



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

**Project Name**      McDuffie Unloaders 1 and 3 Dual Barge Shifter Systems Equipment Supply

**Location**              Mobile, AL

**Project #**    10873      **Task #**    2

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**SPECIFICATIONS AND CONTRACT DOCUMENT**

**ISSUED BY**

**Engineering Services Department**

**ALABAMA STATE PORT AUTHORITY**

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

**Kay Ivey, Governor of Alabama**



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**BID DOCUMENTS**

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**INVITATION TO BID/PROPOSE**

Sealed bid/proposals will be received via courier to the Alabama State Port Authority (ASPA), 1400 Alabama State Docks Blvd, Room 216, Administration Building, Mobile, AL 36602 by 1:30pm on Thursday, May 11th, 2023. Sealed bid/proposals can also be hand delivered from 1:45pm to 2:00pm on Thursday, May 11th, 2023 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 proposals will not be accepted.

**McDuffie Unloaders 1 and 3 Dual Barge Shifter Systems Equipment Supply**  
**MOBILE, ALABAMA**

The work consists principally of providing bonds, labor, materials, equipment, and supervision necessary for the design, fabrication, delivery to McDuffie Terminal as directed by the Owner, installation procedure manuals/drawings, installation assistance, provide QA/QC responsibility over installation work (equipment to be installed under a separate contract), and commissioning of two complete dual barge shifter systems at the Alabama State Port Authority’s McDuffie Terminal in Mobile, Alabama. All equipment supplied under this contract will be installed under a separate contract. All areas of the ASPA McDuffie Coal Terminal are restricted access facilities and require valid Port Access Credentials for entry (refer to Division III, Item SP-15).

Specifications, proposal forms, bond forms, and plans will be available on the Alabama State Port Authority website under bid notices at the following address: <https://www.alports.com/procurement/#bids>. Any issues related to the retrieval of the contract documents from the website should be directed to the ASPA Project Manager, Josh Bell, PE at [josh.bell@alports.com](mailto:josh.bell@alports.com) or 251-441-7205.

An **OPTIONAL** Pre-Bid/Proposal Meeting is scheduