum subcontracts) to cooperate fully in furnishing or in making available to Owner from time to time, whenever requested, in an expeditious manner, any and all such information, materials and data.

Owner's agent or its authorized representative shall have access to the Contractor's facilities, shall have access to the Subcontractor's facilities, shall have access to all necessary records, and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with this article.

If an audit inspection or examination in accordance with this article, discloses overcharges (of any nature) by the Contractor to the Owner in excess of one percent (1%) of the total Contract billings, the actual cost of the Owner's audit shall be reimbursed to the Owner by the Contractor. Any adjustments and/or payments which must be made as a result of any such audit or inspection of the Contractor's invoices and/or records shall be made within a reasonable amount of time (not to exceed 90 days) from presentation of Owner's findings to Contractor.



**Alabama State Port Authority**  
**Specification Booklet**

**Project Name** Blakeley/Mud Lakes Dike Raising & Weir Boxes  
**Location** Mud Lakes DMMA - Mobile AL  
**Project # 11381** Task # 03

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April 2025

**CONSTRUCTION SPECIFICATIONS**

**DIVISION V**  
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## SECTION 501 SUMMARY OF WORK

### PART 1 – GENERAL

#### 1.1 SCOPE

- A. **DIKE RAISING:** The project is located at the Blakeley/Mud Lakes Dredged Material Management Area (DMMA). The work for this project, also described as the Confined Disposal Facility (CDF) Dike Raising, shall include:
1. Mobilization and Demobilization
  2. Provision of erosion and sediment control (ESC) devices and any other environmental controls in accordance with ADEM guidelines.
  3. Clearing and Grubbing along the dike in sand fill placement area and within interior of CDF in borrow areas.
  4. Placement of geotextiles if necessary to construct the Base Dike Widening.
  5. Construct Base Dike Widening using sand delivered to site by others and dumped along the existing dike.
  6. Earthwork within the CDF to excavate trenches and channels to dewater the interior by allowing surface and ground water to flow to the existing weir box structures.
  7. Earthwork within the CDF to stockpile excavated soil to facilitate dewatering and drying of the material.
  8. Constructing the dike to elevation +70 in stages using offsite borrow delivered to the site by others and dumped along the proposed raised dike alignment.
  9. Installation and monitoring of geotechnical instrumentation.
  10. Vegetation of exterior dike slopes.
  11. It is noted that the Mud Lakes DMMA was formerly tailings ponds for the former Alcoa Aluminum plant. The ponds were used for processing bauxite ore for the manufacture of alumina. As such, the bottom of the ponds contain “Red Mud” (Bauxite Residue). ASPA has tested these residuals and found them to be non-hazardous; however, these residuals do exhibit a high pH and should be avoided as much as practical. Installation of the wick drains will be through the bauxite materials.
  12. It is further noted that there is an existing underground electric line and an existing underground water pipe in the vicinity of the north dike roadway. No excavation is required at these locations so these facilities should not be encountered.
- B. **WEIR BOXES:** The project is located at the Blakeley/Mud Lakes Dredged Material Management Area (DMMA). The work for this project, also described as the Confined Disposal Facility (CDF) Weir Boxes, shall include:
1. Mobilization and Demobilization
  2. Provision of erosion and sediment control (ESC) devices and any other environmental controls in accordance with ADEM guidelines.
  3. Construct east and west weir boxes and junction boxes as indicated in the contract drawings.
  4. Install the weir box discharge piping and connect it to the junction boxes.

## 1.2 SEQUENCE OF CONSTRUCTION

- A. DIKE RAISING: The work for the dike raising shall be performed in stages as described herein.
1. Install erosion and sediment control (ESC) devices and any other environmental controls in accordance with ADEM guidelines.
  2. Clear and grub along the dike in the sand fill placement area. Clear wick drain areas of vegetation.
  3. Install geotextile in east cell wick drain area from station 90+00 to station 00+50, install geotextile in west cell wick drain area from station 160+00 to station 162+00.
  4. Place minimum five (5) foot thick layer of sand on geotextile in the wick drain areas to support wick drain installation equipment. Install wick drains to refusal depth (approx. Elevation -22 feet).
  5. Install inclinometers along outboard slopes (installation by others).
  6. Install the first layer of geotextile on the existing ground. Begin geotextile placement in the east cell at station 90+00 and continue south along the center dike toward station 58+00. Geotextile placement will continue counterclockwise along the inside of the east cell until completing the installation at station 00+50.
  7. Following geotextile installation, sand fill will be placed beginning at station 90+00 and continuing south along the center dike. Sand will be placed in a maximum thickness of 36 inches while maintaining a maximum buffer of 100' of exposed geotextile. Continue sand placement in counterclockwise direction until reaching station 00+50.
  8. When the first lift of sand placement has been completed to station 0+50, then the next lift of sand will be placed. Prior to placing this lift, a geogrid layer will be placed on top of the first lift, at approximate elevation +52 ft. The lift thickness will be a maximum of one (1) foot and will proceed in a counterclockwise direction.
  9. Sand fill for the east cell base dike widening will continue in maximum one (1) foot lifts in the counterclockwise direction until the base dike has been constructed to elevation +58 ft. The rate of fill placement will depend on the strength gain of the underlying soils as indicated by the geotechnical instrumentation and as directed by the engineer.
  10. After the sand base dike widening has been completed for the east cell, work shall begin for the base dike widening of the west cell. Install the first layer of geotextile on the existing ground beginning at station 160+00 and working west along the north dike toward station 150+00. Geotextile placement will continue counterclockwise along the inside of the west cell until completing the installation at station 102+00.
  11. Following geotextile installation, sand fill will be placed on the geotextile beginning at station 160+00 and continuing west along the north dike. Sand will be placed in a maximum thickness of 36 inches while maintaining a maximum buffer of 100' of exposed geotextile. Continue sand placement in counterclockwise direction until reaching station 102+00.
  12. When the first lift of sand placement has been completed to station 102+00, then the next lift of sand will be placed. Prior to placing this lift, a geogrid layer will be placed on top of the first lift from station 162+00 to station 150+00, at approximate elevation +52 ft. From station 150+00 to station 102+00 a geotextile will be placed

at approximate elevation +52 ft. The lift thickness will be a maximum of one (1) foot and will proceed in a counterclockwise direction.

13. Sand fill for the west cell base dike widening will continue in maximum one (1) foot lifts in the counterclockwise direction until the base dike has been constructed to elevation +58 ft. The rate of fill placement will depend on the strength gain of the underlying soils as indicated by the geotechnical instrumentation and as directed by the engineer.
14. Following completion of the base dike widening, the dikes in both cells shall be raised in 4-foot-high increments using offsite borrow until a top of dike elevation of +70 is achieved. Timing of placement of each 4-foot-high increment shall be based on strength gain of the underlying soils as indicated by the geotechnical instrumentation and as directed by the engineer.
15. The dike raising will commence at station 90+00 of the east cell and proceed in a counterclockwise direction around the east cell to finish at station 90+00. The lift thickness will be a maximum of eight (8) inches. The dike raising will continue in a counterclockwise direction around the east cell in maximum eight (8) inch lifts until the 4-foot-high increment is completed.
16. Following completion of the east cell dike raising, the dike raising will commence at station 163+00 of the west cell and proceed in a counterclockwise direction around the west cell to finish at station 101+00. The lift thickness will be a maximum of eight (8) inches. The dike will continue in a counterclockwise direction around the west cell from station 163+00 to station 101+00 in maximum eight (8) inch lifts until the 4-foot-high increment is completed.
17. Vegetate exterior and interior dike slopes.
18. Remove erosion and sediment control devices.

B. WEIR BOXES: The work for the weir box shall be performed in stages as described herein.

1. As determined by the Contractor.

### 1.3 CODES AND STANDARDS

A. References in the Contract Documents to Codes, Specifications and Standards is understood to mean the current edition and any Amendments and Revisions to same, except where dates are indicated in this Project Manual. Unless otherwise noted, all work shall be performed in accordance with the provisions of the Alabama Department of Transportation Standard Specifications for Highway Construction – Latest Edition.

### 1.4 MATERIALS AND METHODS

A. All materials and methods of construction used on this Project shall conform to the qualifications established by the Contract Documents.

### 1.5 DRAWINGS AND SPECIFICATIONS

A. Drawings and Specifications shall be considered complementary so that anything shown upon one or described by the other, or implied by either or both, shall be executed and performed as if shown and/or described by both. Drawings and Specifications shall be used for this Work only and are property of the Architect/Engineer and must be returned upon the completion of the Work.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

PART 4 – COMPENSATION (Not used)

– END OF SECTION –

## SECTION 502 PROJECT COORDINATION & SCHEDULE

### PART 1 – GENERAL

#### 1.1 SCOPE

- A. Contractor is solely responsible for all construction means, methods, techniques, sequences and procedures, and for coordinating all portions of Work under Contract. Contractor shall be responsible for coordinating their work with separate contracts being performed in adjacent areas and the Owner's ongoing operations.
- B. Contractor is responsible for acts and omissions of Subcontractors.
- C. Architect/Engineer (A/E) will not establish limits of Work between Contractor and Subcontractors nor will he act as an arbiter in establishing such limits.

#### 1.2 LAYDOWN AREA

- A. The Contractor shall be provided area(s) for storage of equipment and material near the vicinity of the project site. The location and size of the laydown area shall be coordinated with the Owner and is subject to change.

#### 1.3 EXCAVATING AND BACKFILLING

- A. The Contractor is responsible for all excavating, trenching, backfilling, or compaction that may be required to complete Work.
- B. The Contractor is responsible for excavating, trenching, backfilling, or compaction provided by Subcontractors.

#### 1.4 WORK PROVIDED BY SEPARATE CONTRACTORS

- A. The Contractor shall be required to coordinate his work with that of the Owner's ongoing operations and that of other contractors. It is known that the Owner will discharge into the east CDF in the fourth quarter of 2025, October-December.
- B. The contractor with the US Army Corps of Engineers, on the adjacent CDF, will be providing fill material at a rate of approximately 2,0000 cubic yards per day; at a rolling monthly average.

#### 1.5 NOTICE TO PROCEED

- A. Owner will provide a Notice to Proceed to the Contractor when the Contract has been executed and the Owner has reviewed and approved Performance and Payment Bonds and certificates of Contractor's insurance.
- B. Notice to Proceed will establish date of commencement of Work.
- C. It is anticipated that the Owner will issue a Notice to Proceed for this contract **June 1, 2025**. Owner's failure to provide notice on such date shall not give rise to increase in Contract Sum or Contract Time.

#### 1.6 CONTRACT TIME

- A. Commence work at project site not later than ten (10) days after date of commencement established in the Notice to Proceed, unless otherwise coordinated with the Owner's Representative.
- B. Achieve substantial completion of work on or before **June 1, 2026**, with all work complete and ready for Final Payment by **June 1, 2027**. Should the Contractor fail to complete the work within the contract duration established, then liquidated damages shall apply.

- C. Unless otherwise provided in Certificate of Substantial Completion to be prepared by the Engineer, final completion of Work shall be achieved in no later than ten (10) days after date of Substantial Completion provided in Certificate.

#### 1.7 SUPERVISORY PERSONNEL

- A. Project Management and Project Superintendent responsibilities shall be assigned only to personnel that are direct employees of the Contractor. Such responsibilities shall not be assigned to Subcontractor, individual's employ of Subcontractor, or other individuals that are not members of Contractor's staff.
- B. Do not conduct activities at the Project site unless Contractor's project manager or superintendent is present.

#### 1.8 COORDINATION REQUIREMENTS

- A. Existing Facilities & Utilities: The Contractor shall confirm the geometry and orientation of the existing facilities (elevations, dimensions, locations, etc.) at the onset of the project to confirm the layout of the proposed construction and the overall geometry. Additionally, the Contractor at the onset of the project, shall locate all above and underground utilities within the project site.
- B. Operations: The Contractor shall coordinate construction activities with, but not limited to, the Owner, Owner contractors, and the US Army Corps of Engineers site personnel to minimize disruptions and impacts to the existing operations during this contract.

#### 1.9 WORK HOURS AND PROVISIONS

- A. Work at the project site shall be during daylight hours.
- B. Saturday work may be possible at times.

#### 1.10 SITE ACCESS

- A. Site access requirements will be stipulated at the pre-construction meeting.

#### 1.11 PROJECT CONDITIONS

- A. Perform work in a manner that minimizes traffic interferences.
- B. Perform work in a manner that does not willfully damage or degrade road serviceability.
- C. Perform Work in a manner that minimizes the generation of dust and debris.
- D. Traffic will continue on the roadways within, and adjacent to, this project site during construction. The Contractor must maintain an open roadway and sequence his work to allow for use of the adjacent roadways during construction.

#### 1.12 ENVIRONMENTAL PROTECTION

- A. Protect rivers, canals, and drainage ditches from chemical contamination, sediment runoff, construction debris, and other damage.

#### 1.13 UTILITY SERVICES

- A. If utility service is accidentally interrupted, notify Owner through A/E, then promptly commence activities needed to reestablish service. Provide labor, material and equipment needed to complete repairs at earliest practicable time. If so directed by A/E, continue repair operations on a non-stop basis until repairs are complete.
- B. Call-Before-You-Dig Public utilities on site to be coordinated by Contractor with the Owner.



PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

PART 4 – COMPENSATION (Not used)

– END OF SECTION –

## SECTION 503 SUBMITTALS

### PART 1 - GENERAL

#### 1.1 SCOPE

- A. This Section specifies procedural requirements associated with Contractor submittals including the following:
  - 1. Contractor's Construction Schedule
  - 2. Submittal Schedule
  - 3. Shop Drawings
  - 4. Product Data
  - 5. Samples
  - 6. Construction Reports
- B. Refer to General and Supplementary Conditions and other Division I and II Sections for requirements associated with administrative submittals. Such submittals include, but are not limited to, the following:
  - 1. Performance and Payment Bonds
  - 2. Insurance Certificates
  - 3. Schedule of Values
  - 4. Applications for Payment
  - 5. List of Subcontractors
  - 6. Consent of Surety
  - 7. Waivers of Liens
  - 8. Contractor's Statements, Affidavits, and Certifications

#### 1.2 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  - 1. Coordinate each submittal with purchasing, fabrication, testing, delivery, other submittals, and related activities that require sequential activity.
  - 2. Coordinate transmittal of different submittals involving related elements so that processing will not be delayed by the need to postpone review of submittals until related submittals are received.
  - 3. A/E reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
  - 4. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
- B. Processing: Allow sufficient review time so that installation will not be delayed as a result of time required to process submittals, including time for resubmittals.
  - 1. Allow 15 days for A/E's review of Shop Drawings.
  - 2. Allow 10 days for AE's review of submittals other than Shop Drawings.
  - 3. If A/E requires resubmittal of an item, process subsequent submittal in same manner as initial submittal.

4. Extension of contract time will not be authorized because of failure to transmit submittals to A/E sufficiently in advance of Work to permit processing.
- C. Submittal Preparation: Place an identification label or title block on each submittal.
1. Submit one electronic (pdf) copy of each submittal unless otherwise indicated in another section of the specifications, or hard copies are required for other reasons.
  2. Furnish an adequate space on label, or beside title block on shop drawings, to record Contractor's review and approval markings.
  3. Include the following information on label or title block:
    - a. Project Name
    - b. Name of A/E
    - c. Date
    - d. Contractor's Name
    - e. Supplier's Name
    - f. Manufacturer's Name
    - g. Related Specification Section Number
    - h. Drawing Numbers and detail references, as appropriate
- D. Transmittal: Include a transmittal form or letter with each submittal.
1. On transmittal, record relevant information and, if appropriate, requests for data. On form or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations.
  2. Include Contractor's certification that information complies with Contract Document requirements.
  3. Submittals received from sources other than Contractor will be returned without action.
- E. Delivery
1. Hand deliver, mail, or email submittals to:  
**Pete Kotulak: [PKotulak@moffatnichol.com](mailto:PKotulak@moffatnichol.com)**

### 1.3 A/E'S ACTION

- A. Except for information-type submittals, A/E will review and mark submittals to indicate actions taken and instructions to Contractor, and then return an appropriate number of copies to Contractor.
- B. A/E will affix to submittals a self-explanatory stamp, marked to indicate one of the following:
  1. If marked "No Exceptions Taken" that portion of Work represented by submittal may proceed provided it complies with requirements of Contract Documents; final acceptance will depend on compliance.
  2. If marked "Make Corrections Noted," that portion of Work represented by submittal may proceed provided it complies with noted corrections and requirements of Contract Documents; final acceptance will depend on compliance.
  3. If marked "Revise and Resubmit," do not proceed with purchasing, fabrication, delivery, or other similar Work activities associated with submittal. Revise submittal in accordance with notations; resubmit without delay.

4. If marked "Rejected," do not proceed with purchasing, fabrication, delivery, or other similar Work activities associated with submittal. Prepare a new submittal in accordance with notations; resubmit without delay.
  5. If marked "Submit Specified Item", do not proceed with purchasing, fabrication, delivery, or other similar Work activities associated with submittal. Add specified item to submittal; resubmit without delay.
  6. If marked "Review Not Required as Noted" that portion of Work represented by submittal may proceed without AE's approval provided it complies with requirements of Contract Documents; final acceptance will depend on compliance.
- C. A/E will review Contractor's Construction Schedule, Product List, Submittal Schedule, and other similar information-type submittals to determine if A/E has objections to information contained therein. If there are no objections, A/E will mark submittals "No Exceptions Taken," and then return an appropriate number of copies to Contractor.

#### 1.4 SUBMITTAL SCHEDULE

- A. Not later than date of submission of Contractor's Construction Schedule, submit to A/E five copies of Contractor's Schedule of Submittals.
- B. Prepare schedule in form of list that identifies each submittal as follows:
  1. Brief description of submittal
  2. Related Specification Section number
  3. Planned date of submission
- C. Unless A/E objects to Contractor's initial Submittal Schedule, one copy will be returned to Contractor marked "Action Not Required."
- D. If an event occurs which adversely affects Submittal Schedule, submit five copies of revised schedule to A/E within five days of event giving rise to change. Unless the A/E objects to such revised document, one copy will be returned marked "Action Not Required."

#### 1.5 SHOP DRAWINGS

- A. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar documents in accordance with the technical specification. Drawings shall be stamped and sealed by a qualified licensed Engineer from the state of Alabama for review and approval by the Engineer and the Owner.
- B. If corrections are required after the Owner's review, a copy of marked-up drawings will be returned to the Contractor for necessary revisions. Contractor shall then resubmit corrected drawings for final review and approval. However, if for any reasons further corrections are necessary, follow the above procedure until no corrections are required.
- C. Submit newly prepared documents drawn to accurate scale. Do not reproduce Contract Documents or copy standard information as basis of Shop Drawings; standard information prepared without specific reference to Project will not be considered Shop Drawings.
- D. Collect Shop Drawings into a single submittal for each element of construction.
- E. Highlight, encircle, or otherwise indicate deviations from Contract Documents.
- F. Except for templates, patterns and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2" x 11", but no larger than 24" x 36".

## 1.6 PRODUCT DATA

- A. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, and standard color charts. As a minimum, include data which documents the following:
  - 1. Manufacturer's printed recommendations.
  - 2. Compliance with specified industry and trade association standards.
  - 3. Compliance with recognized testing agency standards.
  - 4. Application of testing agency labels and seals.
  - 5. Notation of coordination requirements.
- B. Where special data must be prepared because standard printed data is not suitable for use, submit as "Shop Drawings."
- C. Collect Product Data into a single submittal for each element of construction.
- D. Highlight, encircle, or otherwise indicate deviations from Contract Documents.
- E. If Product Data includes information on materials or options which are not required, mark copies to indicate applicable information.
- F. Unless otherwise specified, submit to A/E six copies of each submittal; two copies will be returned to Contractor.

## 1.7 SAMPLES

- A. Submit Samples which are physically identical to products Contractor proposes to include in Work. Samples include, but not limited to, full- and reduced-size sections of manufactured or fabricated components, cuts or containers of materials, and range-sets showing color, pattern and texture.
- B. Mount, display, or package Samples to facilitate A/E's review. Mark Samples to identify the following:
  - 1. Generic description of Sample
  - 2. Product and manufacturer's name
  - 3. Compliance with specified requirements
- C. Submit Samples to A/E for: (1) review of shape, arrangement, type, color, pattern and texture; (2) comparison of these characteristics with other elements; and (3) for subsequent comparison of these characteristics with products delivered and installed.
- D. Unless a greater number is specified elsewhere or needed to illustrate variations in color, pattern, texture or other characteristics inherent in material represented, submit to A/E three sets of Samples; either one set will be returned to Contractor or, at A/E's option, Contractor will be notified of results of A/E's review.
- E. Special field-erected Samples may be specified elsewhere in Specifications. Such Samples are full-size examples erected on Project site to illustrate products proposed for inclusion in Work and to establish standard by which A/E will evaluate completed Work.

## 1.8 DAILY CONSTRUCTION REPORTS

- A. Prepare a daily construction report which provides the following:
  - 1. Date of construction activity
  - 2. Brief identification of Work activities and areas of execution

3. List of subcontractors on Project site
4. Approximate count of construction personnel on Project site
5. List of equipment and number of hours used on each
6. High and low temperatures, description of general weather conditions
7. Description of accidents
8. Description of emergencies and actions taken
9. Minutes of meetings conducted at Project site
10. Information about Work stoppages, delays, shortages and losses
11. Copy of orders and requests of governing authorities
12. Identification of services connected or disconnected
13. Description of tests conducted at Project site

B. Submit one copy of each report to the Construction Manager daily.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

PART 4 – COMPENSATION (Not used)

– END OF SECTION –

## SECTION 504 ENVIRONMENTAL PROTECTION

### PART 1 - GENERAL

#### 1.1 SCOPE

- A. This Section specifies requirements associated with Contractor's environmental, safety, and health (ES&H) functions for this Contract.

#### 1.2 GENERAL REQUIREMENTS

- A. In performing work under this Contract, the Contractor shall perform work safely, in a manner that ensures adequate protection for employees, the public, and the environment, and shall be accountable for the safe performance of work. The Contractor shall exercise a degree of care commensurate with the work and the associated hazards. The Contractor shall ensure that management of environment, safety, and health (ES&H) functions and activities becomes an integral, but visible part of the Contractor's work, planning, and execution processes. The Contractor shall, in the performance of the Work, ensure that:
  1. Personnel possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.
  2. Resources are effectively allocated to address ES&H, programmatic, and operational considerations. Protecting employees, the public, and the environment is a priority whenever activities are planned and performed.
  3. Before work is performed, the associated hazards are evaluated and a set of ES&H standards and requirements are established which, if properly implemented, provide adequate assurance that employees, the public, and the environment are protected from adverse consequences.
  4. Administrative and engineering controls to prevent and mitigate hazards are tailored to the work being performed and associated hazards. Emphasis should be on designing the work and/or controls to reduce or eliminate the hazards and to prevent accidents and unplanned releases and exposures.
- B. The Contractor, relative to the specifications, shall be able to demonstrate through documentation and work practices that its performance of work under this contract achieved the following:
  1. Fulfilled the work required under the contract
  2. Identified and analyzed specific, task-level hazards associated with the work
  3. Developed and implemented hazard controls related to the hazards
  4. Allowed the performance of work within the controls
  5. Provides feedback to the Contractor and Contractor employees on the adequacy of hazard controls.
- C. The Contractor is responsible for its subcontractor's compliance with the ES&H requirements of this contract.

#### 1.3 MINIMUM REQUIREMENTS FOR ES&H

- A. The term "Contractor" used throughout this document shall be defined to be the Contractor. The Contractor shall pass down requirements outlined throughout this document to all lower tier Contractors and on-site vendors.
- B. Each Contractor is solely responsible for the safety and health of its employees, and all of its lower tiered vendor and Contractor employees. Full compliance with OSHA

and ANSI Standards incorporated by reference, Federal, State, and Local requirements, is mandatory. Failure to comply may result in disqualification and removal of the Contractor.

- C. Each Contractor shall identify and provide documentation for all necessary competent persons for each and any applicable project activities involving but not limited to: safety representative; excavations; temporary electrical; low, medium, and high voltage electrical; ladders; scaffolds; respiratory protection; first aid; fall protection; aerial lifts; forklifts; rigging; work vehicles; and cranes.
- D. Each Contractor shall assure that all work-related injuries and illnesses requiring a physician's care are reported to the Construction Manager.
- E. Each Contractor's employee shall be properly trained to facilitate the safe and expeditious execution of its work.
- F. Each Contractor or his designated safety representative shall conduct daily pre-use inspections of all vehicles and mobile equipment, tools and cord sets, and safety devices. Defective equipment shall be taken out of service.
- G. Each Contractor shall conduct continuous clean-up and maintenance of its work areas, fabrication areas, and office trailers.
- H. Each Contractor shall comply fully with all work permit requirements including hot work, confined space, line breaking (lock-out-tag-out procedures), and excavation, control of hazardous energy, critical lift, etc.
- I. All cars, trucks, mobile equipment, and other construction vehicles shall have operable "amber" flashers permanently or temporary mounted on top of the vehicle or must use the vehicles emergency flashers while in operational areas.
- J. Each Contractor shall submit copies of current Safety Data Sheets (SDS) for all hazardous chemicals and/or materials to be brought onto the project site. Maintain an inventory log of all chemicals utilized on the project site.
- K. Each Contractor shall notify both the Owner and Engineer immediately of any and all chemical or oil spills, no matter how small. Spill control, and clean up, shall only be executed and completed by trained personnel. The Contractor shall be responsible for all costs incurred with the clean-up of spills they cause and proper disposal of spill materials and supplies they utilize.
- L. Each Contractor shall properly dispose of trash and waste. The separation and disposal of trash and waste shall comply with all applicable local, state and federal standards.
- M. Each Contractor shall assure 100% fall protection for employees exposed to potential falls of 6 feet or more. All fall protection equipment and devices shall be thoroughly inspected prior to each use.
- N. Each Contractor shall ensure 100% eye protection (ANSI Z87.1) in all work areas. Safety glasses must have rigid side shields.
- O. Hard hats are required for all Contractor employees working in posted areas and must conform to ANSI Z89.1. Hard Hats shall display the Contractor's company logo on the front of the cap.
- P. Footwear (steel-toe safety shoes) suitable for use in construction environments shall be worn while working on the project site. Electrical workers are required to wear ANSI type "EH" shoes.



- Q. Each Contractor shall provide hearing protection to employees where noise is measured above 85dB, or normal conversation cannot be conducted, or when the area is posted as noise hazardous.
  - R. Each Contractor shall require appropriate clothing to be worn for the assigned task.
  - S. Each Contractor shall provide its employees proper personal protection while working in hazardous environments. Safety vests shall be worn in all high traffic areas to include, but not limited to, any fieldwork areas, dock, and warehouses.
- 1.4 REFERENCE SHEET
- A. The Contractor shall obtain a laminated reference sheet from the Construction Manager prior to mobilizing to the site. The reference sheet shall be kept in all vehicles at the project site, including subcontractors.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

PART 4 – COMPENSATION (Not used)

– END OF SECTION –

## SECTION 505 DEFINITIONS AND INDUSTRY STANDARDS

### PART 1 – GENERAL

#### 1.1 SCOPE

- A. This Section specifies the following:
  - 1. Definitions of certain terms used in Contract Documents
  - 2. Criteria affecting industry standards
  - 3. Meaning of abbreviations

#### 1.2 DEFINITIONS

- A. Regulations: The words "regulations," "laws," "statutes," "ordinances," and "codes" mean lawful orders of public authorities bearing on performance of Work.
- B. Trades: Words such as "carpentry" are not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. Such terms are also not intended to imply that specified requirements apply exclusively to trade persons of corresponding generic name.
- C. Approved: The meaning of "approved," when used in conjunction with A/E's action on Contractor's submittals, applications and requests, is limited to A/E's duties and responsibilities as stated in Conditions of Contract.
- D. Indicated: Phrases such as "indicated on Drawings" and "shown on Drawings" refer to graphic representations, notes, or schedules on Drawings. Words such as "noted," "scheduled," and "specified" are used to help readers locate referenced information, whether located in manufacturer's literature, industry standards, Specifications, or Drawings. There is no limitation on location.
- E. Installer: Words such as "installer," "erector," "applicator," mean Contractor or person or entity engaged by Contractor to perform a portion of Work.
- F. Experienced: The word "experienced," when used with words such as "installer," "erector" and "applicator" and extent or nature of experience is not specifically stated, means having successfully completed not less than five previous projects equal in size and scope to specified Work, being familiar with precautions needed for safe operations, and having knowledge of requirements of authorities having jurisdiction.
- G. Product: The word "product" means material, equipment, system, and other similar words.
- H. Testing Agency: Expressions such as "testing agency" and "testing laboratory" mean an independent entity engaged to gather data or samples, perform inspections or tests, and interpret and report results of inspections or tests.
- I. Industry Standards: The expression "industry standards," when used to specify products or describe quality of construction, means government specifications, trade association specifications, and other similar documents published by standards-producing organizations and agencies.

#### 1.3 INDUSTRY STANDARDS

- A. Reference to industry standard has the same effect that inclusion of standard's complete text would have.
- B. Where the edition date of referenced standard is not specified, comply with edition in effect on date set forth on cover of Project Manual.

- C. If Contract Documents require compliance with two or more industry standards that establish conflicting requirements, confer with A/E before proceeding with affected operations.

#### 1.4 ABBREVIATIONS

- A. Names of trade associations and agencies are frequently abbreviated. Where such abbreviations are used, they mean recognized name of trade association, authority having jurisdiction, or other entity applicable to content of specified provision.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

PART 4 – COMPENSATION (Not used)

– END OF SECTION –

## SECTION 506 MOBILIZATION AND DEMOBILIZATION

### PART 1 - GENERAL

#### 1.1 SCOPE

- A. The work covered by this Section includes the furnishing of all materials and equipment and performing of all labor necessary for the construction of the project. This shall include, but is not limited to, the following:
  - 1. The initial movement of personnel and equipment to the project site;
  - 2. The establishment of the Contractor's field offices, trailers, shops, and storage areas;
  - 3. Provision of sanitary facilities;
  - 4. Pre-construction photographs, surveys, utility locations, stake-outs, and other required site verifications;
  - 5. Provision of any required temporary site utilities;
  - 6. The acquisition of all permitting not otherwise provided;
  - 7. The cost of required insurance, bonds and any other initial expense required for the start of work on this project shall be included in this item.
  - 8. All other features and facilities as may be required by any applicable local, State, and Federal laws; and
  - 9. All other work and operations that must be performed prior to beginning work on compensable items.
- B. This work further includes the following:
  - A. Demobilization of all equipment, material, and personnel upon completion of the project and the clean-up of the project site.
  - B. Employment of an independent, third-party surveyor/inspector for construction stakeout and monitoring of settlement plates.
- C. At the completion of demolition and construction activities, all areas used for storage of equipment and material shall be restored to their original condition as existed prior to commencement of mobilization operations.

#### 1.2 AS-BUILT DRAWINGS

- A. As construction progresses, the Contractor shall keep an up-to-date set of as-built drawings. As-built drawings are the latest set of as-bid documents including addenda and revisions in place prior to formal Notice to Proceed with red line or text marks made on the drawings or attachments made therewith. Such marks or attachments shall be a complete and comprehensive reference to all changes to as-bid documents. After construction is complete, the Contractor shall transmit as-built marks and attachments to the Engineer.

#### 1.3 CLOSEOUT PROCEDURES

- A. Closeout procedures shall be completed and approved by the Engineer prior to the date of final acceptance of the work and prior to final acceptance.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Required materials or temporary construction necessary to complete the work, but not part of the finished work, shall be provided as needed and removed off site in a timely manner when the need for said materials or temporary construction has passed.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. All work done in providing the facilities and services under this Contract shall be done in a safe and workmanlike manner.

## PART 4 - COMPENSATION

### 4.1 MEASUREMENT

- A. Mobilization and Demobilization shall not be measured.

### 4.2 PAYMENT

- A. Payment for "Mobilization and Demobilization", complete, shall be taken to be included in and covered by the Lump Sum Price Bid under, Construction Items (Dike Raising) and Construction Items (Weir Boxes), Item No. 0002 on the Schedule of Prices for the respective project scope.

Payment for "Mobilization and Demobilization (Option)", complete, shall be taken to be included in and covered by the Lump Sum Price Bid under, General Items (Dike Raising), Item No. 0003 on the Schedule of Prices for the respective project scope. This item is payable only if approved by the Owner and/or Engineer.

- B. Basis of payment for "Mobilization and Demobilization" will be fifty percent (50%) of the Lump Sum Price Bid payable on the first monthly estimate, subsequent to, the Contractor moving all necessary facilities, as indicated under Scope above, which would enable him to satisfactorily begin work. The remaining fifty percent (50%) will be prorated over the remaining monthly estimates for contracts scheduled to be complete within 4 months. For contracts scheduled to exceed 4 months, the remaining 50% shall be prorated over the last two (2) monthly estimates of the contract. Payment as directed above shall be full compensation for all labor, materials, equipment, tools and incidentals necessary to complete the work in every respect, in totality, to the satisfaction of the Engineer.
- C. Payment for "Mobilization and Demobilization" shall not be made more than once regardless to the fact that the Contractor may have to shut down work on the project for any reason, move and/or bring equipment to/from the project site, or should the Contractor have to mobilize at several locations within the project site. If an item for "Mobilization and Demobilization" is not provided, the cost of mobilization will be incidental to other items specified in the Contract Documents.

– END OF SECTION –

## **SECTION 507 TEMPORARY UTILITIES**

### **PART 1 – GENERAL**

#### **1.1 SCOPE**

A. Temporary electricity, water, and heat necessary for construction operations.

#### **1.2 REGULATORY REQUIREMENTS**

A. Comply with National Electric Code.

B. Comply with Federal, State and local codes and regulations, and with utility company requirements.

#### **1.3 MATERIALS**

A. Materials for temporary materials may be new or used, but must be adequate in capacity, safe for conditions and in conformance with the requirements of applicable codes and regulations.

#### **1.4 TEMPORARY ELECTRICITY**

A. Power is not available on site.

B. In areas that are required to be worked on during night-time provide lighting necessary to adequately light the work area.

#### **1.5 TEMPORARY WATER**

A. Water is not available on site.

### **PART 2 – PRODUCTS (Not used)**

### **PART 3 – EXECUTION (Not used)**

### **PART 4 – COMPENSATION**

#### **4.1 MEASUREMENT**

A. Temporary Utilities shall not be measured.

#### **4.2 PAYMENT**

A. Payment for “Temporary Utilities”, complete, shall be taken to be included in and covered by the Mobilization and Demobilization Lump Sum Price Bid under, Construction Items (Dike Raising) and Construction Items (Weir Boxes), Item No. 0002 on the Schedule of Prices for the respective project scope.

- END OF SECTION -

**SECTION 508 SANITARY FACILITIES****PART 1 – GENERAL****1.1 TEMPORARY TOILETS**

- A. Provide temporary toilet facilities if necessary for execution of Work.
- B. Erect facilities in locations approved by Architect/Engineer or Owner.
- C. Maintain temporary toilet facilities in sanitary condition.

**1.2 TEMPORARY TELEPHONE**

- A. Provide and maintain temporary telephone service if necessary for execution of Work.
- B. Pay cost of installation and service.

**1.3 MEANS OF ACCESS**

- A. Maintain in good condition all means of access to site.
- B. Restore without expense to Owner, damaged, broken, settled or otherwise defective roadways and parking areas as a result of work under this Contract.

**1.4 PARKING**

- A. The Owner will designate an area where persons employed in work may park their personal vehicles.

**1.5 SHEDS**

- A. If necessary for execution of Work, provide storage and work sheds.
- B. Locate sheds where approved by Architect/Engineer or Owner.
- C. Construct and maintain sheds in good condition and neat appearance.

**1.6 REMOVAL OF TEMPORARY FACILITIES**

- A. Upon completion of Work, remove all temporary facilities from Project site.
- B. Repair all damage to grounds caused by erection and removal of temporary facilities; make repairs to satisfaction of Engineer or Owner.

**PART 2 – PRODUCTS (Not used)****PART 3 – EXECUTION (Not used)****PART 4 – COMPENSATION****4.1 MEASUREMENT**

- A. Sanitary Facilities shall not be measured.

**4.2 PAYMENT**

- A. Payment for “Sanitary Facilities”, complete, shall be taken to be included in and covered by the Mobilization and Demobilization Lump Sum Price Bid under, Construction Items (Dike Raising) and Construction Items (Weir Boxes), Bid Item 0002 on the Schedule of Prices for the respective project scope.

– END OF SECTION –

## SECTION 509 EARTHWORK

### PART 1 – GENERAL

#### 1.1 SCOPE

##### 1.1.1 DIKE RAISING

- A. The work covered by this Section includes the furnishing of all material and equipment and the performing of all labor to complete the earthwork as shown on the Contract Drawings and as herein specified or directed by the Engineer.
- B. Earthwork shall be performed at the two cells within the Blakeley/Mud Lakes CDF.
- C. Granular Fill and Offsite Borrow for the base dike widening and constructing the new dike shall be delivered to the project site from the USACE Mud Lakes Basin CDF, the USACE North Blakeley Basin CDF and/or the USACE South Blakeley Basin CDF.
- D. This work shall include, but is not limited to:
  - 1. Pumping of surface water and progressive trenching within the CDF as needed to lower the water table elevations.
  - 2. Clearing and grubbing existing vegetation within the CDF and along the dikes as necessary to facilitate the sand fill base dike widening construction and dike raising construction.
  - 4. Placing and compacting granular fill and offsite borrow to construct the base dike widening and constructing the new dike. The granular fill and offsite borrow will be hauled to the site and then dumped along the existing dike alignment by others.
- E. Optional earthwork to construct a geotechnical stability berm shall be performed on the western slope outside the CDF. This work includes cutting and mulching trees and shrubs in place, installing erosion and sediment control features, shaping offsite borrow material delivered to the stability berm site from USACE Mud Lakes Basin CDF, the USACE North Blakeley Basin CDF and/or the USACE South Blakeley Basin CDF, and seeding the berm once completed.

##### 1.1.2 WEIR BOX

- A. The work covered by this Section includes the furnishing of all material and equipment and the performing of all labor to complete the earthwork as shown on the Contract Drawings and as herein specified or directed by the Engineer.
- B. This work shall include, but is not limited to:
  - 1. Excavation through the dike to install the spillway outfall pipe and junction box.
  - 2. Pumping out ponded areas.
  - 3. Backfill following installation of the outfall pipe and junction box.

#### 1.2 RELATED SECTIONS

- A. SECTION 510 SOIL EROSION AND SEDIMENT CONTROL
- B. SECTION 511 GEOTEXTILE

#### 1.3 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.
- B. Unless otherwise indicated the most recent edition of the publication, including any revisions, shall be used.



- C. Alabama Department of Transportation (ALDOT) Standard Specifications for Highway Construction, 2022 (or latest edition)
- D. The Alabama Department of Environmental Management (ADEM) Administrative Code
- E. ASTM International (ASTM)
  - ASTM D422 Particle-Size Analysis of Soils
  - ASTM D1556 Density and Unit Weight of Soil in Place the Sand Cone Method
  - ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>))
  - ASTM D2487 Classification of Soils for Engineering Purposes (Unified Soil Classification System)
  - ASTM D6938 Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
  - ASTM E329 Standard Specification for Agencies Engaged in Construction Testing, or Special Inspection
  - ASTM E699 Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components

#### 1.4 SUBMITTALS

##### 1.4.1 DIKE RAISING

- A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.
- B. CDF Dewatering and Progressive Trenching Plan
  - 1. The Contractor shall submit a plan showing how groundwater elevations can be lowered and a crust formed over areas within the cell that are currently underwater or have a very soft unstable ground surface.
    - a. Proposed layout of the trenching effort
    - b. Methods and equipment for dewatering and performing the trenching
    - c. Scheduling and sequencing of the work including maintenance during the granular borrow excavation.
- C. Fill Placement Plan
  - 1. Prior to any work associated with fill placement, the Contractor shall submit a fill placement plan to the Engineer for approval. The plan shall include the following:
    - a. Method and equipment for placing and compacting the fill.
    - b. Sequencing of fill placement detailing: lift thickness, progression of fill, compaction equipment, etc. Lift thicknesses are shown in paragraphs 3.3 and 3.4 below.

- D. Quality Control Plan: Procedures to be implemented to assure that soils to be placed as fill comply with requirement specified herein. The Contractor shall sample the fill material every 5,000 cubic yards for compliance with the gradation and moisture requirements established in this Section. Non-conforming test results shall be reported immediately to the Engineer.
- E. Testing Agency Qualifications: The Contractor shall retain an independent testing agency qualified according to ASTM E329 and ASTM E699 to conduct soils testing.

#### 1.4.2 WEIR BOXES

- A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.
- B. Trench Excavation and Backfill Plan
  - 1. Prior to any work associated with fill placement, the Contractor shall submit a trench excavation and backfill plan to the Engineer for approval. The plan shall include the following:
    - a. Method and equipment for excavation and backfill.
    - c. Sequencing of fill placement detailing: lift thickness, compaction equipment, etc.
- C. Quality Control Plan: Procedures to be implemented to assure that soils to be placed as fill comply with requirement specified herein.
- D. Testing Agency Qualifications: The Contractor shall retain an independent testing agency qualified according to ASTM E329 and ASTM E699 to conduct soils testing. The person performing bearing capacity evaluation of the foundation soils shall be a licensed geotechnical Professional Engineer in the state of Alabama.
- E. Testing agency's methods of testing bearing capacity of foundation soils
- F. Soil sampling, compaction, and bearing capacity test reports
- G. Testing Agency Daily Reports

### PART 2 – PRODUCTS

#### 2.1 FILL MATERIAL FOR DIKE RAISING

- A. Granular Fill: The fill material shall be classified as SP, SW, SM, or SC in accordance with ASTM D2487 and have a fines content (percent passing #200 sieve) less than 30% by weight when tested in accordance with ASTM D422. Maximum particle size shall be 4 inches.
- B. Offsite Borrow: The offsite borrow material shall be classified as SP, SW, SM, SC, ML or CL in accordance with ASTM D2487. Maximum particle size shall be 4 inches. Maximum permeability shall be no greater than  $1 \times 10^{-5}$  ft/min. All organics, vegetation, and trash shall be removed from the borrow before placement. The borrow material shall be dewatered until its moisture content is lowered enough so that it can be compacted in accordance with these specifications.

#### 2.2 FILL MATERIAL FOR WEIR BOXES

- A. The fill material shall be classified as SP, SW, SM, or SC in accordance with ASTM D2487 and have a fines content (percent passing #200 sieve) less than 30% by weight when tested in accordance with ASTM D422. Maximum particle size shall be 4 inches

## PART 3 – EXECUTION

### 3.1 DIKE RAISING

#### 1. CLEARING AND GRUBBING

- A. The site shall be cleared of vegetation and debris prior to fill placement in accordance with ALDOT Specifications.
- B. Vegetation and debris resulting from clearing and grubbing shall be disposed of offsite as directed by the Engineer.

#### 2. TRENCHING AND DEWATERING

- A. Trenching and gravity dewatering shall be performed as necessary to facilitate the fill placement for the base dike widening.
- B. The trenching shall be performed using low ground pressure equipment.
- C. Depth of trenches shall vary depending on the shear strength of the dredged material but will stop at the top of the bauxite residue material.
- E. Slope of trenches shall be made so that water can gravity flow toward the weir boxes.

#### 3. BASE DIKE WIDENING GRANULAR FILL PLACEMENT

- A. Fill construction shall begin after clearing and grubbing has been completed.
- B. The offsite granular fill shall be delivered and dumped along the existing dikes by others.
- C. The Contractor shall then push out the dumped granular fill to construct the base dike widening after placing the reinforcement geotextile
- D. The bottom 36 inches of granular fill can be pushed out by the dozer. Subsequent filling shall be done in maximum 12-inch thick lifts.
- E. The bottom 36 inches of fill shall be compacted by the dozer operation. The remaining template of the base widening fill shall be compacted to a minimum of 90% maximum dry density in accordance with ASTM D1557 with the moisture content within 3.0% of optimum.

#### 4. DIKE CONSTRUCTION OFFSITE FILL PLACEMENT

- A. Fill construction shall begin after the base dike widening has achieved the elevation shown on the drawings using offsite borrow.
- B. The dikes in both cells shall be raised in 4-foot increments. The rate of fill placement will depend on the strength gain of the underlying soils as indicated by the geotechnical instrumentation and as directed by the Engineer.
- C. The fill shall be placed in lifts with a maximum thickness of 8 inches.
- D. The fill shall be compacted to a minimum of 92% maximum dry density in accordance with ASTM D1557 with the moisture content within -4% and +5.0% of optimum.

#### 5. GEOTECHNICAL STABILITY BERM OFFSITE FILL PLACEMENT

- A. Fill construction shall begin after the area has been cleared of vegetation and mulching has been completed.
- B. The fill material shall be placed in one (1) foot lifts.

## 6. QUALITY CONTROL

- A. Test fill material gradation in accordance with ASTM D422. Sample and test a minimum of one test per every 5,000 cubic yards placed.
- B. Perform compaction testing of each lift of the fill in accordance with ASTM D1556 or ASTM D6938.

## 7. TOLERANCES

- A. Ground surfaces after placement of fill shall be within 3 inches of the grades shown on the Drawings.

## 3.2 WEIR BOXES

### 1. EXCAVATING STORM DRAIN AND UTILITY TRENCHES

- A. Excavate trench to indicated depth and width of the proposed pipe trench. Where tight sheeting is necessary or ordered by the Engineer, the maximum allowable width of excavation from inside face of sheeting shall be increased by 3 inches. Trenching shall be in accordance with the latest edition of "Subpart P – Excavation, Trenching and Shoring" of the OSHA Standards and Interpretations. Take care not to over excavate.
- B. Sheeting and Shoring: Sheeting and shoring shall be considered unclassified excavation and incidental to any earthwork operation.

- 1. The Contractor shall support the sides and ends of all excavations wherever necessary with braces, trench boxes, sheeting shores or stringers which meet accepted engineering requirements. All sheeting shall be put in place and/or driven by men skilled in such work and shall be so arranged that it may be withdrawn as backfilling proceeds, without injury to the structures built under the contract or to any roadbed, adjacent structure, or property. If, in the opinion of the Engineer, the material furnished for sheeting excavation is not of proper quality or sufficient size, or not properly placed to insure the safety of the work or of adjacent structure or property, the Contractor shall, upon notice, forthwith procure and place suitable timbering or the work may be ordered stopped until said notice shall have been carried out and without entitling the Contractor to any claim for extra compensation, damage or delay. Nothing in this specification shall be read or interpreted as permitting lesser degrees of support than required by prevailing agency regulations.
- 2. All sheeting in excavation shall be withdrawn as the backfilling is being done. If the contractor requests to leave the sheeting in place and approved by the Engineer, it shall be cut-off at least 1 ½ feet below the finished grade. All cut-off material shall be removed. The sheeting left in place and the cut off and removal shall be at the Contractor's own expense.
- 3. Wherever necessary, in quicksand or soft ground, or for the protection of any property, sheeting shall be driven to such depth below the bottom of the trench as may be required or directed without extra compensation.
- 4. In all trench operations where laborers are at work or where they must pass to and from this work, sufficient light, either natural or artificial, shall be provided at all times.
- 5. A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations that are 4 feet or more in depth so as to require no more than 25 feet of lateral travel for employees.

6. Red lanterns, electrical blinkers, torches, or other approved lighting shall be placed along the exposed sides of all trenches at night, as required, for necessary warning to the public. In no case shall the lights be placed further than 20 feet apart.
  7. Guard railings or barricades shall be provided at or near the sides of trenches and excavations as necessary to protect the workmen and the public. The description of the type of guardrail or barricades to be used shall be submitted to and approved by the Engineer prior to starting any work.
  8. Trench excavations, if over 4 foot in depth, unless in solid rock, hard shale, or hardpan, shall be shored, sheeted and braced. All shoring and bracing shall be constructed in accordance with the design approved by the Engineer.
  9. A trench box may be used, where possible, in lieu of conventional sheeting and shoring.
  10. Excavated material and superimposed loads shall not be nearer than 2 feet to the sides of a trench or other excavation, unless bracing has been installed which is designed to withstand the load.
- C. The sides of the trenches shall be practically plumb. Under no circumstances will they be permitted to be sloped except with the approval of the Engineer and then only for portions of the trench two or more feet above the top of pipe or utility.
  - D. Bottom of trenches shall be accurately graded and bedding installed to provide uniform bearing and support for each section of pipe on specified pipe bedding at every point along its entire length, except for portions of pipe sections where it is necessary to excavate for bell holes and for proper sealing of pipe joints. Bell holes and depressions for joints shall be excavated after trench bottom has been graded and pipe bedding has been placed, and, in order that pipe rest on prepared bottom for as nearly its full length as practicable, bell holes and depressions shall be only of such length, depth and width as required for properly making the particular type of joint. Stones shall be removed as necessary to avoid point bearing.
  - E. Excavation of all utility trenches shall be fully completed at least 20 feet in advance of pipe laying, unless otherwise authorized.
  - F. Nothing in these Specifications shall be interpreted to relieve the Contractor of any requirements of law or applicable regulation governing trenching.
2. UTILITY TRENCH BACKFILL
- A. Coordinate backfilling with utilities testing.
  - B. Place and compact backfill using suitable onsite material to pavement subgrade. Backfill shall be brought up evenly on each side of the pipe and shall not be placed on surfaces that are muddy. Surfaces that receive fill shall be approved by the Engineer prior to placement of backfill.
  - C. The Contractor shall use special care in the preparation of the trench bottom to provide uniform continuous bearing and support for the pipeline, utility line or structure at every point. A suitable type template shall be used to assist in securing a uniform bed for the pipeline, utility line or structure if the Engineer so directs. Pipelines shall be placed on a trench bottom specially shaped to conform to the shape of the pipe line, when specified for the particular utility.
  - D. All irregularities and cavities in the bottom of a trench or tunnel shall be refilled to the required level with off-site select borrow.
  - E. Adjust moisture of refill to within 2% +/- of the optimum moisture content.

- F. Place backfill in maximum of 8 inch lift thickness. Compact to 95% maximum dry density in accordance with ASTM D 1557. Confirm with in-situ density testing at a minimum frequency of one test per 50 linear feet of utility trench per compacted lift.

### 3. UNDERCUTTING UNSUITABLE MATERIAL

- A. During the construction of a utility line or structure, should the character of the material at the bottom of an excavation require excavation to an additional depth or, wherever a trench has been excavated by machinery to the grade directed by the Engineer and he deems it necessary to excavate deeper, the additional depth shall be known as Undercutting Unsuitable Material. However, no excavation taken out of default or negligence on the part of the Contractor shall be so classed. The classification of unsuitable material shall be at the sole discretion of the Engineer. No payment shall be made for unauthorized excavation and backfill below subgrade.
- B. Except as modified above, subgrade shall be termed the bottom of the stone bedding under the pipe.
- C. The Contractor shall complete excavation in earth as nearly as practicable to the neat lines of the structures to be built. Where the character of the material at the bottom of the trench is found to be unstable or to include ashes, cinder, refuse, vegetable or other organic material and any other unsuitable material which should be removed, the Contractor shall excavate and remove such unsuitable material to the depth ordered by the Engineer. This excavation shall be classed as Undercutting Unsuitable Material.
- D. Backfilling of unsuitable trench undercut shall conform to the requirements set forth in Paragraph 3.3 above.

### 4. STRUCTURE FOUNDATIONS

- A. Excavate structure foundations to subgrade elevations and/or minimum frost protection depth indicated on the respective details in the Contract Drawings.
- B. All foundation subgrade elevations shall be tested in accordance with the requirements herein. Bedding Stone/Concrete shall not be placed until the in-situ bearing capacity has been tested by the Inspection Agency, and found to conform to the minimum values specified in the Contract Drawings.
- C. Verification of Required Bearing Capacity
  - 1. The Inspection Agency shall submit proposed in-situ testing methods for Engineer Review and Approval. Testing methods shall be compatible with the inherent nature of materials encountered during excavation (i.e. granular vs cohesive).
  - 2. Frequency of Testing:
    - a. Continuous Mat Footings: Minimum one bearing capacity test per 25 Square Feet of plan-view footing excavation area. Testing shall be performed and evaluated by the geotechnical Professional Engineer.
  - 3. Bearing Capacity Test Reports:
    - a. The Inspection Agency shall submit daily test reports with complete listing of bearing capacity test locations, results, and any required undercutting and/or remedial action as defined in Section 3.5 herein.

### 5. QUALITY CONTROL

- A. Test fill material gradation for offsite granular fill materials in accordance with ASTM D422. Sample and test a minimum of one test per every 5,000 cubic yards placed.
- B. Perform compaction testing of each lift of the fill in accordance with ASTM D1556 or ASTM D6938.

## 6. TOLERANCES

- A. Ground surfaces after placement of initial fill shall be within 3 inches of the grades shown on the Drawings.
- B. Ground surfaces after removal of surcharge shall be within 0.1 feet of proposed pavement subgrade elevations.

## PART 4 – COMPENSATION

### 4.1 MEASUREMENT

- A. Clearing and grubbing for the dikes on the interior of the CDF shall be measured on a per acre basis as established by the limits of grading.
- B. Tree and Shrub Cutting and Mulching (Option) for the geotechnical stability berm shall be measured on a per acre basis.
- C. Base Dike Widening will be measured on a per cubic yard basis using cross-sections of the in-place compacted material as certified by a Professional Land Surveyor (PLS) licensed and in good standing with the Alabama Board for Engineers and Land Surveyors (ABELS). The cross-sections shall be taken before fill placement is initiated and then after the fill achieves the top of fill elevations shown on the drawings. No allowance will be made for settlements or losses that occur during fill placement.
- D. Dike Construction Using Offsite Borrow Material will be measured on a per cubic yard basis using cross-sections of the in-place compacted material as certified by a Professional Land Surveyor (PLS) licensed and in good standing with the Alabama Board for Engineers and Land Surveyors (ABELS). The cross-sections shall be taken before fill placement is initiated and then after the fill achieves the top of fill elevations shown on the drawings. No allowance will be made for settlements or losses that occur during fill placement.
- E. Excavation and backfill for installation of utilities and structures shall not be measured for payment

### 4.2 PAYMENT

- A. Payment for “Clearing and Grubbing”, complete, shall be included in the Unit Price Bid per acre under, Construction Items (Dike Raising), Item No. 1001 on the Schedule of Prices. This price shall include all clearing and offsite disposal.
- B. Payment for “Tree and Shrub Cutting and Mulching (Bid Additive)”, complete, shall be included in the Unit Price Bid per acre under, Construction Items (Dike Raising), Item No. 1002 on the Schedule of Prices. This price shall include all clearing and mulching in place. This item is payable only if required by the Owner.
- C. Payment for “Sand Shaping for Base Dike Widening”, complete, shall be included in the Unit Price per cubic yard under, Construction Items (Dike Raising), Bid Item No. 1005 on the Schedule of Prices. This price shall include spreading, grading, and compacting the granular fill material hauled and dumped along the existing dike.
- D. Payment for “East Cell Dike Construction Using Offsite Borrow Material”, complete in place, shall be made at the Unit Prices Bid per cubic yard under, Construction Items (Dike Raising), Bid Item No. 1006 on the Schedule of Prices. This price shall include spreading, grading, surveying, and testing the offsite borrow material hauled and dumped along the existing dike.
- E. Payment for “West Cell Dike Construction Using Offsite Borrow Material (Option)”, complete in place, shall be made at the Unit Prices Bid per cubic yard under, Construction Items (Dike Raising), Bid Item No. 1007 on the Schedule of Prices. This price shall include spreading, grading, surveying, and testing the offsite borrow

material hauled and dumped along the existing dike. This item is payable only if required by the Owner.

- F. Payment for “Geotechnical Stability Berm Construction Using Offsite Borrow Material (Bid Additive)”, complete in place, shall be made at the Unit Prices Bid per cubic yard under, Construction Items (Dike Raising), Bid Item No. 1008 on the Schedule of Prices. This price shall include spreading, grading, surveying, and testing the offsite borrow material hauled and dumped along the berm location. This item is payable only if required by the Owner.
- A. Payment for “Trench Excavation and Backfill”, complete in place, shall be included in the Lump Sum Price Bid under, Construction Items (Weir Boxes), Item No. 1003 on the Schedule of Prices.
- B. The Contractor’s bid price shall include all the work described in this Section and shown on the Contract Drawings including all labor, materials, services, and equipment necessary to complete the work in every respect to the satisfaction of the Engineer

- END OF SECTION -



## SECTION 510 SOIL EROSION & SEDIMENT CONTROL

### PART 1 – GENERAL

#### 1.1 SCOPE

- A. The work of this Section includes the installation of temporary erosion and sediment control facilities, device maintenance, removal of temporary devices, mulching, installation of permanent erosion control materials and final cleanup in accordance with the project Erosion and Sediment Control Plan (ESCP).
- B. The work shall include but is not limited to:
  - 1. Installation of stabilized construction entrances
  - 2. Installation of silt fence, silt socks, dirt bag, and hay bales
  - 3. Installation of dewatering items including sediment control bags and sump pits
  - 4. Temporary seeding and mulch
  - 5. Dust control
  - 6. Maintenance of soil erosion and sediment control measures
- C. The measures specified herein and in the ESCP are the minimum requirements that Contractor shall comply to control soil erosion and sediment runoff throughout execution of the work. The Contractor shall provide additional work, if necessary, to control soil erosion and sediment runoff throughout the duration of the construction as conditions dictate.

#### 1.2 RELATED SECTIONS

- A. Section 509                      Earthwork
- B. Section 512                      Crushed Aggregate Base

#### 1.3 RELATED DOCUMENTS AND REFERENCES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions, apply to the work of this section.
- B. The Contractor shall respect the local requirements regarding sedimentation and erosion control plans during construction.
- C. Alabama Department of Transportation (ALDOT) Standard Specifications for Highway Construction, 2022 (or latest edition).
- D. Unless otherwise indicated the most recent edition of the publication, including any revisions, shall be used.

#### 1.4 REGULATORY REQUIREMENTS

- A. All work shall comply with the requirements of the Alabama Department of Environmental Management (ADEM).

#### 1.5 SUBMITTALS

- A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.
- B. Provide Owner with five (5) copies of all product data, including maintenance instructions, if applicable. Obtain receipt.

- C. The Contractor shall submit to the Owner and Architect the following documentation, as verification of ESC implementation:
1. Project Soil Erosion and Sediment Control Plan.
  2. Site drawings, indicating any modifications to sizes, quantities or other characteristics of the control measures established in drawings
  3. Drawings, permits, or other documentation related to the control measures implemented.
  4. Photographs of implemented control measures taken at regular intervals throughout the demolition and construction process.
  5. Log of ongoing maintenance activities.
  6. Copies of Meeting Minutes documenting implementation of Erosion and Sediment Control measures.

#### 1.6 SOIL EROSION AND SEDIMENT CONTROL OBJECTIVES

- A. The Owner has established that this Project shall minimize soil erosion, sedimentation of surrounding storm drains, pollution of stormwater runoff leaving the site, and the migration of dust and dirt from the site to surrounding water bodies, roads, and buildings. To achieve this requirement, Contractor shall employ measures to satisfy the following objectives:
1. Minimize unnecessary soil disturbance and dust generation on site.
  2. Minimize stormwater contamination from on-site activities.
  3. Inhibit or slow the flow of runoff across the site.
  4. Remove sediment from runoff before it leaves the site.
  5. Remove dirt from vehicles leaving the site.
  6. Inhibit dust migration from the construction site to surrounding roads and buildings without excessive use of water.
  7. Minimize on-site pollution due to construction activity.
  8. Maintain Erosion and Sediment Control measures throughout the construction process.

#### 1.7 QUALITY ASSURANCE

- A. Contractor shall be responsible for the timely installation and/or maintenance of all sediment control devices throughout the life of the contract necessary to prevent the erosion of soil or movement of sediment from construction activities to sensitive on-site areas, or any off-site areas. Measures in addition to those shown on the drawings necessary to prevent the movement of sediment of site shall be installed, maintained, removed, and cleaned up at the expense of Contractor. The Contractor shall immediately abate any siltation, sedimentation, erosion or pollution of all waters and underground water systems.

#### 1.8 PRODUCT HANDLING

- A. Protection
1. Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the installed work of others.

## B. Replacements

1. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost.

## PART 2 – PRODUCTS

### 2.1 MATERIALS

- A. Seed: Seed mixes shall be as specified in ALDOT Specification Section 860.01(d) for Zone 3 – Areas Not Subject to Frequent Mowing.
- B. Mulch and Mulch Binder: Shall be as specified in ALDOT Specification Section 860.03 Mulching Material.
- C. Silt Fence: Shall be as specified in ALDOT Specification Section 665.02(i).
- D. Temporary Seeding and Mulching: Shall be as specified in ALDOT Specification Section 665.02(a) and 665.02(b).
- E. Water for dust control shall be water with mineral content not exceeding potable water standards.

## PART 3 – EXECUTION

### 3.1 GENERAL

- A. The Engineer shall have the authority to limit the surface area of erodible earth material exposed and to direct the Contractor to provide immediate permanent or temporary soil erosion or sediment control measures to prevent contamination of adjacent watercourses and wetlands. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, pipes, slope drains and use of temporary mulches, mats, seeding or other control devices or methods as necessary to control erosion.

### 3.2 INSTALLATION

- A. All erosion and sediment control practices shall be installed prior to any soil disturbance in their proper sequence and maintained until permanent protection is established.
- B. Any disturbed areas that will be left exposed more than thirty days and not subject to construction traffic shall immediately receive a temporary seeding.
- C. Permanent vegetation to be seeded on all identified areas within 10 days after final grading and topsoiling. Mulch shall be used as necessary for protection until seeding is established.
- D. Immediately following initial disturbance or rough grading, all critical areas subject to erosion (i.e. steep slopes) shall receive temporary seeding in combination with mulch.
- E. All silt fences shall be left in place and maintained until construction is completed or areas are stabilized.
- F. All disturbed areas shall be limed and fertilized prior to both temporary and permanent seeding. If temporary seeding occurs during winter months, no lime and fertilizer is required.
- G. Disturbed areas including road banks shall be maintained in a rough graded condition and temporarily seeded and/or mulched until proper weather conditions exist for establishment or permanent vegetative cover.
- H. All soil to be stockpiled for a period of greater than 30 days shall be temporarily seeded and protected by a berm at the base of the pile, if necessary.

## PART 4 – COMPENSATION

### 4.1 MEASUREMENT

- A. Erosion and Sediment Control shall not be measured but shall include: Stabilized Construction Entrances, Temporary Seeding and Mulching, Permanent Seeding and Mulching, and all work items necessary to install the devices as shown on the Contract Drawings or as directed by the Engineer.

### 4.2 PAYMENT

- A. Payment for “Erosion and Sediment Control Measures” complete in place, shall be taken to be included in and covered by the Lump Sum Price Bid under, Construction Items (Dike Raising), Item No. 1003 on the Schedule of Prices. This price shall include stabilized construction entrances, temporary seeding and mulch, dust control on temporary fencing, and all work items necessary to install and maintain the devices as shown on the Contract Drawings or as directed by the Engineer.
- B. Payment for “Erosion and Sediment Control Measures for Geotechnical Stability Berm (Bid Additive)”, complete in place, shall be taken to be included in and covered by the Lump Sum Price Bid under, Construction Items (Dike Raising), Item No. 1004 on the Schedule of Prices. This price shall include stabilized construction entrances, temporary seeding and mulch, dust control on temporary fencing, and all work items necessary to install and maintain the devices as shown on the Contract Drawings or as directed by the Engineer. This item is payable only if required by the Owner.
- C. Payment for “Dike Seeding” complete in place, shall be taken to be included in and covered by the Unit Price Bid per acre under, Construction Items (Dike Raising), Item No. 3002 on the Schedule of Prices.
- D. Payment for “Geotechnical Stability Berm Seeding” complete in place, shall be taken to be included in and covered by the Unit Price Bid per acre under, Construction Items (Dike Raising), Item No. 3003 on the Schedule of Prices.
- E. Payment for “Erosion & Sediment Control Measures” complete in place, shall be taken to be included in and covered by the Lump Sum Price Bid under, Construction Items (Weir Boxes), Item No. 1001 on the Schedule of Prices. This price shall include stabilized construction entrances, temporary seeding and mulch, dust control on temporary fencing, and all work items necessary to install the devices as shown on the Contract Drawings or as directed by the Engineer.
- F. The above prices shall include all the work described in this Section and shown on the Contract Drawings including all labor, materials, services, and equipment necessary to complete the work in every respect to the satisfaction of the Engineer.

– END OF SECTION –

## SECTION 511 GEOTEXTILE

### PART 1 – GENERAL

#### 1.1 SCOPE

- A. The work covered by this Section includes the furnishing of all material and equipment and the performing of all labor for the placement of the geotextile as required by the Contract Documents.
- B. The work shall include, but is not limited to, geotextiles, reinforcement geotextiles, and geogrids placed at the following locations:
  1. Base Dike Widening
  2. Haul roads, access roads, and CDF dike roadways

#### 1.2 RELATED SECTIONS

- A. Section 509                      Earthwork
- B. Section 512                    Crushed Aggregate Base

#### 1.3 STANDARDS AND REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. Unless otherwise indicated the most recent edition of the publication, including any revisions, shall be used.

##### C. ASTM International (ASTM)

ASTM D4354	Standard Practice for Sampling of Geosynthetics and Rolled Erosion Control Products (RECPs) for Testing
ASTM D4355	Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc-Type Apparatus
ASTM D4491	Standard Test Methods for Water Permeability of Geotextiles by Permittivity
ASTM D4533	Standard Test Method for Trapezoid Tearing Strength of Geotextiles
ASTM D4632	Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
ASTM D4751	Standard Test Method for Determining the Apparent Opening Size of Geotextile
ASTM D4595	Standard Test Method for Tensile Properties of Geotextiles by Wide-Width Strip Method
ASTM D4873	Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples
ASTM D4884	Standard Test Method for Strength of Sewn or Bonded Seams of Geotextiles
ASTM D6241	Standard Test Method for the Static Puncture Strength of Geotextiles and Geotextile- Related Products Using a 50-mm Probe

ASTM D6637	Standard Test Method for Determining Tensile Properties of Geogrids by Single or Multi-Rib Tensile Method
ASTM D7737	Standard Test Method for Individual Geogrid Junction Strength
ASTM D7764	Standard Practice for Pre-Installation Acceptance Testing of Vibrating Wire Piezometers
ASTM D7864	Standard Test Method for Aperture Stability Modulus of Geogrids

#### 1.4 SUBMITTALS

- A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.
- B. Prior to delivery of Geotextile to the job site, the Contractor shall submit the following certified test reports to the Engineer for approval:
  1. Apparent Opening Size (ASTM D4751)
  2. Grab Tensile Strength (ASTM D4632)
  3. Permittivity (ASTM D4491)
  4. CBR Puncture Strength (ASTM D6241)
  5. Sewn Seam Strength (ASTM D4884)
  6. Tear Strength (ASTM D4533)
  7. U.V. Stability (ASTM D4355)
  8. Wide Width Tensile Strength – Machine Direction (ASTM D4595)
  9. Wide Width Tensile Strength – Cross-machine Direction (ASTM D4595)
- C. Prior to delivery of Geogrid to the job site, the Contractor shall submit the following certified test reports to the Engineer for approval:
  1. Junction Efficiency (ASTM D7737)
  2. Aperture Stability (ASTM D7864)
  3. Radial Stiffness (ASTM D6637)
- D. The certification(s) shall show the appropriate ASTM test(s) for each material, the test results, and a statement that the material meets the specifications.
- E. Manufacturer's recommendations for seaming joints.
- F. Samples: Representative sample of each type of geotextile showing the name of the manufacturer, brand name, type of fiber shall be submitted.
- G. Quality Standards: The Contractor shall submit the Manufacturer's Quality Control Plan along with their current A2LA, GAI-LAP, and ISO 9001:2008 certificates.

#### 1.5 QUALITY ASSURANCE

- A. The geotextile manufacturer shall have all of the following credentials:
  1. Geosynthetic Accreditation Institute (GAI) – Laboratory Accreditation Program (LAP)
  2. American Association for Laboratory Accreditation (A2LA)

### 3. ISO 9001:2008 Quality Management System

- B. The geotextile manufacturer shall have a GAI-LAP accredited laboratory at the production location capable of performing the ASTM tests as outlined in the specification.

#### 1.6 QUALITY CONTROL

- A. The Engineer shall examine all the geotextile rolls for damage and defect prior to installation. Any roll found to be damaged and/or defective shall be removed from the site and shall be replaced by an acceptable roll.
- B. Manufacturing Quality Control: Testing shall be performed at a laboratory accredited by GAI-LAP and A2LA for tests required for the geotextile, at frequency meeting or exceeding ASTM D4354.
- C. Sewn seam strength shall be verified based on testing of either conformance samples obtained using Procedure A of ASTM D4354 or based on manufacturer's certifications and testing of quality assurance samples obtained using Procedure B of ASTM D4354. A lot size for conformance or quality assurance sampling shall be considered to be the shipment quantity of the given product or a truckload of the given product, whichever is smaller.

#### 1.7 DELIVERY, STORAGE AND HANDLING

- A. Geotextile labeling, shipment, handling, and storage shall follow ASTM D4873. Product labels shall clearly show the manufacturer or supplier name, style name, roll number, length, and width of the roll.
- B. Each geotextile roll shall be wrapped with a material that will protect the geotextile from damage due to shipment, water, sunlight, and contaminants.
- C. Geotextile shall be stored in areas where water cannot accumulate, elevated off the ground, and protected from conditions that will affect the properties or performance. Outdoor storage shall not be for periods that exceed the manufacturer's recommendations, or for two months, whichever is less.
- D. Handle and unload geotextile rolls with load carrying straps, a forklift with a stinger bar, or an axial bar assembly. Rolls shall not be dragged along the ground, lifted by one end, or dropped to the ground.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. Materials: All materials specified shall be applied as per the Manufacturer's printed instructions and recommendations or as directed by the Engineer.
- B. Unapproved Materials: Any work in which unapproved materials are used shall be performed at the Contractor's risk and will be considered unacceptable, unauthorized, and will not be paid for and may require removal.

### 2.2 GEOTEXTILE

- A. Geotextile Type 1 under the dike roadway shall be non-woven polypropylene. Reinforcement geotextile Type 2 shall be manufactured with fibers consisting of high-tenacity long-chain synthetic polymers composed of at least 95% by weight polyesters. They shall form a stable network such that filaments or yarns retain their dimensional stability relative to each other, including selvages. The geotextile shall be free of any chemical treatment or coating which reduces permeability and shall be inert to chemicals commonly found in soil.

- B. Woven slit film geotextiles will not be allowed.
- C. The Type 1 Geotextile shall be Geotex 4X4HF, manufactured by Propex, or approved equal. The Type 2 Reinforcement Geotextile shall be SC30K, manufactured by Syntex, or approved equal. These geotextile materials shall equal or exceed the minimum (or maximum, if noted) average roll values (MARVs) specified below:

**Geotextile Type 1 (Geotex 4X4HF or Approved Equivalent)**

Physical Property	Test Value	Test Method
Wide Width Tensile Strength (MD – Machine Direction)	400 lbs/in.	ASTM D4595
Seam Strength (XMD)	200 lbs/in.	ASTM D4884
Apparent Opening Size (max.)	30 US Sieve	ASTM D 751
Permittivity	0.40 sec-1	ASTM D4491
Ultraviolet Stability	80% strength at 500 hours	ASTM D4355
Grab Tensile Strength (MD)	475 lbs	ASTM D4632
CBR Puncture Strength	2000 lbs	ASTM D6241
Tear Strength(MD)	180 lbs	ASTM D4533

**Reinforcement Geotextile Type 2 (SC30K or Approved Equivalent)**

Physical Property	Test Value	Test Method
Ultimate Tensile Strength (MD – Machine Direction)	2500 lbs/in.	ASTM D4595
Seam Strength (XMD)	1250 lbs/in.	ASTM D4884
Apparent Opening Size (max.)	NA	ASTM D4751
Permittivity	0.30 sec-1	ASTM D4491
Ultraviolet Stability	50% strength at 500 hours	ASTM D4355
Tensile Strength at 5% Strain (MD)	1,200 lbs/in	ASTM D4595

- D. Geotextile shall have a minimum roll width of 15 feet.
- E. The geotextile shall be delivered to the job site in its original manufacturer's container(s). Each roll shall be individually wrapped in a protective wrapping which shall protect the geotextile from ultraviolet radiation and from abrasion due to shipping and handling and to avoid moisture pick up. Materials exhibiting wetness, disintegration, decomposition, and/or abrasion due to shipping and handling will be rejected and shall be removed from the job site immediately, at the Contractor's cost.
- F. Installation, handling, and storage of geotextile shall be in accordance with the manufacturer's recommendations or the Engineer's direction.

### 2.3 GEOGRID

- A. The geogrid shall be manufactured from a punched polypropylene sheet, which is then oriented in three substantially equilateral directions so that the resulting ribs shall have a high degree of molecular orientation, which continues at least in part through the mass of the integral node.
- B. The geogrid shall be TriAX TX 160, manufactured by Tensar, or approved equal, that equals or exceeds the minimum (or maximum, if noted) average roll values (MARVs) specified in the following table:



**Geogrid (TriAXTX 160 or Approved Equivalent)**

<b>Physical Property</b>	<b>Test Value</b>	<b>Test Method</b>
Junction Efficiency, %	93%	ASTM D 7737
Aperture Stability, kg-cm @ 5 kg-cm	3.6 kg-cm	ASTM D 7764
Radial Stiffness, kN/m @ 5% strain	300 kN/m	ASTM D 6637

## 2.4 TEMPORARY ANCHORS

- A. Temporary anchors that penetrate the geotextile are prohibited.

## PART 3 - EXECUTION

## 3.1 SEQUENCE

- A. Type 1 Geotextile shall be placed underneath road stone as shown on the drawings.
- B. Type 2 Geotextile and Geogrid shall be placed as necessary to facilitate placement of fill for the base dike widening.

## 3.2 INSTALLATION

- A. Surface to receive the geotextile shall be prepared in accordance with the requirements of Section 509, "Earthwork," of these Specifications and shall be accepted by the Engineer prior to geotextile placement. Surface shall be relatively smooth condition free of obstructions, sharp objects, stumps, and debris that could damage the geotextile during installation.
- B. Geotextile shall be placed with the machine direction roll length oriented parallel to the fill direction. If the Contractor places fill parallel to the face of the dike, the geotextile shall be oriented with the machine (or roll) direction perpendicular to the baseline of the dike. Adjacent Type 2 and Type 3 geotextile rolls/panels shall be sewn.
- C. Prior to covering, the geotextile shall be inspected by the Engineer to ensure the geotextile has not been damaged during installation. Damaged geotextiles, as identified by the Engineer, shall be immediately repaired.
- D. Geotextile shall extend to the limits shown on the drawings. Two (2) feet of fill shall be placed on the 10-foot-wide perimeter area to anchor the geotextile prior to placing fill. Fill placement shall proceed after installation of the geotextile has been completed a minimum of 50 feet ahead of the leading edge of the fill.
- E. If placement of the fill material causes damage to the geotextile, the damaged area shall be repaired immediately. The placement procedure shall be modified to eliminate further damage from taking place.

## 3.3 SEWN SEAMS

- A. Type 2 Geotextile shall have sewn seams, both factory and field.
- B. Factory and field seams shall be continuously sewn. The stitch type used shall be a Type 401 double thread lock stitch or as recommended by the manufacturer. The seam type used shall be a butterfly type seam or as recommended by the manufacturer. For seams that are field sewn, the seams shall be sewn using the same equipment and procedures as will be used for production (factory) seams. Seams shall meet the minimum specified strength requirements. The thread at the end of each seam run shall be tied off to prevent unraveling. Skipped stitches or discontinuities shall be sewn with an extra line of stitching with a minimum of 18 inches of overlap.

## PART 4 - COMPENSATION

### 4.1 MEASUREMENT

- A. Geotextiles shall be measured on a square yard basis using the ground surface area covered by the geotextile. Overlaps shall not be measured.

### 4.2 PAYMENT

- A. Payment for "Geotextile Type 1" shall be made at the Unit Price Bid per square yard under, Construction Items (Dike Raising), Item No. 2001 on the Schedule of Prices. This price shall include furnishing and placement.
- B. Payment for "Reinforcement Geotextile Type 2" shall be made at the Unit Prices Bid per square yard under, Construction Items (Dike Raising), Item No. 2002 on the Schedule of Prices. This price shall include furnishing, seaming, and placement.
- C. Payment for "Geogrid" shall be made at the Unit Prices Bid per square yard under, , Construction Items (Dike Raising), Item No. 2003 on the Schedule of Prices. This price shall include furnishing, seaming, and placement
- D. The above prices shall include all the work described in this Section and shown on the Contract Drawings including all labor, materials, services, and equipment necessary to complete the work in every respect to the satisfaction of the Engineer.

END OF SECTION

## SECTION 512 CRUSHED AGGREGATE BASE

### PART 1 - GENERAL

#### 1.1 SCOPE

- A. The work covered by this Section includes the furnishing of all materials and equipment and the performing of all labor to complete the Crushed Aggregate Base as required by the Contract Documents. The requirements specified herein are minimum requirements.
- B. This work shall include but is not limited to the furnishing of graded aggregate, fines, water and the mixing, hauling, placing, shaping, compacting and fine grading as required to construct roads on the new raised dikes.

#### 1.2 RELATED SECTIONS

- A. Section 509                      Earthwork
- B. Section 511                    Geotextile

#### 1.3 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. Alabama Department of Transportation (ALDOT) Standard Specifications for Highway Construction, 2022 (or latest edition).
- C. American Association of State Highway and Transportation Officials (AASHTO)
  - AASHTO T27                      Sieve Analysis of Fine and Coarse Aggregate
  - AASHTO T85                     Specific Gravity of Coarse Aggregate
  - AASHTO T96                    Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
  - AASHTO T 104                 Standard Method of Test for Soundness of Aggregate
- C. ASTM International (ASTM)
  - ASTM C131                      Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
  - ASTM C136                      Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
  - ASTM D1556                    Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method
  - ASTM D1557                    Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>))
  - ASTM D2940                    Standard Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports
  - ASTM D4318                    Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
  - ASTM D6938                    Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

## 1.4 SUBMITTALS

- A. General: Submit the following in accordance with these Specifications. Note that approval of Submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the specifications nor from responsibility for errors of any sort in the submittal.
- B. Crushed Aggregate Base
  - 1. Submit target gradation
- C. Test Results
  - 1. Gradation (AASHTO T27/ASTM C136)
  - 2. Maximum dry density (ASTM D1557)
  - 3. Optimum moisture content (ASTM D1557)
  - 4. Percent of wear (AASHTO T96/ASTM C131)
  - 5. Plasticity index (ASTM D4318)
- D. Submittals shall show the appropriate ASTM test(s) references for each material.
  - 1. Qualifications
  - 2. Inspection Agency
  - 3. Inspector

## 1.5 QUALITY ASSURANCE

- A. Inspection Agency: An independent third party, for inspection of soil compaction, shall be provided by the Contractor.
- B. The Agency's responsibilities shall include:
  - 1. Having an Inspector present on-site during all earthwork operations.
  - 2. Approving all backfilling procedures and mechanical compaction equipment.
  - 3. Verifying compaction by in-place density tests. Tests shall be submitted to the Engineer for review.

## PART 2 – PRODUCTS

### 2.1 MATERIAL

- A. Material for the Crushed Aggregate Base shall be plant mixed crushed rock or recycled concrete meeting the requirements set forth in ASTM D2940 and shall conform to Section 825.03, Type B, of the ALDOT Specifications.

## PART 3 – EXECUTION

### 3.1 INSTALLATION

- A. Prepare road surface in accordance with Section 509, "Earthwork."
- B. Place Geotextile Type 1 on prepared earth surface. Crushed aggregate base shall be placed on the geotextile and compacted in a 6-inch lift.
- C. The crushed aggregate base shall be compacted to a minimum density of 97% of maximum dry density as determined by ASTM D1557. During compaction operations, the moisture content of the material shall be maintained within 2% of the material's optimum moisture content. In-place density shall be measured in accordance with ASTM D1556 or ASTM D6938.

- D. The completed Crushed Aggregate Base shall be true to the required lines and grades. Deviations in excess of ½ inch from cross-section and profile grade shall be corrected.

### 3.2 FIELD QUALITY CONTROL

- A. The Contractor shall employ the services of a third-party testing firm to perform modified proctor and in-place density tests to control the fill.
- B. At least one modified proctor testing shall be performed for each material used. Additional tests shall be performed should the type or character of the compacted material change.
- C. Frequency of Testing
  - 1. A minimum of one in-place density and moisture content test per 250 square yards to be paved shall be taken for each compacted lift, but not less than one test minimum per area.
  - 2. A minimum of one compacted lift of utility trench, but not less than one test minimum per trench.
  - 3. Frequency of testing may be increased as directed by the Engineer.

### 3.3 HAUL ROAD MAINTENANCE

- A. The Contractor is responsible for maintenance of the haul and access roads throughout the duration of the contract. The full subbases section shall be restored to the design profile and thickness at the completion of the contract.

## PART 4 - COMPENSATION

### 4.1 MEASUREMENT

- A. Crushed Aggregate Base shall be measured on a per square yard basis for a six (6) inch thick compacted layer.

### 4.2 PAYMENT

- A. Payment for “Crushed Aggregate Base Course, 6” Compacted Thickness” complete in place, shall be made at the Unit Price Bid per square yard under, Construction Items (Dike Raising), Item No. 3001 on the Schedule of Prices. This price shall include all placing, grading, compacting, surveying, and testing. Costs for maintaining and restoring the haul and access roads shall be considered incidental to the granular fill items.
- B. Payment for “Geotechnical Stability Berm Crushed Aggregate Base Course, 6” Compacted Thickness (Bid Additive)” complete in place, shall be made at the Unit Price Bid per square yard under, Construction Items (Dike Raising), Item No. 1009 on the Schedule of Prices. This price shall include all placing, grading, compacting, surveying, and testing. Costs for maintaining and restoring the haul and access roads shall be considered incidental to the granular fill items.
- C. The above prices shall include all the work described in this Section and shown on the Contract Drawings including all labor, materials, services, and equipment necessary to complete the work in every respect to the satisfaction of the Engineer.

– END OF SECTION –

## SECTION 513 PREFABRICATED VERTICAL DRAINAGE WICKS

### PART 1 - GENERAL

#### 1.1 SCOPE

- A. The work covered by this Section includes the furnishing of all materials and equipment and the performing of all labor to complete the installation of prefabricated vertical drainage wicks as required by the Contract Documents. The requirements specified herein are minimum requirements.

#### 1.2 RELATED SECTIONS

- A. Section 509                      Earthwork
- B. Section 511                    Geotextile

#### 1.3 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. Alabama Department of Transportation (ALDOT) Standard Specifications for Highway Construction, 2022 (or latest edition).
- C. ASTM International (ASTM)
 

ASTM D638	Standard Test Method for Tensile Properties of Plastics
ASTM D3776	Mass Per Unit Area (Weight) of Fabric
ASTM D3786	Standard Test Method for Bursting Strength of Textile Fabrics – Diaphragm Bursting Strength Tester Method
ASTM D4491	Standard Test Methods for Water Permeability of Geotextiles by Permittivity
ASTM D4533	Standard Test Method for Trapezoid Tearing Strength of Geotextiles
ASTM D4632	Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
ASTM D4716	Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
ASTM D4751	Standard Test Method for Determining Apparent Opening Size of a Geotextile
ASTM D4833	Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products

#### 1.4 SUBMITTALS

- A. General: Submit the following in accordance with these Specifications. Note that approval of Submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the specifications nor from responsibility for errors of any sort in the submittal.
- B. Samples: At least two (2) weeks prior to the installation of drainage wicks, the Contractor shall submit a representative sample of the vertical drainage wick showing the name of the manufacturer, brand name and type of filter.

- C. Test Results: Certified test results provided by the manufacturer indicating compliance with the specified properties.
- D. Work Plan: The Contractor shall submit to the Engineer, for review and approval, details of the equipment, sequence and method of installation. Approval by the Engineer will not relieve the Contractor of the responsibility to install drainage wicks in accordance with these Specifications.

## PART 2 – PRODUCTS

### 2.1 DRAINAGE WICK

- A. The drainage wick shall be prefabricated, consisting of plastic drainage core, either studded or grooved on both sides to form suitable drainage channels with surrounding but unattached filter made of non-woven polypropylene geotextile.
- B. The drainage wick shall have the following minimum properties:

Property	Test Result	ASTM Test Method
Drain:		
Weight	75 gm/m (0.8 oz/ft)	D3776
Width	95 mm (3.8 inches)	
Thickness	3 mm (1/8 inch)	
Discharge Capacity	90x10-6m <sup>3</sup> /sec (1.5 gpm)	D4716
Core:		
Grab Tensile Strength	0.80 kN (180 lbs)	D638
Fabric:		
AOS (maximum)	0.212mm (No. 70 sieve)	D4751
Grab Tensile Strength	0.575 kN (130 lbs)	D4632
Elongation at Break	>60%	D4632
Trapezoidal Tear	0.267 kN (60 lbs)	D4533
Puncture Strength	0.178 kN (40 lbs)	D4833
Mullen Burst	930 kPa (135 psi)	D3786
Flux	2,240 lpm/m <sup>2</sup> (55 gpm/ft <sup>2</sup> )	D4491
Permeability	0.02 cm/sec	D4491

## PART 3 – EXECUTION

### 3.1 EQUIPMENT

- A. Drainage wicks shall be installed with approved modern equipment of a type that will cause a minimum disturbance of subsoil during installation.
- B. The drainage wick shall be installed using a mandrel sleeve and shall be penetrated into the soil with minimum disturbance. The sleeves shall protect the wick material

from tears, cuts and abrasions during installation and shall be retracted after each drainage wick is installed.

### 3.2 TRIAL WICK INSTALLATION

- A. Prior to the installation of drainage wicks within the designated areas, the Contractor shall demonstrate that his equipment, method and materials produce a satisfactory installation in accordance with these Specifications. For this purpose, the Contractor shall be required to install trial wicks at locations designated by the Engineer. Trial wicks successfully installed to the satisfaction of the Engineer shall be measured and paid for as described in Paragraphs 4.1 and 4.2 of this Section.
- B. Approval by the Engineer of the method and equipment used to install the trial wicks shall not necessarily constitute acceptance of the method for the remainder of the project. If, at any time, the Engineer considers that the method of installation does not produce a satisfactory wick then the Contractor shall alter his method and equipment as necessary to comply with these specifications, at no additional cost to the Administration.

### 3.3 CONSTRUCTION METHODS

- A. The wicks shall be advanced by using a mandrel or sleeve that will be advanced through the sand base dike granular fill material, existing soils, and the compressible strata to the required depth. Either static or vibratory method shall be used for advancing the drains. Jetting shall not be permitted during installation. The mandrel shall be provided with an "anchor" plate at the bottom to prevent the soil from entering the bottom of the mandrel during the installation of the drain and to anchor the bottom of the drain at the required depth at the time of the removal of the mandrel. The mandrel shall be of minimum cross-sectional area required for installing the drains.
- B. Drainage wicks shall be located and staked out by the Contractor within the limits of wick drain installation as shown on the Contract Drawings. The location of the drainage wicks shall not vary by more than 6 inches from the spacing indicated on the Contract Drawings. The equipment shall be carefully checked for plumbness prior to advancing each wick and must not deviate more than 0.5 inch per foot from the vertical. Wicks that are out of their proper location by more than 6 inches or wicks that are damaged in construction, or wicks that are improperly completed shall be rejected by the Engineer and no compensation will be allowed for any materials furnished or for any work performed on such wicks.
- C. Where obstructions are encountered at a depth greater than 5.0' below the working surface that cannot be penetrated using normal and accepted procedures, the Contractor shall complete the drain from the elevation of the obstruction to the working surface and notify the Engineer. At the direction of the Engineer, the Contractor shall then install a new drain within 18 inches of the obstructed drain. The Contractor shall be paid for all obstructed drains at the Contract unit price unless the drain is improperly completed.
- D. Splicing of wicks shall only be permitted if the Contractor can demonstrate to the satisfaction of the Engineer that the splicing will neither decrease the strength nor reduce the flow capacity of the completed wick drain.
- E. Drainage wicks shall be installed from sand base dike granular fill ground surface to the estimated tip elevations shown on the Contract Drawings, or to such a depth where the soil resists a reasonable effort at further penetration. The Engineer may vary the depth, spacing, or the number of wicks to be installed.
- F. During the installation of wicks, the Contractor shall provide suitable means of determining the depth of the drainage wick.



- G. After the installation of each drain, the drain shall be cut neatly such that 12 inches (+/- 3 inches) of drain material extend above the top of the existing subgrade.

#### PART 4 - COMPENSATION

##### 4.1 MEASUREMENT

- A. Prefabricated Vertical Drainage Wicks shall be measured on a linear foot basis from top of the existing surface to the tip of the drainage wick plus 1 foot, complete in place, and accepted by the Engineer. Splices and lost or wasted material shall not be measured.

##### 4.2 PAYMENT

- A. Payment for "Prefabricated Vertical Drainage Wicks" complete in place, shall be made at the Unit Price Bid per vertical linear foot under, Construction Items (Dike Raising), Item No. 2004 on the Schedule of Prices. This price shall be full compensation for the cost of furnishing the full length of drainage wick material, installing the drainage wick, and any alteration of equipment and methods of installation to produce the required result.
- B. The above prices shall include all the work described in this Section and shown on the Contract Drawings including all labor, materials, services, and equipment necessary to complete the work in every respect to the satisfaction of the Engineer.

– END OF SECTION –

## SECTION 514 MISCELLANEOUS METALS

### PART 1 – GENERAL

#### 1.1 SCOPE

- A. The work covered by this Section includes the furnishing of all material and equipment and the performing of all labor to complete fabrication and installation of miscellaneous metal fabrications and Structural steel systems including, materials, installation, workmanship, fabrication, assembly, erection, inspection, quality control, and testing shall be provided in accordance with AISC 360 Chapter N as shown on the Contract Drawings and as herein specified or directed by the Engineer.
- B. This work shall include but is not limited to:
  - 1. Weir Box Structure
  - 2. Ladders
  - 3. Handrails
  - 4. Metal Deck Grating
  - 5. Cover Plates at Outfall Pipes
  - 6. Steel Outfall Pipes
  - 7. Slip on metal flanges at Outfall Pipes & HDPE Pipe Splice

#### 1.2 RELATED WORK

- A. Section 518                      Cast-in-Place Concrete
- B. Section 519                      Pre-Engineered Walkway

#### 1.3 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. American National Standards Institute (ANSI)
  - ANSI B18.2.1                      Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head and Lag Screws (Inch Series)
  - ANSI B18.2.2                      Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)
  - ANSI B18.6.2                      Square Head Set Screws and Slotted Headless Set Screws (Inch Series)
  - ANSI B18.6.3                      Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series)
  - ANSI B18.21.1                      Washers: Helical Spring-Lock, Tooth Lock and Plain Washers (Inch Series)
  - ANSI B18.22.1                      Washers: Helical Spring-Lock, Tooth Lock and Plain Washers (Inch Series)
- C. American Society of Mechanical Engineers (ASME)

ASME BPVC SEC II-C Boiler and Pressure Vessel Code: Section II: Materials – Part C: Specifications for Welding Rods, Electrodes, and Filler Metals

D. American Institute of Steel Construction (AISC)

AISC 360 Structural Steel Buildings

E. ASTM International (ASTM)

ASTM A 36 Carbon Structural Steel

ASTM A 53 Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

ASTM A 123 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A 153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ASTM A 572 High-Strength Low-Alloy Columbium-Vanadium Structural Steel

ASTM A 687 High-Strength Nonheaded Steel Bolts and Studs

ASTM A 780 Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

ASTM A 992 Structural Steel Shapes

ASTM F1554 Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

ASTM F3125/F3125M Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength

F. American Welding Society, Inc. (AWS)

AWS D1.1 Structural Welding Code Steel

AWS QC1 AWS Certification of Welding Inspectors

G. National Association of Architectural Metal Manufacturers (NAAMM)

NAAMM MBG 531 Metal Bar Grating Manual

H. Steel Structures Painting Council (SSPC)

SSPC-SP 1 Solvent Cleaning

SSPC-SP 6 Commercial Blast Cleaning

I. Research Council on Structural Connections of the Engineering Foundation (RSCS)

1.4 SUBMITTALS

A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.

B. Drawings

1. Weir Box Structure

2. Handrails

3. Ladders
  4. Metal Deck Grating
  5. Cover Plates at Outfall Pipes
  6. Steel Outfall Pipes
  7. Slip on metal flanges at Outfall Pipes & HDPE Pipe Splice
- C. Statements
1. Welding procedure qualifications
  2. Nondestructive examination (NDE) procedures
  3. NDE personnel certification procedures
  4. Welding Inspector certification
- D. Welding Procedures and Qualifications
1. Specifications and Test Results: Submit copies of the welding procedure specifications and procedure qualification test results for each type of welding required. Approval of any procedure does not relieve the Contractor of the responsibility for producing acceptable welds.
  2. Certification: Before assigning welders or welding operators to the work, submit their names, together with certification that each individual is performance qualified as specified. Do not start welding work prior to procedure qualification. The certification shall state the type of welding and positions for which each is qualified, the code and procedure under which each is qualified, date qualified, and the firm and individual certifying the qualification tests. Welder qualification certificates shall bear the approval of the certified welding inspector.
- E. Certificates
1. Adhesive anchors
  2. Anchor bolts
  3. Structural carbon steel
  4. High strength bolts and nuts
- F. Certifications, test procedures, and other submittals shall show the appropriate ASTM test(s) for each material.
- G. Records
1. Weld Identifications: Submit a list of the welder's names and symbol for each welder. To identify welds, submit written records indicating the location of welds made by each welder or welding operator.
- 1.5 QUALIFICATION OF WELDERS
- A. Qualify welders in accordance with AWS D1.1 using procedures, materials, and equipment of the type required for the work.
- 1.6 QUALITY ASSURANCE
- A. Procedures: Develop and qualify procedures for welding metals included in the work. Do not start welding until welding procedures, welders, and welding operators have been qualified. Perform qualification testing by a testing laboratory approved by the Engineer. Notify the Engineer at least 24 hours in advance of the time and place of the tests. When practicable, perform the qualification tests at or near the work site.

Maintain current records of the test results obtained in welding procedure, welding operator/welder performance qualifications, and nondestructive examination (NDE) procedures. These records shall be readily available at the site for examination by the Engineer. Qualify the procedures for making transition welds between different materials or between plates or pipes of different wall thicknesses. The choice of welding process shall be the responsibility of the Contractor.

- B. Previous Qualifications: Welding procedures, welders, and welding operators previously qualified by test may be accepted for the work without requalification provided that the following conditions are fulfilled:
1. Copies of welding procedures, procedures qualification test records, and welder and welding operator performance qualification test records are submitted and approved in accordance with the paragraph entitled "Submittals".
  2. Testing was performed by an approved testing laboratory or technical consultant or by the Contractor's approved quality control organization. The welding procedures, welders, and welding operators were qualified in accordance with AWS D1.1, and base materials, filler materials, electrodes, equipment, and processes conformed to the applicable requirements of this specification.
  3. The requirements of paragraph entitled "Welder and Welding Operator Performance Qualification for renewal of qualification were met, and records showing name of employer and period of employment using the process for which qualifications are submitted as evidence of conformance.
- C. Performance: The Contractor shall be responsible for the quality of joint preparation, welding, and examination. Clearly identify and record materials used in the welding operations. The examination and testing defined in this specification area minimum requirements. Provide additional examination and testing as necessary to achieve the quality required.
1. Welding Procedures Qualification: Qualification of the welding procedures for each group of materials to be welded is required as indicated in AWS D1.1. Record in detail and qualify the "Welding Procedure Specification" for every welding procedure proposed. Qualification for each welding procedure shall conform to the requirements of AWS Standards and to this specification. The welding procedures shall specify end preparation for weld, including cleaning, alignments, and root openings. Preheat, interpass temperature control, and postheat treatment of welds shall be as required by AWS, unless otherwise indicated or specified. Welding procedure qualifications shall be identified individually and referenced on the shop drawings or suitably keyed to the contract drawings.
  2. Welder and Welding Operator Performance Qualification: Qualify each welder and welding operator who is assigned to work covered under this specification by performance tests using equipment, positions, procedures, base metals, and electrodes or bare filler wires from the same specification, classification, or group number that will be encountered on his assignment. Welders or welding operators who make acceptable procedure qualification tests will be considered performance-qualified for the welding procedure used. Determine performance qualification in accordance with AWS D1.1 and as specified.
  3. Renewal of Qualification: Requalification of a welder or welding operator shall be required under one or any combination of the following conditions:
    - a. When a welder or welding operator has not used the specific welding process for a period of three (3) months. The period may be extended to six (6) months if the welder has been employed on another welding process.

- b. There is specific reason to question the welder's ability to make welds that will meet the requirements of the specifications.
  - c. The welder or welding operator was qualified by an employer other than those firms performing work under this contract and a qualification test has not been taken within the preceding 12 months. Renewal of qualification under this condition need be made on only a single test joint of any thickness, position, or material to reestablish qualification for any thickness, position, or material for which the welder or welding operator had qualified previously.
4. Qualification of Inspection and Nondestructive Examination (NDE) Personnel: Qualify Inspection and nondestructive examination personnel in accordance with the following requirements:
- a. Welding Inspector Certification: Qualify welding inspectors in accordance with AWS QC1.
  - b. NDE Personnel Certification Procedures: Certify NDE personnel and establish a written procedure for the control and administration of NDE personnel training, examination, and certification. Base procedures on appropriate specific and general guidelines of training and experience recommended by ASNT SNT-TC-1A, Supplement C-Ultrasonic.

#### 1.7 DELIVERY, STORAGE, AND PROTECTION

- A. Protect from corrosion, deformation, and other types of damage. Store items in an enclosed area free from contact with soil and weather. Remove and replace damaged items with new items.
- B. Weld Material: Deliver filler metals, electrodes, fluxes, and other welding materials to the site in manufacturer's original packages and store in a dry space until used. Label and design packages properly to give maximum protection from moisture and to assure safe handling.

#### 1.8 ENVIRONMENTAL

- A. Do not perform welding when the quality of the completed weld could be impaired by the prevailing work or weather conditions. The Engineer will determine when the weather or working conditions are unsuitable for welding.

### PART 2 – PRODUCTS

#### 2.1 MATERIALS

- A. Anchor Bolts, Nuts and Washers
  - 1. Adhesive Anchor Bolts: HILTI RE 500 V3 or approved equal.
  - 2. Anchor bolts shall conform to ASTM F1554 Grade 55, unless otherwise noted. Where exposed, anchor bolts shall be of the same material, color, and finish as the metal to which applied.
  - 3. Bolts, Nuts, Studs and Rivets: ASMC/ANSI B18.2.2 and ASTM A 687 or ASTM F 3125 Grade A 325, as noted.
  - 4. Screws: ANSI B18.2.1, ANSI B18.6.2, and ANSI B18.6.3.
  - 5. Washers: Provide plain washers to conform to ANSI B18.22.1. Provide beveled washers for American Standard beams and channels, square or rectangular, tapered in thickness, and smooth. Provide lock washers to conform to ANSI B18.21.1.
- B. Steel Pipe: ASTM A 53, Type E or S, Grade B and AWS D1.1

- C. Miscellaneous Steel Plates and Structural Shapes: Wide flange ASTM A 992, angles, channels, misc. shapes, and plates ASTM A 572 Grade 50 – Unless otherwise noted

## 2.2 FABRICATION FINISHES

- A. Galvanize: Anchor bolts, grating fasteners, washers, and parts or devices necessary for proper installation, unless indicated otherwise.
- B. Galvanizing
  - 1. Bolts, Nuts, and Washers: ASTM A 153, Class C or D as applicable.
  - 2. Handrails, Hanging Platforms, Walkway, and Plates and Structural Shapes: ASTM A 123, Thickness Grade 100.
  - 3. Hot-dip galvanized items specified to be zinc-coated, after fabrication where practicable.
- C. Surface Preparation: Blast clean surfaces in accordance with SSPC-SP6. Clean surfaces which become contaminated with rust, dirt, oil, grease, or other contaminants with solvents in accordance with SSPC-SP1. Steel to be embedded in concrete shall be free of dirt and grease.
- D. Repair of Zinc-Coated Surfaces: Repair damaged surfaces with galvanizing repair method and paint conforming to ASTM A 780 or by the application of stick or thick paste material specifically designed for repair of galvanizing, as approved by the Engineer. Clean areas to be repaired and remove the slag from the welds. Heat surfaces to which stick or paste material is applied, with a torch to a temperature sufficient to melt the metallics in stick or paste; spread the molten material uniformly over surfaces to be coated and wipe the excess material off.
- E. Nonferrous Metal Surfaces: Protect by plating, anodic, or organic coatings.

## 2.3 MISCELLANEOUS PLATES AND SHAPES

- A. Provide for items that do not form a part of the structural steel framework, such as miscellaneous mountings, frames, and connections. Provide for connections and fastener welds as indicated.

## 2.4 WELDING MATERIALS

- A. Comply with ASME BPVC SEC II-C. Welding equipment, electrodes, welding wire, and fluxes shall be capable of producing satisfactory welds when used by a qualified welder or welding operator using qualified welding procedures.

## 2.5 FLOOR GRATINGS

- A. Design steel grating in accordance with NAAM MBG 531 for bar type gratings. Galvanize steel floor gratings.
  - 1. Design floor gratings to support a stress live load of 100 pounds per square foot for the spans indicated, with maximum deflection of  $L/240$ .
  - 2. In accordance with NAAM MBG 531, band edges of grating with bars of the same size as the bearing bars. Weld banding in accordance with the manufacturer's standard for trim. Design tops of bearing bars, cross or intermediate bars to be in the same plane and to match grating finish.
  - 3. Anchor gratings to structural members with bolts, toggle bolts, or expansion shields and bolts or otherwise in accordance with manufacturer's recommended system.
  - 4. Provide slip resistant surface finishes.

## PART 3 – EXECUTION

### 3.1 INSTALLATION

- A. Install items at locations indicated, according to manufacturer's instructions. Items listed below require additional procedures.

### 3.2 ANCHORAGE, FASTENINGS, AND CONNECTIONS

- A. Provide anchorage where necessary for fastening miscellaneous metal items securely in place. Include for anchorage not otherwise specified or indicated, expansion shields or adhesive anchors for concrete; machine and carriage bolts for steel. Do not use wood plugs in any material. Provide non-ferrous attachments for non-ferrous metal. Make exposed fastenings of compatible materials, generally matching in color and finish, to which fastenings are applied. Conceal fastenings where practicable.

### 3.3 BUILT-IN WORK

- A. Form for anchorage metal work built-in with concrete or masonry or provide with suitable anchoring devices as indicated or as required. Furnish metal work in ample time for securing in place as the work progresses.

### 3.4 BOLTED CONSTRUCTION

- A. Install according to AISC 360 Chapter N. High strength bolts shall be pretensioned in accordance with RCSC Specifications.
- B. Field treat damaged galvanized finish with two coats of high zinc dust oxide paint, cold galvanizing compounds or approved equal conforming to the requirements of ASTM A 780. In addition, all exposed threaded surfaces shall be painted with two coats of high zinc dust oxide paint after installation of unit.

### 3.5 WELDING

- A. Perform welding, welding inspection, and corrective welding, in accordance with AWS D1.1 unless noted below. Use continuous welds on all exposed connections. Grind visible welds smooth in the finished installation.
- B. Welding: Do not deviate from applicable codes, approved procedures, and approved shop drawings without prior written approval from the Engineer. Materials or components with welds made off the site will not be accepted if the welding does not conform to the requirements of this specification unless otherwise specified. Assign each welder or welding operator an identifying number, letter, or symbol that shall be used to identify his welds. Each welder or welding operator shall apply his mark adjacent to his weld using an approved rubber stamp or felt-tipped marker with permanent, weatherproof ink or other approved methods that do not deform the metal. For seam welds, place identification marks adjacent to the welds at 3-foot intervals. Confine identification by die stamps or electric etchers to the weld reinforcing crown, preferably in the finished crater.
- C. Welding Operators: Perform welding in accordance with qualified procedures using qualified welders and welding operators.

### 3.6 EXAMINATIONS AND TESTS

- A. Visual and nondestructive examinations shall be performed by an AWS-certified welding inspector paid for by the Contractor to detect surface and internal discontinuities in completed welds. The services of a qualified commercial inspection or testing laboratory or technical consultant shall be approved by the Engineer. Visually examine welds and ultrasonic examination shall be required as specified. When examination and testing indicate defects in a weld joint, a qualified welder shall repair the weld in accordance with the Paragraph 3.8 of this Section.



- B. Visual Examination: Visually examine 100 percent of welds as follows:
  - 1. Before Welding - for compliance with requirements for joint preparation, placement of backing rings or consumable inserts, alignment and fit-up and cleanliness.
  - 2. During Welding - for conformance to the qualified welding procedure.
  - 3. After Welding - for cracks, contour and finish, bead reinforcement, undercutting, overlap, and size of fillet welds.
- C. Nondestructive Examination: NDE shall be in accordance with written procedures. Procedures for ultrasonic tests and methods shall conform to AWS D1.1. The approved procedure shall be demonstrated to the satisfaction of the Engineer's QA personnel. In addition to the information required in AWS, the written procedures shall include:
  - 1. Timing of the nondestructive examination in relation to the welding operations.
  - 2. Safety precautions.
- D. 25 Percent NDE: All steel welding shall be subjected to 25 Percent NDE unless noted otherwise. Additional testing may be required if unsatisfactory results are obtained.

### 3.7 ACCEPTABLE STANDARDS

- A. Visual: The following indications are unacceptable:
  - 1. Cracks – external surface
  - 2. Undercut on surface which is greater than 1/32 inch (1.0 mm) deep.
  - 3. Lack of fusion on surface.
  - 4. Convexity of fillet weld surface greater than 10 percent of longest leg plus 0.03 inch (1.0 mm).
  - 5. Concavity in fillet welds greater than 1/16 inch (2.0 mm).
  - 6. Fillet weld size less than indicated or greater than 1-1/4 times the minimum specified fillet leg length.
- B. Ultrasonic Examination: Linear type discontinuities are unacceptable if the amplitude exceeds the reference level and discontinuities have lengths which exceed the following:
  - 1. 3/4-inch (19.0 mm)
  - 2. Discontinuities are interpreted to be cracks, lack of fusion, and incomplete penetration are unacceptable regardless of length.

### 3.8 CORRECTIONS AND REPAIRS

- A. Remove defects and replace welds as specified. Repair defects discovered between weld passes before additional weld material is deposited. Wherever a defect is removed, a repair by welding is not required, the affected area shall be blended into the surrounding surface eliminating sharp notches, crevices, or corners. After defect removal is complete and before rewelding, reexamine the area by the same test methods which first revealed the defect to ensure that the defect has been eliminated. After rewelding, reexamine the repaired area by the same test methods originally used for that area. For repairs to base material, the minimum examination shall be the same as required for butt welds. Indication of a defect shall be regarded as a defect unless reevaluation by NDE or by surface conditioning shows that no unacceptable indications are present. The use of foreign material to mask, fill in, seal or disguise welding defects will not be permitted.

### 3.9 FIELD QUALITY CONTROL

- A. Perform field tests, and provide labor, equipment, and incidentals required for testing. The Engineer shall be notified in writing of defective welds, within 7 working days of the date of the weld inspection.
- B. Welds
  - 1. Visual Inspection: AWS D1.1. Furnish the services of AWS-certified welding inspectors for fabrication and erection inspection and testing and verification inspections. Welding inspectors shall visually inspect and mark welds, including fillet weld and returns.
  - 2. Non-Destructive Testing: AWS D1.1. Test locations shall be as indicated. If more than 20 percent of welds made by a welder contain defects identified by testing, then all welds made by said welder shall be tested by radiographic or ultrasonic testing, as approved by the Engineer. When all welds made by an individual welder are required to be tested, magnetic particle testing shall be used only in areas inaccessible to either radiographic or ultrasonic testing. Retest defective areas after repair.

## PART 4 – COMPENSATION

### 4.1 MEASUREMENT

- A. Weir box steel framing & steel outfall pipes shall be measured per ton of steel.
- B. Weir box metal grating shall be measured per square foot.
- C. All other miscellaneous metals, such as bolts and hardware, shall not be measured and shall be considered incidental to the Weir box steel framing construction.

### 4.2 PAYMENT

- A. Payment for “Weir Box Steel Framing”, complete in place, shall be made by the Unit Price Bid per ton of steel under, Construction Items (Weir Boxes), Item No. 1005 on the Schedule of Prices. This Price shall include all fabrication, galvanizing, assembly, erection, and testing.
- B. Payment for “Weir Box Metal Grating”, complete in place, shall be made by the Unit Price Bid per square foot under, Construction Items (Weir Boxes), Item No. 1007 on the Schedule of Prices. This Price shall include all fabrication, assembly, and erection.
- C. The above prices shall include all the work described in this Section and shown on the Contract Drawings including all labor, materials, services, and equipment necessary to complete the work to the satisfaction of the Engineer.

– END OF SECTION –

## SECTION 515 HEAVY TIMBER CONSTRUCTION

### PART 1 - GENERAL

#### 1.1 SCOPE

- A. The work covered by this Section includes the furnishing of all material and equipment, and the performing of all labor to complete the heavy timber construction as shown on the Contract Drawings and as herein specified or directed by the Engineer.
- B. This work shall include but is not limited to:
  - 1. Weir Boards

#### 1.2 RELATED SECTIONS

- A. Section 514                      Miscellaneous Metals

#### 1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. American Institute of Timber Construction (AITC)
  - AITC 108                      Standard for Heavy Timber Construction
- C. American National Standards Institute (ANSI)
  - ANSI B18.2.2                Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)
  - ANSI B18.22.1              Washers: Helical Spring-Lock, Tooth Lock, and Plain Washers (Inch Series)
- D. ASTM International (ASTM)
  - ASTM A 36                    Carbon Structural Steel
  - ASTM A 123                  Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
  - ASTM A 153                  Zinc Coating (Hot-Dip) on Iron and Steel Hardware
  - ASTM A 307                  Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
  - ASTM A 780                  Repair of Damaged and Uncoated Areas of Hot-Dipped Galvanized Coatings
- E. American Wood Preserver's Association (AWPA)
  - AWPA C1                    All Timber Products – Preservative Treatment by Pressure Process
  - AWPA C2                    Lumber, Timber, Bridge Ties and Mine Ties – Preservative Treatment by Pressure Process
  - AWPA C18                   Standard for Pressure Treated Material in Marine Construction
  - AWPA M4                    Standard for the Care of Preservative-Treated Wood Products

#### 1.4 SUBMITTALS

- A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from

responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.

- B. Certifications, test procedures, and other submittals shall show the appropriate ASTM or AWWA standard(s) for each material.
- C. Submit manufacturer's data, test reports, certifications, and installation instructions for all materials, including but not limited to:
  - 1. Hardware including steel shapes and fasteners
  - 2. Treated timber materials
  - 3. Timber preservative
- D. Shop drawings detailing fabrication and erection of each timber system indicated. Include plans, elevations, sections, and details of members of their connection. Show anchorage and accessory items.
- E. Submit certification by treating plant that required treatments comply with specified standards.

## 1.5 QUALITY ASSURANCE

- A. Comply with AITC 108.
- B. Timber is to be graded in accordance with Southern Pine Inspection Bureau "Grading Rules" or West Coast Lumber Inspection Bureau "Standard Grading Rules for West Coast Lumber."

## 1.6 PROJECT CONDITIONS

- A. Field Measurements: All timber framing must be measured for accurate fit in the field prior to fabrication. Avoid cutting members to fit in the field after treatment has been applied wherever possible.

## PART 2 - PRODUCTS

### 2.1 MATERIAL

#### A. Lumber and Timber

- 1. General: Comply with the grading rules of grading agency for species of timber used. Southern Pine Inspection Bureau (SPIB), West Coast Lumber Inspection Bureau (WCLIB).
- 2. Solid Sawn: Provide solid, rough sawn (undressed) lumber and timbers of stress-rated Southern Pine. Weir Boards to be Non-Dense Select Structural Grade with the following minimum stress values:
  - a. Members size 4"x 6" (dry service conditions)
    - 1) Bending: 1850 psi
    - 2) Shear parallel to the grain: 175 psi
    - 3) Compression perpendicular to the grain: 480 psi
  - b. Members size 5"x 5" (dry service conditions)
    - 1) Bending: 1850 psi
    - 2) Shear parallel to the grain: 175 psi
    - 3) Compression perpendicular to the grain: 480 psi

3. Framing members to be identified by the grade mark of a recognized association or independent inspection agency using the specific grading requirements of the association recognized as covering the species used. The association or independent inspection agency shall be certified by the American Lumber Standards Committee.
4. Treat by the full-cell process using ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), chromated copper arsenate (CCA) to a net retention of 2.50 pounds per cubic foot in accordance with AWPA C1, AWPA C2 and AWPA C18 for treated lumber and timbers.

#### B. Hardware

1. Hardware shall include bolts with nuts and washers, nails, spikes, and other metal fastenings.
2. Bolts: ASTM A 307
3. Nuts: ANSI B 18.2.2
4. Washers: ANSI B 18.22.1
5. Steel Plates and Pipe Straps: ASTM A 36
6. All hardware, except stainless, shall be hot-dip galvanized in accordance with ASTM A 123 and ASTM A 153, as applicable.

### PART 3 – EXECUTION

#### 3.1 CUTTING

- A. Avoid extra cutting of timber members after treatment wherever possible. Where members must be cut during erection, apply a heavy brush coat of the same treatment complying with AWPA M4.

#### 3.2 GALVANIZED SURFACES

- A. Repair damaged surfaces with galvanizing repair method and paint conforming to ASTM A 780 or by the application of stick or thick paste material specifically designed for repair of galvanizing, as approved by the Engineer. Clean areas to be repaired and remove the slag from the welds. Heat surfaces to which stick or paste material is applied, with a torch to a temperature sufficient to melt the metallics in stick or paste; spread the molten material uniformly over surfaces to be coated and wipe the excess material off.

#### 3.3 FASTENING

- A. Use washers of the size and type specified under all bolt heads and nuts in contact with wood. Burr threads of all bolts after nuts have been finally tightened. Vertical bolts shall have nuts on the lower end. All bolts shall have sufficient additional threading to allow for splits or cracks or existing members to be pulled together adequately.

### PART 4 – COMPENSATION

#### 4.1 MEASUREMENT

- A. Weir box timbers shall be measure per board foot of timber.

#### 4.2 PAYMENT

- A. Payment for “Weir Box Timber”, complete in place, shall be made by the Unit Price Bid per board foot under, Construction Items (Weir Boxes), Item No. 1008 on the Schedule of Prices. This Price shall include furnishing of timber boards for weir boards on all 4

sides of the weir boxes, installing of all timber work, hardware, and all other incidentals to complete the work included in the Contract Documents. The installation cost should only include the three permanent sides of each weir boxes as indicated in the drawings. The remaining side shall be installed by the Dike Operators during operation as needed.

- B. The above prices shall include all the work described in this Section and shown on the Contract Drawings including all labor, material, services, and equipment necessary to complete the work in every respect to the satisfaction of the Engineer.

– END OF SECTION –

## SECTION 516 COATING OF STEEL STRUCTURES

### PART 1 - GENERAL

#### 1.1 SCOPE

- A. Coating of steel waterfront structures consists of the installation of a coating component to protect steel from corrosion.

#### 1.2 RELATED WORK

- A. Section 514                      Miscellaneous Metals

#### 1.3 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. Unless otherwise indicated, the most recent edition of the publication, including any revisions, shall be used.

- B. American Institute of Steel Construction (AISC)

AISC SPE                      Sophisticated Paint Endorsement

- C. ASTM International (ASTM)

ASTM D7091                      Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nondestructive Coatings Applied to Non-Ferrous Metals

ASTM E376                      Measuring Coating Thickness by Magnetic-Field or Eddy-Current (Electromagnetic) Test Methods

- D. National Association of Corrosion Engineers (NACE)

NACE RP0188                      Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrate

- E. The Society for Protective Coatings (SSPC)

SSPC PS 12.01                      One Coat Zinc-Rich Painting System

SSPC Paint 20                      Zinc-Rich Primers (Type I, Inorganic, and Type II, Organic)

SSPC Paint 36                      Two-Component Weatherable Aliphatic Polyurethane Topcoat, Performance-Based

SSPC QP 3                      Evaluating Qualifications of Shop Painting Applicators

SSPC SP 1                      Solvent Cleaning

SSPC SP 10/NACE No. 2 Near-White Blast Cleaning

#### 1.4 SUBMITTALS

- A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.

- B. Product Data

1. Coating material manufacturer's data
2. Coating material manufacturer's application instructions

- C. Procedures
  - 1. Coating repair procedures
  - 2. Quality control procedures
- D. Inspection Reports
  - 1. Dry film thickness measurements
  - 2. Holiday test results
- E. Certificates
  - 1. Shop coating contractor qualifications
  - 2. Shop coating inspector qualifications

## 1.5 QUALITY ASSURANCE

A. Shop coating Contractor shall possess a current SSPC QP 3 or AISC SPE certification. Application of coating in the shop and in the field shall be done under the supervision of an experienced coating inspector. Contractor shall submit Coating Manufacturer / Installer dry film thickness measurements and holiday testing results prior to delivery of steel pile or pipe to site. Contractor shall visually inspect steel pile and pipe for damaged coating prior to installation. Testing and inspection shall be in accordance with paragraph titled "Quality Control" of this section.

## 1.6 ENVIRONMENTAL CONDITIONS

A. Start work only when ambient and curing temperatures are within limits of coating manufacturer's recommendations and at least 5 degrees F above dew point temperature. Do not clean or apply exterior coatings when damp or exposed to foggy, rainy, or snowy weather, when relative humidity is outside the humidity ranges required by the coating manufacturer, when metallic surface temperature is less than 5 degrees above the dew point of the surrounding air, or when surface temperature is below 45 degrees F or over 95 degrees F, unless approved by the Engineer.

## 1.7 SAFETY AND HEALTH PRECAUTIONS

A. Materials listed in this section contain coal tar pitch volatiles, which are toxic. Follow safety procedures as recommended by the manufacturer. Work in a well-ventilated area. Provide, and require workers to use impervious clothing, gloves, face shields (8-inch minimum), and other appropriate protective clothing necessary to prevent eye and skin contact with coating materials. Keep coatings away from heat, sparks, and flame.

## PART 2 - PRODUCTS

### 2.1 COATING SYSTEMS

A. Coating: Provide catalyst component for coating specific for the system. Use thinners which are compatible with the coating. Provide the coating systems specified herein or an approved equal.

- B. Organic Zinc-Rich Primer (Carboline Carbozinc® 859 or approved equivalent)
  - 1. System: SSPC PS 12.01
  - 2. Paints: SSPC Paint 20, Type II (Organic)
- C. Epoxy-Polyamide (Carboline Carboguard® 60 or approved equivalent)
  - 1. Color: Dark Gray
- D. Acrylic Polyurethane (Carboline Carbothane® 134 or approved equivalent)



1. Paints: SSPC Paint 36
2. Color: Black

### PART 3 - EXECUTION

#### 3.1 CLEANING AND PREPARATION OF SURFACES

- A. Solvent Cleaning: SSPC SP 1. Remove visible oil or grease first by scraper. Then remove the remaining oil and grease by wiping or scrubbing the surface with rags or brushes wetted with solvent. Use clean solvent and clean rags or brushes for the final wiping.
- B. Power Tool Cleaning: SSPC SP3. Use power tools like power wire brushing, power sanding, or power grinding to remove loose contaminants, rust, paint, and other contaminants that may be detrimental to coating applications. Avoid creating sharp ridges, burrs, or sharp cuts.
- C. Blast Cleaning: SSPC SP 10/NACE No. 2. After solvent cleaning, complete surface preparation by near-white blast cleaning. Remove residual dust from blasted surface by blowing with dry, oil-free air, vacuuming, or sweeping. Provide surface profile of at least 1 1/2-mil thickness.
- D. Additional Preparation: After blast cleaning, surface imperfections that remain shall be removed as necessary to provide a holiday free coating. After blast cleaning and any additional preparation, remove visible oil, grease, and drawing and cutting compounds by solvent cleaning in accordance with SSPC SP 1.

#### 3.2 PROPORTIONING AND MIXING OF COATING SYSTEM

- A. Proportioning of Organic Zinc-Rich Primer System: Mix and thin in accordance with manufacturer's recommendations.
- B. Proportioning of Epoxy-Polyamide System: Proportion per manufacturer's recommendations.
- C. Mixing of Epoxy-Polyamide System: Mix per manufacturer's recommendations.

#### 3.3 COATING APPLICATION

- A. Apply primer coating to dry surfaces not more than 4 hours after near-white blast cleaning. Apply coats of each system so that finished surfaces are free from runs, sags, brush marks, and variations in color.
- B. Application Method: Allow previous coat to dry to tack-free condition but not more than 72 hours before applying next coat. Under conditions of direct sunlight or elevated ambient temperatures of 90 degrees F or greater, limit inter-coat drying period to a maximum of 24 hours.
- C. Repair of Defects: Repair detected coating holidays, thin areas, and exposed areas damaged prior to or during installation by surface treatment and application of additional coating or by manufacturer's recommendations. Allow a period of at least 72 hours to pass following final coat before placing in immersion service.
- D. Coal Tar Epoxy-Polyamide System: Apply a minimum of two (2) coats, each coat at a dry film thickness (DFT) of no less than 8-mils.
- E. Dry Film Thickness: Provide total system minimum dry film thickness of 16 mils. Measure using a magnetic gage.

#### 3.4 SURFACES TO BE COATED

- A. All Weir Box Steel Framing, including rolled steel shapes, steel outfall pipes and plates.

- B. All surfaces of the steel framing where the coating is damaged or removed for welding the steel outfall pipe and its cover plate to the columns, shall be prepared to SSPC SP 3 standards and re-coated with the same product as the original coating.

### 3.5 QUALITY CONTROL

- A. Holiday Testing: Prior to shipping, test 100% of coated surfaces for holidays in total coating system in accordance with NACE RP0188. Noted holidays shall be repaired in accordance with the Manufacturer's procedures.
- B. Dry Film Thickness: After repair of holidays, measure dry film thickness using a magnetic dry film thickness gage in accordance with ASTM D7091 and ASTM E376. If any region of coated surface has insufficient coating thickness or holidays, the coating on that region shall be repaired with an approved coal tar epoxy product. Re-measure after an additional coat is applied, if necessary to meet minimum coating thickness requirements.
- C. Test Results: Submit report of coating test results. Note defective areas and corrective measures taken.

## PART 4 - COMPENSATION

### 4.1 MEASUREMENT

- A. Coating work shall not be measured and shall be considered incidental to the weir box steel framing structure construction.

### 4.2 PAYMENT

- A. Payment for coating work is incidental and shall be included within "Weir Box Steel Framing", complete in place, shall be made by the Unit Price Bid per ton of steel under, Construction Items (Weir Boxes), Item No. 1005 on the Schedule of Prices.
- B. The above prices shall include all the work described in this Section and shown on the Contract Drawings including all labor, materials, services, and equipment necessary to complete the work to the satisfaction of the Engineer.

– END OF SECTION –

## SECTION 517 WEIR BOX DISCHARGE PIPING

### PART 1 - GENERAL

#### 1.1 SCOPE

A. The work covered by this Section includes the furnishing of all materials and equipment and the performing of all labor to complete the weir box discharge piping system as required by the Contract Documents. The work shall include:

1. High Density Polyethylene (HDPE) Pipe
2. Pipe Fittings

#### 1.2 RELATED SECTIONS

A. Section 509 Earthwork

#### 1.3 REFERENCES

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

B. Unless otherwise indicated the most recent edition of the publication, including any revisions, shall be used.

C. Alabama Department of Transportation (ALDOT). Standard Specifications for Highway Construction, 2022 (or latest edition).

D. American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M294 Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter

E. ASTM International (ASTM)

ASTM D3350 Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

ASTM F714 Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter

ASTM F2620 Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings

#### 1.4 SUBMITTALS

A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.

B. Submit HDPE Pipe and piping fixtures product data and shop drawings.

C. Submit product data and shop drawings detailing the connection of the HDPE piping to the proposed weir box structures and the existing 30-inch diameter HDPE pipes.

D. Submittals to be made in accordance with General Provisions, Division IV Section 70 Control of Materials and shall include pipe and fitting, aggregate gradation and texts, precast junction box shop drawings.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage: Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris.

Before, during, and after installation, plastic pipe and fittings shall be protected from any environment that would result in damage or deterioration to the material. The Contractor must always keep a copy of the manufacturer's instructions available at the construction site and follow these instructions unless directed otherwise by the Engineer. Solvents, solvent compounds, lubricants, elastomeric gaskets, and any similar materials required to install plastic pipe shall be stored in accordance with the manufacturer's recommendations and shall be discarded if the storage period exceeds the recommended shelf life. Solvents in use shall be discarded when the recommended pot life is exceeded.

- B. Handling: Materials shall be handled in a manner that ensures delivery to the trench in sound, undamaged condition. Pipe shall be carried to the trench, not dragged or rolled.

## PART 2 - PRODUCTS

### 2.1 HDPE PIPE FOR WEIR BOX DISCHARGE

- A. High Density Polyethylene (HDPE) discharge pipes shall have a diameter of 30 inches or 36 inches and shall conform to AASHTO M294.

#### 1. Polyethylene Pipe and Fittings

- a. Materials used for the manufacture of polyethylene pipe and fittings shall be PE 3608 high density polyethylene meeting cell classification 345464C for black per ASTM D3350; and shall be listed in the name of the pipe and fitting Manufacturer in PPI (Plastics Pipe Institute) TR-4, 2010; with a standard grade HDB rating of 160 psi at 73°F. The manufacturer shall certify that the materials used to manufacture pipe and fittings meet these requirements. The fitting material may be gray or black.
- b. Polyethylene pipe shall be manufactured in accordance with ASTM F714 and shall be so marked. Each production lot of material or pipe shall be tested for melt index, density and for black pipe, % carbon. Each production lot of pipe shall be tested for dimensions and ring tensile strength.
- c. Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings. Fabricated fittings shall be rated for internal pressure service at least equal to the full-service pressure rating of the mating pipe.
- d. Polyethylene flange adapters shall be made with sufficient through-bore length to be clamped in a butt fusion-joining machine without the use of a stub-end holder. The sealing surface of the flange adapter shall be machined with a series of small v-shaped grooves (serrations) to promote gasketless sealing, or restrain the gasket against blowout.
- e. Back-up rings & flange bolts. Flange adapters shall be fitted with convoluted ductile iron backup rings. The back-up ring bore shall be chamfered or radiused to provide clearance to the flange adapter radius. Flange bolts and nuts shall be Grade 2 or higher.

## PART 3 – EXECUTION

### 3.1 GENERAL

- A. The Contractor shall be responsible for verifying all field conditions as shown on the Contract Drawings.

### 3.2 EXCAVATION THROUGH DIKE

- A. Excavation through the dike shall conform to the plans and drawings and in accordance with Specification Section 509, "Earthwork" and all applicable codes.

Where necessary, trench walls shall be shored or reinforced, and all necessary precautions shall be taken to ensure a safe working environment. The grade and slope of the pipe trench shall be as shown on the drawings.

### 3.3 PIPE FOUNDATION AND BEDDING

- A. The bedding surface for the pipe shall provide a firm foundation of uniform density throughout the entire length of the pipe. When rock is encountered, it shall be removed and replaced with a minimum 8 inch select backfill. When unsuitable foundation material is encountered, it shall be removed and replaced with select backfill for the full width of the trench. The middle of the bedding equal to 1/3 of the pipe outside diameter shall be loosely placed, with the remainder compacted to a minimum of 90% standard proctor density.

### 3.4 HEAT FUSION JOINING

- A. Joints between plain end pipes and fittings shall be made by butt fusion using procedures that are in accordance with ASTM F2620. The Contractor shall ensure that persons making heat fusion joints have received training in the recommended procedure. The Contractor shall maintain records of trained personnel and shall certify that training was received not more than 12 months before commencing construction. External and internal beads shall not be removed.
- B. Butt fusion of unlike wall thickness. Butt fusion shall be performed between pipe ends, or pipe ends and fitting outlets that have the same outside diameter and are not different in wall thickness by more than one Standard DR. Transitions between unlike wall thickness greater than one SDR shall be made with a transition nipple (a short length of the heavier wall pipe with one end machined to the lighter wall) or by mechanical means or electrofusion.
- C. Fusion Quality: The Contractor shall ensure the field set-up and operation of the fusion equipment, and the fusion procedure used by the Contractor's fusion operator while on site. Upon request by the Owner, the Contractor shall verify field fusion quality by making and testing a trial fusion. The trial fusion shall be allowed to cool completely; then test straps shall be cut out and bent strap tested in accordance with ASTM F2620. If the bent strap test of the trial fusion fails at the joint, the field fusions represented by the trial fusion shall be rejected. The Contractor at his expense shall make all necessary corrections to equipment, set-up, operation and fusion procedure, and shall re-make the rejected fusions.

### 3.5 FLANGED CONNECTIONS

- A. Polyethylene pipe and fittings may be joined together by means of flanged connections (flange adapters and back-up rings). In such case, the installation instructions of the joining device manufacturer shall be observed. The HDPE pipe shall be joined to the steel pipe at the weir box structure using a flanged connection.
- B. Flange Installation: Flange connections shall be installed in accordance with the Manufacturer's recommended procedure. Flanges shall be centered and aligned to each other before assembling and tightening bolts. HDPE pipe at the weir box should be fitted with a butt fused flange adapter and with a bolted plate with an air-tight gasket. In no case shall flange bolts be used to draw the connection into alignment. Bolt threads shall be lubricated, and flat washers should be used under the nuts. Bolts shall be evenly tightened according to the tightening pattern and torque step recommendations of the Manufacturer. At least 1 hour after initial assembly, flange connections shall be re-tightened following the tightening pattern and torque step recommendations of the Manufacturer. The final tightening torque shall be as recommended by the Manufacturer.

### 3.6 PLACING PIPE AND PIPE HANDLING

- A. Submit printed copies of the manufacturer's recommendations for installation procedures of the material being placed, prior to installation. Only proper suitable tools and appliances for the safe convenient handling and laying of pipes and fittings shall be used. Prior to pipe installation, construct bedding foundation to grade along the entire length of pipe to be installed.
- B. When lifting with slings, only wide fabric choker slings capable of safely carrying the load shall be used to lift, move, or lower pipe and fittings. Wire rope and chain are prohibited. Slings shall be of sufficient capacity for the load and shall be inspected before use. Worn or damaged equipment shall not be used.
- C. Each pipe shall be thoroughly examined before being laid; defective or damaged pipe shall not be used. Plastic pipe shall be protected from exposure to direct sunlight prior to laying, if necessary, to maintain adequate pipe stiffness and meet installation deflection requirements. Pipelines shall be laid to the grades and alignment indicated.
- D. Pipe shall not be laid in water, and pipe shall not be laid when trench conditions or weather are unsuitable for such work. Diversion of drainage or dewatering of trenches during construction shall be provided as necessary.

### 3.7 BACKFILLING

- A. After the pipe has been properly bedded, sand fill shall be placed along both sides of pipe in lifts of 4- to 6-inches. The filter stone haunch and backfill shall be brought up evenly on both sides of pipe for the full length of pipe. This method of filling shall continue until the fill has reached the design elevation as for the dike construction, as shown in the Contract Documents. Tests for density shall be made as necessary to ensure conformance to the compaction requirements specified below.
- B. When compacting by rolling or operating heavy equipment parallel with the pipe, displacement of or injury to the pipe shall be avoided. Movement of construction machinery over the Pipe System at any stage of construction shall be at the Contractor's risk. Any damaged pipe shall be repaired or replaced.

## PART 4 - COMPENSATION

### 4.1 MEASUREMENT

- A. HDPE Pipe shall be measured on a per linear foot of pipe. Flanges, fusion welding, and connection hardware, for connecting to new and existing piping, as well as testing, shall be included in this price.

### 4.2 PAYMENT

- A. Payment for "36" Diameter HDPE Pipe", complete in place, shall be included in the Unit Price Bid per linear foot under, Construction Items (Weir Boxes), Item No. 3001 on the Schedule of Prices.
- B. Payment for "30" Diameter HDPE Pipe", complete in place, shall be included in the Unit Price Bid per linear foot under, Construction Items (Weir Boxes), Item No. 3002 on the Schedule of Prices.
- C. All prices shall include all work described in this Section and shown on the Contract Drawings including all labor, material, services, and equipment necessary to complete the work in every respect to the satisfaction of the Engineer. Excavating, backfilling, material removal and replacement of materials shall be incidental to the installation of the piping.

– END OF SECTION –

## SECTION 518 CAST-IN-PLACE CONCRETE

### PART 1 – GENERAL

#### 1.1 SCOPE

- A. The work covered by this Section includes the furnishing of all materials and equipment and the performing of all labor to complete cast-in-place concrete work as shown on the Contract Drawings and as herein specified or directed by the Engineer.
- B. This work shall include but is not limited to:
  - 1. Weir box structure foundations and associated items.
  - 2. Concrete foundations for the walkways.
  - 3. West Junction Box and associated items.

#### 1.2 RELATED SECTIONS

- A. Section 514                      Miscellaneous Metals

#### 1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. American Association of State Highway and Transportation Officials (AASHTO)
  - AASHTO M182                      Burlap Cloth Made from Jute or Kenaf and Cotton Mats
  - AASHTO M194                      Chemical Admixtures for Concrete
  - AASHTO T259                      Resistance of Concrete to Chloride Ion Penetration
- C. American Concrete Institute (ACI)
  - ACI 117                              Tolerances for Concrete Construction and Materials
  - ACI 211.1                            Selecting Proportions for Normal, Heavyweight, and Mass Concrete
  - ACI 301                              Specifications for Concrete Construction
  - ACI 302.1R                          Guide for Concrete Floor and Slab Construction
  - ACI 304R                            Guide for Measuring, Mixing, Transporting, and Placing Concrete
  - ACI 304.2R                          Placing Concrete by Pumping Methods
  - ACI 305R                            Guide to Hot Weather Concreting
  - ACI 306.1                            Cold Weather Concreting
  - ACI 308                              Guide to Curing Concrete
  - ACI 318                              Building Code Requirements for Structural Concrete
  - ACI 347                              Guide to Formwork for Concrete
  - ACI SP-66                            Detailing Manual
- D. ASTM International (ASTM)
  - ASTM A615                          Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
  - ASTM C31                            Making and Curing Concrete Test Specimens in the Field

ASTM C33/C33M	Concrete Aggregates
ASTM C 39/C39M	Compressive Strength of Cylindrical Concrete Specimens
ASTM C94	Ready-Mixed Concrete
ASTM C143	Slump of Hydraulic Cement Concrete
ASTM C150/C150M	Portland Cement
ASTM C171	Sheet Materials for Curing Concrete
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C231	Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	Air-Entraining Admixtures for Concrete
ASTM C295/C295M	Petrographic Examination of Aggregates for Concrete
ASTM C309	Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C311/C311M	Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete
ASTM C494	Chemical Admixtures for Concrete
ASTM C595	Blended Hydraulic Cements
ASTM C618	Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
ASTM C881	Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C989/C989M	Slag Cement for Use in Concrete and Mortars
ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1107/C1107M	Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM C1157/C1157M	Standard Performance Specification for Hydraulic Cement
ASTM C1218	Water-Soluble Chloride in Mortar and Concrete
ASTM C1260	Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1567	Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
ASTM C1602/C1602M	Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D5759	Standard Guide for Characterization of Coal Fly Ash and Clean Coal Combustion Fly Ash for Potential Uses
E. American Welding Society (AWS)	
AWS D1.4	Structural Welding Code – Reinforcing Steel



F. Concrete Reinforcing Steel Institute (CRSI)  
CRSI MSP-1 Manual of Standard Practice

1.4 DEFINITIONS

- A. "Cementitious material" as used herein shall include all portland cement, pozzolan, fly ash, ground granulated blast-furnace slag, and silica fume.
- B. "Exposed to public view" means situated so that it can be seen from eye level from a public location after completion of the building. A public location is accessible to persons not responsible for operation or maintenance of the building.
- C. "Chemical admixtures" are materials in the form of powder or fluids that are added to the concrete to give it certain characteristics not obtainable with plain concrete mixes.
- D. "Supplementary cementing materials" (SCM) include coal fly ash, silica fume, granulated blast-furnace slag, natural or calcined pozzolans, and ultra-fine coal ash when used in such proportions to replace the portland cement that result in improvement to sustainability and durability and reduced cost.
- E. "Design strength" (f'c) is the specified compressive strength of concrete at time(s) specified in this section to meet structural design criteria.
- F. "Mass Concrete" is any concrete system that approaches a maximum temperature of 158 degrees F within the first 72 hours of placement. In addition, it includes all concrete elements with a section thickness of 3 feet or more regardless of temperature.
- G. "Mixture proportioning" is the process of designing concrete mixture proportions to enable it to meet the strength, service life and constructability requirements of the project while minimizing the initial and life-cycle cost.
- H. "Mixture proportions" are the masses or volumes of individual ingredients used to make a unit measure (cubic meter or cubic yard) of concrete.
- I. "Pozzolan" is a siliceous or siliceous and aluminous material, which in itself possesses little or no cementitious value but will, in finely divided form and in the presence of moisture, chemically react with calcium hydroxide at ordinary temperatures to form compounds possessing cementitious properties.
- J. "Workability (or consistency)" is the ability of a fresh (plastic) concrete mix to fill the form/mould properly with the desired work (vibration) and without reducing the concrete's quality. Workability depends on water content, chemical admixtures, aggregate (shape and size distribution), cementitious content and age (level of hydration).

1.5 SUBMITTALS

- A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals
- B. Certifications, test reports and other submittals shall show the appropriate AASHTO or ASTM test(s) for each material.
- C. Submit the following shop drawings for approval:
  - 1. Reinforcing drawings, prior to fabrication, showing reinforcing steel placement, schedules, sizes, grades, and splicing and bending details. Drawings shall show support details including types, sizes, and spacing.

2. Form drawings showing details of formwork, joints supports, studding and shoring, and sequence of form and shoring removal.
  3. Lift drawings showing all dimensions, pour locations and designations, location of horizontal and vertical construction joints, concrete volumes, and locations of embedded items.
- D. Work Plans
1. The Contractor shall submit to the Engineer details of the equipment, materials, methods, and procedures for the following items:
    - a. Concrete Pumping (if used)
    - b. Cold Weather Concreting
    - c. Hot Weather Concreting
    - d. Concrete Finishing
    - e. Concrete Curing
  2. Approval by the Engineer will not relieve the Contractor of his responsibility to perform work in accordance with these Specifications.
- E. Concrete Mix Design
1. Thirty days minimum prior to concrete placement, submit a mix design for each strength and type of concrete. Certify using an independent commercial testing laboratory, that proportioning of mix is in accordance with ACI 211.1 for the specified strength and is based on data, which has been determined by laboratory testing during the last twelve (12) months.
  2. Submit a complete list of materials including type, brand, source, and amount; of cement, ground slag, and admixtures; and applicable reference specifications.
  3. All materials used in the trial mix design shall be identical to those used in production. In case the source, brand or characteristic properties of the ingredients are varied during the term of the Contract, submit revised mix design and all relative submittals.
  4. Submit laboratory test reports and manufacturer's certificates for all ingredients attesting to conformance with specifications.
  5. Submit certificates stating that each admixture is compatible with all other materials in the mix design.
  6. Submit manufacturer's catalog data and mixing instructions for all admixtures.
- F. Submit manufacturer's data, test reports, certifications, and installation instructions for all materials, including but not limited to:
1. Concrete repair materials
  2. Curing Compounds
  3. Epoxy Bonding Compound
  4. Form materials and location of use
  5. Form accessories
  6. Form release agents
  7. Mill test reports for reinforcing (tests on each heat, showing chemical and physical analysis).

G. Batch Tickets: Submit a delivery ticket from the concrete supplier with each batch delivered to the site setting forth the following information:

1. Name of supplier
2. Name of batching plant and location
3. Serial number of ticket
4. Date
5. Truck number and batch number
6. Specific job designation
7. Volume of concrete (cubic yards)
8. Specific class of concrete
9. Time loaded and amount of water added
10. Type and brand of cement
11. Weight of cement
12. Maximum size of aggregates
13. Weights of coarse and fine aggregates, respectively
14. Type and amount of admixtures
15. Mix design designation

H. Concrete Test Reports

1. Air content
2. Compressive strength tests
3. Slump
4. Temperature

I. Qualifications

1. Concrete Field Technician
2. Independent Testing Laboratory

## 1.5 QUALITY ASSURANCE/CONTROL

A. Concrete admixtures shall be manufactured by a firm with a minimum of five (5) years experience in the production of similar admixtures.

B. Formwork and falsework design calculations

C. Welding Procedures and Qualifications

1. Welders shall be qualified in accordance with AWS D1.4.
2. Submit copies of the welding procedure specifications and procedure qualification test results for each type of welding required. Approval of any procedure does not relieve the Contractor of the responsibility for producing acceptable welds.
3. Before assigning welders or welding operators to the work, submit their names, together with certification that each individual is performance qualified as specified. Do not start welding work prior to procedure qualification. The certification shall state the type of welding and positions for which each is

qualified, the code and procedure under which each is qualified, date qualified, and the firm and individual certifying the qualification tests.

- D. Contractor's representative performing field quality control testing and preparing test samples shall, as a minimum, possess current certification as an ACI Concrete Field Technician – Grade I.
- E. Independent Testing Laboratory Qualifications for Concrete Qualification Testing: The Contractor-provided concrete testing laboratory shall have the necessary equipment and experience to accomplish required testing. The laboratory shall meet the requirements of ASTM C1077 and be Cement and Concrete Reference Laboratory (CCRL) inspected.

## 1.7 MODIFICATION OF REFERENCES

- A. Accomplish work in accordance with ACI publications except as modified herein. Consider the advisory or recommended provisions to be mandatory, as though the word "shall" had been substituted for the words "should" or "could" or "may," wherever they appear. Interpret reference to the "Building Official," the "Structural Engineer," and the "Architect/Engineer" to mean Engineer.

## 1.8 DELIVERY, HANDLING, AND STORAGE

- A. Do not deliver concrete until forms, reinforcement, embedded items, and chamfer strips are in place and ready for concrete placement. Conform to ACI 301 for job site storage of materials. Protect materials from contaminants such as grease, oil, and dirt. Ensure materials are clearly identified.

## PART 2 – PRODUCTS

### 2.1 CONCRETE MATERIALS.

- A. Cementitious Materials: For exposed concrete, use one manufacturer and one source for each type of cement, ground slag, fly ash, and pozzolan.
  - 1. Fly Ash
    - a. ASTM C618, Class F, except that the maximum allowable loss on ignition shall not exceed 6 percent. Class F fly ash for use in mitigating Alkali-Silica Reactivity shall have a Calcium Oxide (CaO) content of less than 8 percent and a total equivalent alkali content less than 1.5 percent.
    - b. Add with cement. Fly ash content shall be a minimum of 20 percent by weight of cementitious material, provided the fly ash does not reduce the amount of cement in the concrete mix below the minimum requirements of local building codes. Where the use of fly ash cannot meet the minimum level, provide the maximum amount of fly ash permissible that meets the code requirements for cement content. Report the chemical analysis of the fly ash in accordance with ASTM C311/C311M. Evaluate and classify fly ash in accordance with ASTM D5759.
  - 2. Raw or Calcined Natural Pozzolan: Natural pozzolan shall be raw or calcined and conform to ASTM C618, Class N, including the optional requirements for uniformity and effectiveness in controlling Alkali-Silica reaction and shall have an ignition loss not exceeding 3 percent. Class N pozzolan for use in mitigating Alkali-Silica Reactivity shall have a Calcium Oxide (CaO) content of less than 13 percent and total equivalent alkali content less than 3 percent.
  - 3. Ground Granulated Blast-Furnace Slag: ASTM C989/C989M, Grade 100. Slag content shall be a minimum of 40 percent by weight of cementitious material.

4. Portland Cement: Provide cement that conforms to ASTM C150/C150M, Type II, with tri-calcium aluminates (C3A) content less than 10 percent and a maximum cement-alkali content of 0.80 percent Na<sub>2</sub>O<sub>e</sub> (sodium oxide) equivalent. Use one brand and type of cement for formed concrete having exposed-to-view finished surfaces.
  5. Blended Cements: Blended cement shall conform to ASTM C595/C595M and ASTM C1157/C1157M, Type IP or IS, including the optional requirement for mortar expansion and consist of a mixture of ASTM C150/C150M Type I, or Type II cement and a complementary cementing material. The slag added to the Type IS blend shall be ASTM C989/C989M ground granulated blast-furnace slag. The pozzolan added to the Type IP blend shall be ASTM C618 Class F and shall be interground with the cement clinker. The manufacturer shall state in writing that the amount of pozzolan in the finished cement will not vary more than plus or minus 5 mass percent of the finished cement from lot-to-lot or within a lot. The percentage and type of mineral admixture used in the blend shall not change from that submitted for the aggregate evaluation and mixture proportioning.
- B. Aggregates:
1. Conforming to Section 801 and Section 802 of the ALDOT Specifications. ASTM C33/C33M, except as modified herein. Furnish aggregates for exposed concrete surfaces from one source. Provide aggregates that do not contain any substance which may be deleteriously reactive with the alkalis in the cement. Submit test report showing compliance with ASTM C33/C33M.
  2. Fine and coarse aggregates shall show expansions less than 0.08 percent at 28 days after casting when testing in accordance with ASTM C1260. Should the test data indicate an expansion of 0.08 percent or greater, reject the aggregate(s) or perform additional testing using ASTM C1567 using the Contractor's proposed mix design. In this case, include the mix design low alkali portland cement and one of the following supplementary cementitious materials:
    - a. GGBF slag at a minimum of 40 percent of total cementitious
    - b. Fly ash or natural pozzolan at a minimum of total cementitious of:
      - 1) 30 percent if (SiO<sub>2</sub> plus Al<sub>2</sub>O<sub>3</sub> plus Fe<sub>2</sub>O<sub>3</sub>) is 65 percent or more
      - 2) 25 percent if (SiO<sub>2</sub> plus Al<sub>2</sub>O<sub>3</sub> plus Fe<sub>2</sub>O<sub>3</sub>) is 70 percent or more,
      - 3) 20 percent if (SiO<sub>2</sub> plus Al<sub>2</sub>O<sub>3</sub> plus Fe<sub>2</sub>O<sub>3</sub>) is 80 percent or more
      - 4) 15 percent if (SiO<sub>2</sub> plus Al<sub>2</sub>O<sub>3</sub> plus Fe<sub>2</sub>O<sub>3</sub>) is 90 percent or more.

If a combination of these materials is chosen, the minimum amount shall be a linear combination of the minimum amounts above. Include these materials in sufficient proportion to show less than 0.08 percent expansion at 28 days after casting when tested in accordance with ASTM C1567.
  3. Aggregates shall not possess properties or constituents that are known to have specific unfavorable effects in concrete when tested in accordance with ASTM C295/C295M.
- C. Admixtures
1. Calcium chloride or any other admixtures containing chloride salts shall not be used.
  2. Six month and one year compressive and flexural strength tests are not required for admixtures.

3. Accelerating: ASTM C494, Type C
  4. Air Entraining: ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions.
  5. High Range Water Reducer (Superplasticizer): ASTM C494, Type F or G. The admixture shall contain no chlorides, amines, sugar, urea, foaming agents, or air entraining agents and shall meet the requirements of AASHTO M194, with the following exceptions:
    - a. The water content shall be a maximum of 85 percent of that of the control, and the durability factor shall be a minimum of 90 when tested in accordance with ASTM C666, Procedure B. Air entrained concrete containing the admixture shall have no more than 1½ percent weight loss after 300 freeze-thaw cycles.
    - b. Chloride permeability within a depth of ½ inch to 1 inch shall be a maximum of 226 ppm after 200 days ponding when tested in accordance with AASHTO T259.
    - c. The admixture shall be added at the job site in liquid form as recommended by the manufacturer.
  6. Retarding: ASTM C494, Type D
- D. Water: Water shall comply with the requirements of ASTM C1602/C1602M. Minimize the amount of water in the mix. Improve workability by adjusting the grading rather than by adding water. Water shall be potable, free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances deleterious to concrete. Submit test report showing water complies with ASTM C1602/C1602M.
- E. Nonshrink Grout: ASTM C1107/C1107M.
- F. Biodegradable Form Release Agent: Provide form release agent that is colorless, biodegradable. Provide product that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces. Provide form release agent that does not contain diesel fuel, petroleum-based lubricating oils, waxes, or kerosene. Submit documentation indicating type of biobased material in product and biobased content
- 2.2 REINFORCING STEEL
- A. Reinforcing steel for all concrete shall be deformed billet-steel and shall conform to ASTM A615, Grade 60.
- 2.3 ACCESSORIES
- A. Accessories shall conform to the ACI Detailing Manual SP-66.
- B. Wire ties shall be 16 gauge or heavier black annealed steel wire.
- 2.4 SUPPORTS
- A. Bar supports for formed surfaces shall be designed and fabricated in accordance with CRSI MSP-1 and shall be steel or precast concrete blocks.
- B. Precast concrete blocks shall not be less than 4 inches square when supporting reinforcement on the ground. Precast concrete blocks shall have compressive strength equal to that of the surrounding concrete.
- 2.5 CONCRETE MIX
- A. Concrete mixes shall be proportioned in accordance with ACI 211.1, ACI 301, ACI 318, and ACI 304.2R except as otherwise specified.

- B. The water-soluble chloride ion concentrations in hardened concrete between 28 and 42 days shall not exceed 0.15 when tested in accordance with ASTM C 1218.
- C. The compressive strength ( $f'_c$ ) of the concrete for each portion of the structure(s) shall be as indicated on the Contract Drawings and specified in the following table:

PROPERTY			Concrete Foundations	
28-Day Compressive Strength, ASTM C39/C39M (psi)	-	-	<sup>1</sup> 5000	-
-	-	-	-	-
Coarse Aggregate Size No. (ASTM C33/C33M)	-	-	<sup>3</sup> 57 or 67	-
Water-Cement Ratio (by weight)	-	-	0.45	-
Design Slump (inch)	-	-	<sup>2</sup> 4	-
Air Entrainment (%)	-	-	6.5 +1,-1.5	-
Calcium Nitrite Corrosion Inhibitor	-	-	NO	-

<sup>1</sup> Required Average Strength of Mix Design: The selected mixture shall produce an average compressive strength exceeding the specified strength by the amount indicated on ACI 301. When a concrete production facility has a record of at least 15 consecutive tests, the standard deviation shall be calculated and the required average compressive strength shall be determined in accordance with ACI 301. When a concrete production facility does not have a suitable record of tests to establish a standard deviation, the required average strength shall be as follows: For  $f'_c$  between 3,000 and 5,000 psi, required compressive strength ( $f'_{cr}$ ) shall be 1,200 psi plus  $f'_c$ .

<sup>2</sup> Final slump may be increased to 8 inches when superplasticizers are used.

<sup>3</sup> The combined aggregates shall be well graded from the coarsest to the finest with not more than 18 percent nor less than 8 percent of the combined aggregate retained on any individual sieve with the exceptions that the No. 50 may have less than 8 percent retained, sieves finer than No. 50 shall have less than 8 percent retained, and the coarsest sieve may have less than 8 percent retained.

## 2.6 EPOXY BONDING COMPOUND

- A. Epoxy bonding compounds shall conform to ASTM C881.
- B. Provide Type I for bonding hardened concrete to hardened concrete; Type II for bonding freshly mixed concrete to hardened concrete; and Type III as a binder in epoxy mortar or concrete, or for use in bonding skid-resistant materials to hardened concrete. Provide Grade 1 or 2 for horizontal surfaces and Grade 3 for vertical surfaces. Provide Class A if placement temperature is below 40 degrees F; Class B if placement temperature is between 40 and 60 degrees F; or Class C if placement temperature is above 60 degrees F.

## 2.7 MATERIALS FOR CURING CONCRETE

- A. Burlap: AASHTO M182, Class 1, 2, or 3.
- B. Impervious Sheeting: ASTM C171, except that polyethylene sheeting shall not be used.
- C. Membrane forming curing compounds: shall conform to ASTM C309, Type 1-D or 2.

## 2.8 FORM MATERIALS

### A. Forms

- 1. Forms shall be wood, steel, or other approved concrete form material.
- 2. Retain-in-place or stay-in-place metal forms are not permitted

### B. Form Ties

- 1. Form ties shall be factory-fabricated metal ties, shall be of the removable or internal disconnecting or snap-off type, and shall be of a design that will not permit form deflection and will not spall concrete upon removal.
- 2. Solid backing shall be provided for each tie.
- 3. Except where removable tie rods are used, ties shall not leave holes in the concrete surfaces less than  $\frac{1}{4}$  inch or more than 1 inch deep and not more than 1 inch in diameter.
- 4. Removable tie rods shall not be more than  $1\frac{1}{2}$  inches in diameter.

### C. Form Releasing Agents

- 1. Form releasing agents shall be commercial formulations that will not bond with, stain, or adversely affect concrete surfaces.
- 2. Agents shall not impair subsequent treatment of concrete surfaces depending upon bond or adhesion nor impede the wetting of surfaces to be cured with water.

## PART 3 – EXECUTION

### 3.1 PLACEMENT OF FORMS

- A. Provide forms, shoring, and scaffolding for concrete placement in accordance with ACI 301 Section 2 and 5 and ACI 347 with the following additions:
  - 1. Forms shall conform to the shape, lines, grades, and dimensions of the concrete as called for on the Contract Drawings. They shall be mortar tight, and sufficiently rigid to maintain the desired position and shape during and after placing concrete. Surfaces of metal forms shall be free from irregularities, dents, and sags. Lumber used in forms for exposed surfaces shall be evenly matched and free from loose knots and other imperfections that would produce defects on the finished concrete surfaces. Used lumber may be used if it conforms to the above.
  - 2. Forms shall be capable of producing a surface, which meets the requirements of the type of finish specified herein.
  - 3. All formwork shall be provided with adequate cleanout openings to permit inspection and easy cleaning after reinforcing steel has been placed. Where possible, these openings shall be on the side of the unexposed surfaces.
  - 4. Form ties shall be of a type, which will conform to the reinforcing steel clearance requirements given in the Contract Drawings. Form ties that are to be completely withdrawn shall be coated with a nonstaining bond breaker. Wire ties will not be permitted.



5. Forms shall not be reused if there is any evidence of surface wear and tear or defects, which would impair the quality of the surface. Surfaces of forms to be reused shall be cleaned of mortar from previous concreting and of all other foreign material before reuse.
6. Forms shall not be reused if there is any evidence of surface wear and tear or defects, which would impair the quality of the surface. Surfaces of forms to be reused shall be cleaned of mortar from previous concreting and of all other foreign material before reuse.
7. Except as otherwise shown, external corners that will be exposed shall be chamfered by moldings placed in the forms.

### 3.2 PREPARATION

- A. When bonding lifts or pours, apply a thin coat of epoxy bonding compound to dry, clean surfaces. Scrub compound into the surface with a stiff-bristle brush. Place concrete while compound is stringy. Do not permit compound to harden prior to concrete placement. Follow manufacturer's instructions regarding safety and health precautions when working with epoxy resins.
- B. The inside of the forms shall be coated with non-staining mineral oil or other approved material. Where oil is used, it shall be applied before the reinforcing steel is placed. All excess oil or other approved material shall be removed before placing concrete.
- C. Before depositing concrete, all debris, ice, and water shall be removed from the spaces to be occupied by the concrete. Any flow or water into such spaces shall be diverted through proper side drains to a sump, or be removed by other approved methods, which will avoid washing the freshly placed concrete.
- D. Before pouring any concrete, the Contractor shall ascertain that all the work under the other Sections of the Contract which pass through the concrete, such as fittings, pipes, sleeves, anchors, frames, bolts, plates, expansion joint angles, inserts, conduits and any other items normally required but not shown, have been set in place. Plumb anchor bolts, check location, and elevation. Temporarily fill voids in sleeves with readily removable material to prevent the entry of concrete.

### 3.3 JOINTS

- A. Construction Joints: Locate joints to least impair strength. Continue reinforcement across joints unless otherwise indicated.

### 3.4 BATCHING, MEASURING, MIXING AND TRANSPORTING CONCRETE

- A. Batching, measuring, mixing, and transporting concrete shall conform to ASTM C94, ACI 301, ACI 302.1R, and ACI 304R, except as modified herein.
- B. Batching equipment shall be such that the concrete ingredients are consistently measured within the following tolerances: one percent for cement and water, two percent for aggregate, and three percent for admixtures. Furnish mandatory batch ticket information for each load of ready mix concrete.
- C. Measuring: Make measurements at intervals as specified in Paragraph 3.14.
- D. Mixing: Machine mix concrete. Begin mixing within 30 minutes after the cement has been added to the aggregates. Place concrete within 90 minutes of either addition of mixing water to cement and aggregates or addition of cement to aggregates if the air temperature is less than 85 degrees F. Reduce mixing time and place concrete within 60 minutes if the air temperature is greater than 85 degrees F except as follows: if set retarding admixture is used and slump requirements can be met, limit for placing concrete may remain at 90 minutes. Additional water may be added, provided that

both the specified maximum slump and water-cement ratio are not exceeded. When additional water is added, additional 30 revolutions of the mixer at mixing speed is required. If the entrained air content falls below the specified limit, add a sufficient quantity of admixture to bring the entrained air content within the specified limits. Dissolve admixtures in the mixing water and mix in the drum to uniformly distribute the admixture throughout the batch.

- E. Transporting: Transport concrete from the mixer to the forms as rapidly as practicable. Prevent segregation or loss of ingredients. Clean transporting equipment thoroughly before each batch. Do not use aluminum pipe or chutes. Remove concrete, which has segregated in transporting, and dispose of as directed.

3.5 PLACING REINFORCING STEEL

- A. All reinforcing steel shall be placed accurately in the positions shown on the Contract Drawings or as directed by the Engineer. If bars are moved more than one bar diameter to avoid interference with other reinforcement, conduits, or other embedded items, the resulting arrangement of the bars, including additional bars required to meet structural requirements, shall be approved by the Engineer before concrete is placed. Cutting and bending shall be in accordance with ACI 318.

- B. All reinforcing steel shall be secured in place true to the lines and grades indicated by the use of metal or concrete supports, spacers and ties as approved by the Engineer. Supports shall be of sufficient strength to maintain the reinforcing steel in place throughout the concreting operation. Supports shall be used in such a manner that they will not be exposed on the face of nor in any way discolor or be noticeable in the surface of the finished concrete.

- C. Substitution of different size bars will be permitted only when approved by the Engineer. No additional compensation will be allowed for substituting larger size bars in lieu of the bars specified.

- D. Splices of reinforcement shall conform to ACI 318 and shall be made only as required or indicated.

- 1. All lap splices be Class 'B' tension lap splices in accordance with ACI 318. Lapped bars shall not be spaced farther apart than one-fifth the required lap length or 6 inches, whichever is less. Lap splices shall not be used for bars larger than No. 11.

- E. All main reinforcing steel shall have the following minimum cover except as noted otherwise on the Contract Drawings:

- 1. Concrete cast against and permanently exposed to earth.....3”
- 2. Concrete exposed to water or earth:
  - Top of foundations .....2”
  - Sides of foundations .....2”

The above dimensions shall be measured from the face of the reinforcing steel to the face of the forms.

- F. All reinforcing steel shall be secured in place true to the lines and grades indicated by the use of metal or concrete supports, spacers and ties as approved by the Engineer. Supports shall be of sufficient strength to maintain the reinforcing steel in place throughout the concreting operation. Supports shall be used in such a manner that they will not be exposed on the face of nor in any way discolor or be noticeable in the surface of the finished concrete. Metal accessories for exposed concrete surfaces shall be galvanized.

- G. All reinforcing steel shall be fully placed, secured, and approved by the Engineer before any concrete is placed.

### 3.6 PLACING CONCRETE

- A. When all the other provisions of this Section have been met and the Contractor is ready to place concrete, the Engineer shall be notified. No concrete shall be deposited before the Inspector has inspected and approved the reinforcing steel and other work in place and given permission in writing on a prepared form to proceed. Do not place concrete when weather conditions prevent proper placement and consolidation; in uncovered areas during periods of precipitation; or in standing water.
- B. The concrete shall be conveyed from the mixer and placed in the following manner so that there shall be no separation of the various ingredients. Concrete discharging from the mixer shall not be chuted directly into the hopper, bucket, or concrete cart. The concrete shall be discharged down a chute into a baffled downpipe, dropping vertically the minimum distance necessary to fill the hopper, bucket, or concrete cart. Concrete being chuted into a form shall discharge into a baffled downpipe and then drop vertically the minimum clear distance necessary to avoid clogging the downpipe. Concrete discharging from a conveyor belt or side opening hopper or bucket shall drop vertically through a baffled downpipe or a vertical hopper or bucket opening. Chuting of concrete for distances greater than 20 feet will not be allowed.
- C. Concrete shall be deposited as nearly as possible in its final position to avoid segregation due to rehandling or flowing. Concrete shall be placed in the form by dumping against the face of concrete already in place and not by dumping away from concrete already in place. Concrete placed in forms deeper than 3 feet shall be dumped into a hopper feeding into a vertical drop chute and then falling free only the minimum clear distance necessary to avoid stopping the downpipe. The Contractor shall submit to the Engineer any method of placing and conveying concrete that deviates in any manner from the preceding specification for approval before any such methods are used to place concrete on the job.
- D. At the discretion of the Engineer, the provisions specified above for conveying and placing concrete may be modified to suit conditions encountered in the field.
- E. All concrete shall be placed with the aid of approved mechanical vibrating equipment. Vibration, unless otherwise approved, shall be transmitted directly through the concrete and in no case through the forms, or through the reinforcing. The duration of vibration at any location shall be the minimum required to produce thorough compaction. Vibration shall be supplemented by forking or spading by hand adjacent to the forms on exposed faces, or as required. Furnish a spare vibrator on the job site whenever concrete is placed.

### 3.7 REMOVAL OF FORMS

- A. Forms shall be removed preventing injury to the concrete and ensuring the complete safety of the structure. Formwork for columns, walls, side of beams and other parts not supporting the weight of concrete may be removed when the concrete has attained sufficient strength to resist damage from the removal operation but not before at least 24 hours has elapsed since concrete placement.
- B. The Engineer may order the forms to remain in place for a longer period than that considered to be sufficient in the judgment of the Contractor. However, should the Engineer acquiesce in the removal of forms by the Contractor, the Engineer assumes no responsibility and the Contractor is in no manner relieved of his responsibility of such removal. All formwork shall be removed before completion of this Contract.

### 3.8 FINISHING

- A. The Contractor shall notify the Engineer upon removal of forms. The Inspector shall inspect newly stripped surfaces, any portion of which, in the judgement of the Engineer, is damaged beyond repair shall be removed and recast at no additional cost to the Owner. Those surfaces to be repaired shall be repaired in a manner approved by the Engineer.
- B. Horizontal Surfaces
  - 1. Finish types shall be as defined in ACI 301.
    - a. Foundation surfaces shall receive a floated finish.
    - b. Surfaces receiving subsequent bonded overlays or lifts shall be given a raked scratch surface.
    - c. Step slab shall receive light broom finish.
- C. Vertical Surfaces
  - 1. Finish types shall be as defined in ACI 301.
  - 2. Surfaces shall receive a rough-form finish.

### 3.9 CURING AND PROTECTION

- A. Concrete curing shall be in accordance with ACI 301 and ACI 308 unless otherwise specified.
- B. Begin curing immediately following form removal. Avoid damage to concrete from vibration created by pile driving, movement of equipment in the vicinity, disturbance of formwork or protruding reinforcement, and any other activity resulting in ground vibrations. Protect concrete from injurious action by sun, rain, flowing water, frost, mechanical injury, tire marks, and oil stains. Do not allow concrete to dry out from time of placement until the expiration of the specified curing period. If forms are removed prior to the expiration of the curing period, provide another curing procedure specified herein for the remaining portion of the curing period. Provide moist curing for those areas receiving liquid chemical sealer-hardener or epoxy coating.
- C. Membrane Curing Compound: Do not use membrane curing compounds on surfaces exposed to public view, corrosion inhibitor treated concrete, on any surface to be painted, where coverings are to be bonded to the concrete, or on concrete to which other concrete is to be bonded.
- D. Moist Curing: Remove water without erosion or damage to the structure.
  - 1. Ponding or Immersion: Continually immerse the concrete throughout the curing period. Water shall not be more than 20 degrees F less than the temperature of the concrete. For temperatures between 40- and 50-degrees F, increase the curing period by 50 percent.
  - 2. Fog Spraying or Sprinkling: Apply water uniformly and continuously throughout the curing period. For temperatures between 40- and 50-degrees F, increase the curing period by 50 percent.
  - 3. Pervious Sheeting: Completely cover surface and edges of the concrete with two thicknesses of wet sheeting. Overlap sheeting 6 inches over adjacent sheeting. Sheeting shall be at least as long as the width of the surface to be cured. During application, do not drag the sheeting over the finished concrete or over sheeting already placed. Wet sheeting thoroughly and keep continuously wet throughout the curing period.

4. Protection of Treated Surfaces: Prohibit pedestrian and vehicular traffic and other sources of abrasion at least 72 hours
  - E. Curing Periods: ACI 301 Section 5. Provide a minimum of 7 days of wet curing period. Begin curing immediately after placement. Protect concrete from premature drying, excessively hot temperatures, and mechanical injury; and maintain minimal moisture loss at a relatively constant temperature for the period necessary for hydration of the cement and hardening of the concrete. The materials and methods of curing shall be subject to approval by the Engineer.
- 3.10 TOLERANCES
- A. Comply with tolerances of ACI 117.
- 3.11 PUMPING CONCRETE
- A. Pumping of concrete shall conform to the requirements of ACI 304R and ACI 304.2R.
  - B. Pumping shall not result in separation or loss of materials nor cause interruptions sufficient to permit loss of plasticity between successive increments. Loss of slump in pumping equipment shall not exceed 2 inches. Concrete shall not be conveyed through pipe made of aluminum or aluminum alloy. Rapid changes in pipe sizes shall be avoided. Maximum size of coarse aggregate shall be limited to 33 percent of the diameter of the pipe. Maximum size of well-rounded aggregate shall be limited to 40 percent of the pipe diameter. Samples for testing shall be taken at both the point of delivery to the pump and at the discharge end.
- 3.12 COLD WEATHER CONCRETING
- A. Cold weather concreting shall conform to the requirements of ACI 306.1
  - B. Adequate protection of concrete against damage by frost during the making and early curing period is absolutely essential whenever the atmospheric temperature is below 40 degrees F or whenever the temperature may fall below 40 degrees F within 24 hours after placement.
  - C. The Contractor shall provide and have on the job ready to install, adequate facilities for enclosing the freshly placed concrete and heating the enclosure for the period November 1 to April 1.
  - D. The mixing water and aggregates shall be heated by steam coils or other devices so that the concrete during mixing is kept above a minimum temperature of 65 degrees F.
  - E. Concrete when placed in the forms shall have a minimum temperature of 55 degrees F. Freshly laid concrete and the surrounding atmosphere shall be maintained at a temperature of 50 degrees F or greater for a period of 48 hours after placement.
  - F. A permanent temperature record shall be kept for the days on which protection is required as specified in Paragraph B above, showing the date, hour, outside temperature and temperature within the enclosure to show the most favorable or unfavorable conditions to which the concrete is subjected. The Contractor shall furnish maximum and minimum thermometers or recording thermometers for this purpose. A copy of the temperature record shall be sent to the Engineer at the close of each day's work.
  - G. Tarpaulins supported on horses or other framework shall follow closely the placing of the concrete so that only a few feet of the finished work is exposed to the outside atmosphere at any one time. Tarpaulins shall be arranged so that heated air can circulate freely in the space between the tarpaulin and the freshly placed concrete.

- H. Within the enclosure, means for artificial heating shall be provided as well as maintain the temperatures specified continuously and with a reasonable degree of uniformity in all parts of the enclosure.
  - 1. The Contractor shall provide adequate fire protection accessible at all times where heating is in progress and shall maintain watchmen or other attendants to keep the heating units in continuous operation. All heating appliances shall be vented.
  - 2. Heating appliances shall not be placed in a manner as to endanger formwork or centering or expose any area of concrete to drying out or other injury due to excessive temperatures.
- I. The use of salts, chemicals, or other foreign material in the mix to lower the freezing point of the concrete is prohibited.

### 3.13 HOT WEATHER CONCRETING

- A. Hot weather concreting shall conform to the requirements of ACI 305R.
- B. Concrete shall be protected during placement, finishing, and curing in hot weather to minimize the formation of plastic shrinkage cracks.
- C. Concrete, when placed in the forms, shall have a maximum temperature of 90°F. Mixing water shall be chilled as required to maintain the temperature of the concrete below this unit.
- D. Forms shall be wetted prior to placement of concrete. Fog spraying may be used to cool the air, cool the forms and reinforcing steel ahead of placement and to lessen the amount of evaporation from the concrete surface before and after finishing.

### 3.14 FIELD QUALITY CONTROL AND CONCRETE TESTING

- A. Concrete Testing: The making of all concrete specimens, slump, temperature, and air content tests shall be performed by an ACI Certified Field Technician. Laboratory testing of cast-in-place concrete shall be done by the Contractor-furnished and Engineer-approved laboratory.
- B. Test Specimens: The Contractor shall supply all concrete, compression test molds, tamping rods, trowel, metal or glass covers, slump cone, storage box and sand necessary for making test specimens as outlined herein. The Contractor shall make, cure, and remove from molds and transport to the testing laboratory, five (5) specimens for each sample in accordance with ASTM C31 and ASTM C172.
- C. Compressive Strength Tests: Make five test cylinders for each set of tests in accordance with ASTM C31. Precautions shall be taken to prevent evaporation and loss of water from the specimen. Samples for strength tests of each mix design of concrete placed each day shall be taken not less than once a day, nor less than once for each 100 cubic yards of concrete, nor less than once for each 5000 square feet of surface area for slabs or walls. For the entire project, take no less than five sets of samples and perform strength tests for each mix design of concrete placed. Each strength test result shall be the average of two cylinders from the same concrete sample tested at 28 days.
- D. Test Reports: Contractor shall fill in data on concrete test sample form. When tests have been conducted, the Contractor shall furnish the results of the tests with all pertinent data to the Engineer.
- E. Deficiencies and Remedial Action: In the event that concrete strength test results do not meet the acceptance criteria specified in ACI 301, additional tests of concrete shall be performed at the sole expense of the Contractor. In the event that tests of concrete in place do not meet the acceptance criteria specified, those portions of the structure

affected as determined by the Engineer shall be removed and replaced in a manner acceptable to the Engineer at no additional expense to the Owner.

- F. Slump Tests: The Contractor shall check the consistency of concrete by means of slump tests conducted in accordance with ASTM C143. The maximum slump may be increased as specified with the addition of an approved admixture provided the water-cement ratio is not exceeded. Perform tests at commencement of concrete placement, when test cylinders are made, and for each batch of concrete.
- G. Air Content Test: The Contractor shall test the air content in accordance with ASTM C231. The air content test shall be made at the same time as specified for slump tests.
- H. Temperature: Concrete temperature shall be taken and recorded at the same time as specified for slump tests.

#### PART 4 – COMPENSATION

##### 4.1 MEASUREMENT

- A. Cast-in-place concrete shall be measured on a cubic yard basis taken from the neat lines of the foundation structures in place.

##### 4.2 PAYMENT

- A. Payment for “Weir Box Foundation Concrete”, complete in place, shall be included in the Unit Price Bid per cubic yard under, Construction Items (Weir Boxes), Item No. 1004 on the Schedule of Prices. This price shall include all formwork, reinforcing steel, anchor bolts installation, joints, curing, testing, concrete work, and all incidentals.
- B. Payment for “Junction Box Concrete”, complete in place, shall be included in the Unit Price Bid per cubic yard under, Construction Items (Weir Boxes), Item No. 1009 on the Schedule of Prices. This price shall include all formwork, reinforcing steel, anchor bolts installation, hardware and installation, joints, curing, testing, concrete work, and all incidentals.
- C. Payment for “Pre-Engineered Walkway Foundation Concrete”, complete in place, shall be included in the Unit Price Bid per cubic yard under, Construction Items (Weir Boxes), Item No. 1010 on the Schedule of Prices. This price shall include all formwork, reinforcing steel, anchor bolts installation, joints, curing, testing, concrete work, and all incidentals.
- D. The above prices shall include all the work described in this Section and shown on the Contract Drawings including all labor, materials, services, and equipment necessary to complete the work in every respect to the satisfaction of the Engineer.

– END OF SECTION –

## SECTION 519 PRE-ENGINEERED WALKWAY

### PART 1 – GENERAL

#### 1.1 SCOPE

- A. The work includes the design, furnishing of all material and equipment, and the performing of all labor necessary to complete the design, fabrication and installation of Pre-Engineered Walkways as schematically depicted on the Contract Drawings and as herein specified or directed by the Engineer.
- B. This scope establishes the general requirements for design, materials, and testing of Pre-Engineered Walkway systems to be used for access to and from the Dike/Weir box Structure.
- C. This scope covers only the general requirements of Pre-Engineered Walkway design, fabrication, and erection. The specific requirements of each assembly and component shall be provided with the information that will be part of the submitted design and detail information.
- D. The Pre-Engineered Walkway systems shall be designed to function in the physical and environmental conditions that they will undergo at the site, including but not limited to marine exposure, applied loads, temperature, snow, ice, and wind, and provide all fixtures and fittings to accommodate installation in the locations indicated in the Contract Drawings.

#### 1.2 RELATED SECTIONS

- A. Section 514                      Miscellaneous Metals

#### 1.3 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. The Aluminum Association (AA)  
Aluminum Design Manual
- C. American Welding Society (AWS)
  - AWS D1.1/D1.1M              Structural Welding Code – Steel
  - AWS D1.2                      Structural Welding Code - Aluminum
  - AWS QC1                      AWS Certification of Welding Inspectors
- D. ASTM International (ASTM)
  - ASTM A123/A123M            Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
  - ASTM A780                    Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
  - ASTM A500/A500M            Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
  - ASTM A572/A572M            Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
  - ASTM F3125/F3125M         Standard Specification for High strength structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and



150 ksi (1040 MPa) Minimum, Tensile Strength, Inch and Metric Dimensions

- E. Research Council on Structural Connections of the Engineering Foundation (RCSC)
- F. Society of Automotive Engineers International (SAE)
  - SAE AMS-QQ-A-200B General Specification for Aluminum Alloys, Bar, Rod, Shapes, Structural Shapes, Tube, and Wire, Extruded
- G. American Institute of Steel Construction (AISC)
  - Manual of Steel Construction, Fourteenth Edition
  - AISC 360 Specifications for Structural Steel Buildings 16<sup>th</sup> Edition

#### 1.4 QUALIFIED SUPPLIERS

- A. The Contractor shall provide the following documentation for their proposed pre-engineered walkway manufacturer / supplier:
  1. Product Literature: Documentation to verify performance history and to ensure the proposed manufacturer / supplier will be in compliance with these specifications. Documentation shall include:
    - a. Representative design calculations
    - b. Representative drawings
    - c. Splicing and erection procedures
    - d. Warranty information
    - e. Inspection and Maintenance procedures
    - f. AISC Shop Certification
    - g. Welder Qualifications
  2. Proposed suppliers shall have at least five (5) years of experience designing and fabricating pre-engineered walkway structures and a minimum of five (5) successful projects of similar or larger size and value, each of which has been in service at least three (3) years. List the location, walkway or bridge size, owner, and a contact for reference for each project.

#### 1.5 SUBMITTALS

- A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.
  1. Shop Drawings
    - a. Walkways
  2. Product Data
    - a. Lifting inserts and devices
  3. Design Data
    - a. Walkway Design Computations
  4. Certificates
    - a. Steel Materials

- b. Aluminum Materials
  - c. Bolting Materials
  - d. Fabrication
  - e. Welding Certificates
  - f. Welding Inspector Certificates
5. Test Reports
- a. Aluminum
  - b. Fasteners
  - c. Steel
6. Manufacturer Qualification

## 1.6 QUALITY CONTROL

- A. Walkway Performance: Provide walkways of prefabricated aluminum or structural steel for platform access, including connections at dike side foundation and weir box structure. Walkway shall be designed in accordance with "Specifications for Aluminum Structures", AA, latest edition, or AISC, using allowable strength design (ASD) method.
- 1. Walkways shall have a minimum clear walkway width of 3.5 feet, and an overall outside width not to exceed 5.0 feet. Length of walkways shall be as indicated on the drawings. Walkways shall have continuous handrails that are a minimum of 3.5 feet above the walking surface, but not to exceed 3.75 feet.
  - 2. Walking surface shall be skid resistant.
  - 3. Provide skid-resistant transition plates between end of walkway and landing surfaces.
  - 4. Provide for bearing supports, including one fixed and one expansion assembly for each span.
  - 5. Contact between aluminum and dissimilar metals and concrete shall be avoided, except for the use of compatible stainless steel pins. Where potential for galvanic corrosion exists, the aluminum shall be isolated from direct contact with other metals or concrete by use of suitable non-conducting insulators or bushings.
- B. Walkway Design
- 1. Walkway systems shall be designed for the following load conditions as a minimum. Load cases shall be combined based upon their probability of simultaneous occurrence, and in accordance with applicable codes and standards. Calculations shall be performed for wind loads both parallel and perpendicular to the walkway.
  - 2. Structural design of the walkway structure(s) shall be performed by or under the direct supervision of a licensed professional engineer and done in accordance with recognized engineering practices and principles. The engineer shall be licensed to practice in Alabama and will sign and seal the design calculations and fabrication drawings
- C. Design Loads: In considering design and fabrication issues, this structure shall be assumed to be statically loaded. No dynamic analysis is required nor shall fabrication issues typically considered for dynamically loaded structures be considered for this walkway.

1. Dead Load: The walkway structure shall be designed considering its own dead load (superstructure and original decking) only. No additional dead loading need be considered.
  2. Uniform Live Load
    - a. Pedestrian Live Load
      - 1) Main Members: Main supporting members, including girders, trusses and arches shall be designed for a pedestrian live load of 100 pounds per square foot of walkway area. The pedestrian live load shall be applied to those areas of the walkway to produce maximum stress in the member being designed.
      - 2) Secondary Members: Walkway decks and supporting floor systems, including secondary stringers, floor beams and their connections to main supporting members shall be designed for a live load of 100 pounds per square foot, with no reduction allowed.
  3. Concentrated Loads: The walkway superstructure, floor system and decking shall be designed for each of the following point load conditions:
    - a. A concentrated load of 1000 pounds placed on any area 2.5 ft x 2.5 ft square.
  4. Wind Load: Wind pressures shall be determined based on ASCE 7-16 with an ultimate wind speed of not less than 153 mph.
    - a. Horizontal Forces
      - 1) The walkway(s) shall be designed for a wind load on the full vertical projected area of the walkway as if enclosed. The wind load shall be applied horizontally at right angles to the longitudinal axis of the structure.
      - 2) The wind loading shall be considered both in the design of the lateral load bracing system and in the design of the truss vertical members, floor beams and their connections.
    - b. Overturning Forces: The effect of forces tending to overturn structures shall be calculated assuming that the wind direction is at right angles to the longitudinal axis of the structure. In addition, an upward force shall be applied at the windward quarter point of the transverse superstructure width.
  5. Top Chord/Railing Loads: The top chord, truss verticals, and floor beams shall be designed for lateral wind loads (per paragraph titled "Horizontal Forces") and for any loads required to provide top chord stability; however, in no case shall the load be less than 50 pounds per lineal foot or a 200 pound point load, whichever produces greater stresses, applied in any direction at any point along the top chord or at the top of the safety system (42" or 54" above deck level), if higher than the top chord.
- D. Design Limitations
1. Deflection
    - a. Vertical Deflection
      - 1) The vertical deflection of the main trusses due to service pedestrian live load shall not exceed 1/400 of the span.
      - 2) The vertical deflection of cantilever spans of the structure due to service pedestrian live load shall not exceed 1/300 of the cantilever arm length.

- 3) The deflection of the floor system members (floor beams and stringers) due to service pedestrian live load shall not exceed  $1/360$  of their respective spans.
    - b. Horizontal Deflection: The horizontal deflection of the structure due to lateral wind loads shall not exceed  $1/500$  of the span under an 85 MPH (25 PSF) wind load.
  2. Minimum Thickness of Metal: The minimum thickness of all structural steel members shall be  $3/16$  inch nominal and be in accordance with the AISC Manual of Steel Construction' "Standard Mill Practice Guidelines". For ASTM A500/A500M tubing, the section properties used for design shall be per the AISC Steel Construction Manual.
- E. Governing Design Codes/References: Structural members shall be designed in accordance with recognized engineering practices and principles as follows:
1. Structural Steel Allowable Strength Design (ASD)
    - a. American Institute of Steel Construction (AISC)
    - b. Structural steel design shall be in accordance with AISC 360
  2. Welded Tubular Connections
    - a. AISC 360 Chapter K
    - b. All welded tubular connections shall be checked, when within applicable limits, for the limiting failure modes outlined in the ANSI/AWS D1.1/D1.1M Structural Welding Code
    - c. When outside the "validity range" defined in these design guidelines, the following limit states or failure modes (but not limited to) shall be checked:
      - 1) Chord face plastification
      - 2) Punching shear (through main member face)
      - 3) Material failure
        - (a) Tension failure of the web member
        - (b) Local buckling of a compression web member
      - 4) Weld failure
        - (a) Allowable stress based on "effective lengths"
        - (b) "Ultimate" capacity
      - 5) Local buckling of a main member face
      - 6) Main member failure:
        - (a) Web or sidewall yielding
        - (b) Web or sidewall crippling
        - (c) Web or sidewall buckling
        - (d) Overall shear failure
    - d. All tubular joints shall be plain unstiffened joints (made without the use of reinforcing plates) except as follows:

- 1) Floor beams hung beneath the lower chord of the structure may be constructed with or without stiffener (or gusset) plates, as required by design.
- 2) Floor beams that frame directly into the truss verticals (H-Section walkways) may be designed with or without end stiffening plates as required by design.
- 3) Where chords, end floor beams and in high profiles the top end struts weld to the end verticals, the end verticals (or connections) may require stiffening to transfer the forces from these members into the end vertical.
- 4) Truss vertical to chord connections.

NOTE: The effects of fabrication tolerances shall be accounted for in the design of the structure. Special attention shall be given to the actual fit-up gap at welded truss joints.

3. Aluminum: Aluminum members shall be designed in accordance with Specification for Aluminum Structures, AA, latest edition using Allowable Stress Design.
4. Bolted Splices
  - a. American Institute of Steel Construction (AISC) and the Research Council on Structural Connections of the Engineering Foundation (RCSC).
  - b. Bolted splice design shall be in accordance with Section J3 of AISC 360. Splices shall be designed for the actual load in the member but in no case for less than 50% of the effective strength of the member.
  - c. Bolted field splices shall be located on the walkway to produce a structure which can be economically shipped and erected. Splices along the length of the walkway (in chords and diagonals) shall be placed at the approximate midpoint of a bay (between two panel points). Splices across the width of the walkway (in floor beams and wind braces) may be used, when necessary, to keep the overall structure width within reasonable limits for shipping.

#### 1.07 DELIVERY AND STORAGE

- A. Lift and support walkways at the lifting and supporting points indicated on the shop drawings. Store walkways off the ground. Protect from weather, marring, damage, and overload.

#### 1.08 QUALITY ASSURANCE

- A. Drawing Information: Submit drawings indicating complete information for the fabrication, handling, and erection of the walkways. Drawings shall not be reproductions of contract drawings. Design drawings of walkways (including connections) shall be prepared and sealed by a registered professional engineer and submitted for approval prior to fabrication. The drawings shall indicate, as a minimum, the following information:
  1. Walkway system layout
  2. Connections walkways and other construction
  3. Material properties of all materials used
  4. Lifting and assembly requirements
  5. Erection sequence and handling requirements
  6. All loads used in design (such as live, dead, wind, handling, and erection)

7. Bracing/shoring required
- B. Design Calculations
1. Submit calculations reflecting design conforming to requirements of paragraph entitled "Walkway Design". Design calculations (including connections) shall be prepared and sealed by a registered professional engineer in the state where the project is located and submitted for approval prior to fabrication.
  2. Camber: The walkway shall have a vertical camber dimension at midspan equal to 100% of the full dead load deflection.
- C. Structural Calculations: Structural calculations for the walkway superstructure shall be submitted by the walkway manufacturer and reviewed by the approving engineer. The calculations shall include all design information necessary to determine the structural adequacy of the walkway. The calculations shall include the following:
1. All AISC checks for axial, bending and shear forces in the critical member of each truss member type (i.e. top chord, bottom chord, floor beam, vertical, etc.)
  2. Checks for the critical connection failure modes for each truss member type (i.e. vertical, diagonal, floor beam, etc.) Special attention shall be given to all welded tube-on-tube connections (see section 3.3.2 for design check requirements).
  3. All bolted splice connections.
  4. Main truss deflection checks.
  5. Deck design.
- NOTE: The analysis and design of triangulated truss walkways shall account for moments induced in members due to joint fixity where applicable. Moments due to both truss deflection and joint eccentricity must be considered.
- D. Welder and welding inspector certifications shall be in compliance with AWS standard qualification tests.

## PART 2 – PRODUCTS

### 2.1 WALKWAYS

- A. Aluminum: Aluminum alloy shall be 6061-T6. Extruded in accordance with the applicable requirements of SAE AMS-QQ-A-200B.
- B. Steel: ASTM A500/A500M Grade B, ASTM A572/A572M, Grade 50.
- C. Stainless Steel: Type 316 L.
- D. Insulators: MIL-I-24768/14. Bushings or separation sheets shall be a minimum of 1/16 in thickness.
- E. Bolts: ASTM F3125, hot-dip galvanized.

### 2.2 FINISHES

- A. Steel Galvanizing
  1. Steel galvanizing shall be in accordance with ASTM A 123 or ASTM A 153 as applicable. Galvanize all walkway steel items as specified herein. Hot-dip galvanize items specified to be zinc-coated after fabrication where practicable.
  2. Repair of Zinc-Coated Surfaces: Repair damaged surfaces with galvanizing repair method and paint conforming to ASTM A 780 or by application of stick or thick paste material specifically designed for repair of galvanizing, as approved by the Designer. Clean areas to be repaired and remove slag from welds. Heat surfaces

to which sticks or paste material is applied, with a torch to a temperature sufficient to melt the metallics in stick or paste; spread molten material uniformly over surfaces to be coated and wipe off excess material.

#### B. Steel Cleaning and Painting

1. Surface Preparation: Prepare galvanized surfaces to be painted and/or coated in accordance with coating manufacturer's recommendations. Wash cleaned surfaces, which have become contaminated with rust, dirt, oil, grease, or other contaminants with solvents until thoroughly clean. Galvanized walkways shall be brush-off blast cleaned in accordance with SP-SP 7 and cleaned of any grease or other foreign matter with a suitable degreaser before applying coatings.
2. Priming and Intermediate Coat: Shop apply one coat of primer and one coat of intermediate coat in accordance with manufacturer's printed instructions. Primer and intermediate coat shall be in a Cycloaliphatic Amine Epoxy, Carboline Carboguard 890, or approved equal, applied to a DFT of 4-6 mils, in accordance with the manufacturer's recommendations.
3. Top Coat: Shop apply one coat or more top coats as needed to provide complete coverage, in accordance with manufacturer's printed instructions. Top coat shall be an Acrylic Aliphatic Polyurethane, Carboline Carbothane 134 HS, or approved equal, applied to a DFT of 2 mils, in accordance with the manufacturer's recommendations. Color: Safety Yellow.

C. Aluminum Finish: Shall be manufacturer's standard, free of marks, abrasions, and similar surface defects.

D. Decking shall be non-slip grating or approved equal. Transition plates shall have a non-slip surface.

### PART 3 – EXECUTION

#### 3.1 FABRICATION

##### A. General Requirements

1. Drain Holes: When the collection of water inside a structural tube is a possibility, either during construction or during service, the tube shall be provided with a drain hole at its lowest point to let water out.
2. Welds
  - a. Special attention shall be given to developing sufficient weld throats on tubular members. Fillet weld details shall be in accordance with AWS D1.1/D1.1M, Section 3.9 (See AWS Figure 3.2). Unless determined otherwise by testing, the loss factor "Z" for heel welds shall be in accordance with AWS Table 2.8. Fillet welds that run onto the radius of a tube shall be built up to obtain the full throat thickness. The maximum root openings of fillet welds shall not exceed 3/16" in conformance with AWS D1.1/D1.1M, Section 5.22. Weld size or effective throat dimensions shall be increased in accordance with this same section when applicable (i.e. fit-up gaps > 1/16").
  - b. The fabricator shall have verified that the throat thickness of partial joint penetration groove welds (primarily matched edge welds or the flare-bevel-groove welds on underhung floor beams) shall be obtainable with their fit-up and weld procedures. Matched edge welds shall be "flushed" out when required to obtain the full throat or branch member wall thickness.

- c. For full penetration butt welds of tubular members, the backing material shall be fabricated prior to installation in the tube so as to be continuous around the full tube perimeter, including corners. Backing may be of four types:
  - 1) A "box" welded up from four (4) plates.
  - 2) Two "channel" sections, bent to fit the inside radius of the tube, welded together with full penetration welds.
  - 3) A smaller tube section which slides inside the spliced tube.
  - 4) A solid plate cut to fit the inside radius of the tube.
- d. Corners of the "box" backing, made from four plates, shall be welded and ground to match the inside corner radii of the chords. The solid plate option shall require a weep hole either in the chord wall above the "high side" of the plate or in the plate itself. In all types of backing, the minimum fit-up tolerances for backing shall be maintained at the corners of the tubes as well as across the "flats".
- e. Aluminum welding shall be in accordance with AWS D1.2/D1.2M.
- f. Field spliced steel shall be fully bolted with ASTM F3125 type 3 high-strength bolts in accordance with ASTM F3125.

### 3.2 DELIVERY AND ERECTION

- A. Delivery shall be made to a location nearest the site which is easily accessible to normal over-the-road tractor/trailer equipment. All trucks delivering walkway materials shall be unloaded at the time of arrival.
- B. The manufacturer shall provide detailed, written instruction in the proper lifting procedures and splicing procedures (if required). The method and sequence of erection shall be the responsibility of the Contractor.
- C. The walkway manufacturer shall provide written inspection and maintenance procedures to be followed by the walkway owner.

## PART 4 – COMPENSATION

### 4.1 MEASUREMENT

- A. Pre-engineered walkway shall be measured per each unit complete.

### 4.2 PAYMENT

- A. Payment for the "Pre-Engineered Walkways", complete in place, shall be included in the Unit Price Bid per each under, Construction Items (Weir Boxes), Item No. 1006 on the Schedule of Prices. This price shall include design, fabrication, transport, erection, and all other work described in this Section and shown on the Contract Drawings including all labor, materials, services, and equipment necessary to complete the work in every respect to the satisfaction of the Engineer.

– END OF SECTION –



## SECTION 520 DEMOLITION

### PART 1 - GENERAL

#### 1.1 SCOPE

- A. The work covered by this Section includes the furnishing of all material and equipment and the performing of all labor to complete the demolition, removal and disposal of items as shown on the Contract Drawings or directed by the Engineer.
- B. During the demolition work, adjacent construction and storage areas shall be protected from damage. Any damage resulting from demolition work shall be repaired or replaced by the Contractor to the satisfaction of the Engineer at no additional cost to the Service. Cleanup of all debris shall be done by the Contractor.

#### 1.2 RELATED SECTIONS

- A. Section 509                      Earthwork

#### 1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only. Unless otherwise indicated the most recent edition of the publication, including any revisions, shall be used.
- B. American National Standards Institute (ANSI)  
ANSI A10.6                      Safety Requirements for Demolition Operations
- C. Occupational Safety and Health Administration (OSHA), U.S. Code of Federal Regulations (CFR) Title 29 Part 1926—Occupational Safety and Health Regulations for Construction
- D. Environmental Protection Agency (EPA), U.S. Code of Federal Regulations (CFR), Title 40:
  - a. Part 61 – National Emission Standards for Hazardous Air Pollutants.
  - b. Part 82 – Protection of Stratospheric Ozone.
  - c. Part 273 – Standards for Universal Waste Management.

#### 1.4 SUBMITTALS

- A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.
- B. Demolition Plan: The plan shall include the sequence of work and methods for selectively demolishing the items shown on the Contract Drawings.

#### 1.5 REGULATORY AND SAFETY REQUIREMENTS

- A. When applicable, demolition work shall be accomplished in strict accordance with 29 CFR 1926-Subpart T.
- B. Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the General Conditions, Contractor's safety requirements shall conform to ANSI A10.6.

#### 1.6 DEMOLITION PLAN

- A. Demolition plan shall provide for safe conduct of the Work and shall include:

1. Detailed description of methods and equipment to be used for each operation, including protection to public, property, and workers.
  2. Contractor's planned sequence of operations, including coordination with other work in progress.
  3. Disconnection schedule of utility services.
- B. Include statements affirming Contractor inspection of the existing structures and their suitability to perform as a safe working platform or, if inspection reveals a safety hazard to workers, state provisions for securing safety of workers throughout performance of the Work.
- 1.7 SEQUENCING AND SCHEDULING
- A. The Work of this Specification shall not commence until Contractor's demolition plan has been approved by Engineer.
  - B. Include the Work of this Specification in the progress schedule.
- 1.8 BURNING
- A. The use of burning at the project site for the disposal of refuse and debris will not be permitted.
- 1.9 USE OF EXPLOSIVES
- A. The use of explosives at the project site will not be permitted.

## PART 2 - PRODUCTS

### 2.1 FILL MATERIAL

- A. Comply with excavating, backfilling, and compacting procedures for soils used as backfill material to voids, depressions or excavations resulting from demolition or deconstruction of structures.

### 2.2 REMOVED MATERIALS

- A. All material and debris, either existing or resulting from demolition and removal work, which are not designated to be salvaged or relocated, shall become the property of the Contractor and shall be removed from the property and disposed of off-site at an approved facility. The Contractor shall exercise care in performing demolition and removal work in order not to damage adjacent structures or materials to be reused or stored for future use as directed by the Owner's Representative

## PART 3 - EXECUTION

### 3.1 EXISTING FACILITIES TO BE DEMOLISHED OR RENOVATED

- A. Structures:
  1. Remove existing structures indicated to be removed as indicated on the drawings. The existing east cell weir box is to be salvaged and placed onsite. It shall be removed by Contractor, remain property of Owner and placed by Contractor at Blakeley Terminal at the direction of the Owner.
  2. Demolish structures in a systematic manner from the top of the structure to the ground.
  3. Locate demolition equipment throughout the site and remove materials so as to not impose excessive loads to supporting structures.
- B. Relocation of Utilities and Related Equipment:

1. Notify Owner or appropriate utilities to turn off affected services at least 48 hours before starting demolition or renovation activities.
2. Remove existing utilities as indicated and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by Engineer.
3. When utility lines are encountered that are not indicated on the Drawings, notify Engineer and Owner prior to further work in that area.
4. Provide a permanent leak-proof closure for water and gas lines.

#### C. Items With Unique/Regulated Disposal Requirements

1. Remove and dispose of items with unique or regulated disposal requirements in the manner dictated by law or in the most environmentally responsible manner. Certificates of Disposal, Chain of Custody forms, or other applicable documents shall be provided within 21-calendar days following each shipment.

### 3.2 PROTECTION

#### A. Dust and Debris Control

1. Prevent the spread of dust and debris and avoid the creation of nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.

#### B. Existing Work

1. Survey the site and examine the Drawings and Specifications to determine the extent of the Work before beginning any demolition or renovation.
2. Take necessary precautions to avoid damage to existing items scheduled to remain in place, to be reused, or to remain the property of Owner; any Contractor-damaged items shall be repaired or replaced as directed by Engineer.
3. Provide temporary weather protection during interval between removal of existing exterior surfaces and installation of new to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
4. Ensure that structural elements are not overloaded as a result of or during performance of the Work. Responsibility for additional structural elements or increasing the strength of existing structural elements as may be required as a result of any Work performed under this Contract shall be that of the Contractor. Repairs, reinforcement, or structural replacement must have Engineer approval.

#### C. Weather Protection: Protect at all times, materials and equipment from weather.

#### D. Protection of Personnel

1. During demolition, continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site.
2. Provide temporary barricades and other forms of protection to protect Owner's personnel and public from injury due to demolition Work.
3. Provide protective measures as required to provide free and safe passage of Owner's personnel and public to occupied portions of the structure.

### 3.3 RELOCATIONS

- #### A. Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Clean all items to be relocated prior to reinstallation, to

the satisfaction of Engineer. Repair items to be relocated which are damaged or replace damaged items with new undamaged items as approved by Engineer.

#### 3.4 BACKFILL

- A. Do not use demolition debris as backfill material, unless otherwise noted on the drawings.
- B. Fill excavations and other hazardous openings to existing ground level or level of new construction in accordance with Section 509 Earthwork.

#### 3.5 TITLE TO MATERIALS

- A. Except for the existing East Cell Weir Box, all items designated to be removed shall become the property of Contractor:
- B. Title to equipment and materials resulting from demolition is vested in the Contractor upon approval by Engineer of Contractor's demolition/renovation plan, and the resulting authorization by Engineer to begin demolition.

#### 3.6 DISPOSITION OF MATERIAL

- A. Do not remove equipment and materials without approval of Contractor's demolition/renovation plan by Engineer.
- B. Remove salvaged items designated as the property of Owner in a manner to prevent damage, and pack or crate to protect the items from damage while in storage or during shipment. Properly identify containers as to contents.
- C. Repair or replace, at the discretion of Engineer, items damaged during removal or storage.
- D. Owner will not be responsible for the condition or loss of, or damage to, property scheduled to become Contractor's property after Engineer's authorization to begin demolition. Materials and equipment shall not be viewed by prospective purchasers or sold on the Site.

#### 3.7 REUSE OF MATERIALS AND EQUIPMENT

- A. Remove and store materials and equipment listed to be reused or relocated to prevent damage and reinstall as the Work progresses.
- B. Properly store and maintain equipment and materials in same condition as when removed.
- C. Store equipment and material designated to be reused in a location designated by Owner.
- D. Equipment and material designated to be reused shall be cleaned, serviced and checked for proper operability before being put back into service.
- E. Engineer will determine condition of equipment and materials prior to removal.

#### 3.8 UNSALVAGEABLE MATERIAL

- A. Concrete, masonry, and other noncombustible material, except concrete permitted to remain in place, shall be disposed off-site in a legal manner.
- B. Combustible material shall be disposed of off the Site.

#### 3.9 DISPOSAL LOG

- A. The Contractor shall maintain a disposal log of all material removed from the site. The log shall include a description of the material, quantity by weight, disposal site, and date of disposal.

### 3.10 CLEANUP

- A. Debris and rubbish shall be removed from the site. Debris and rubbish shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

## PART 4 - COMPENSATION

### 4.1 MEASUREMENT

- A. Removal and disposal of surface debris, site structures, and utilities shall not be measured.

### 4.2 PAYMENT

- A. Payment for "Site Demolition", complete, shall be made at the Lump Sum Price Bid under, Construction Items (Weir Boxes), Item No. 1002 on the Schedule of Prices. These items shall include, but are not limited to, all required excavation, removal, demolition, and disposal of drain lines (above and below ground), and the existing spillway structures in the CDF area.
- B. The above prices shall include all the work described in this Section and shown on the Contract Drawings including all labor, materials, services, and equipment necessary to complete the work to the satisfaction of the Engineer.

– END OF SECTION –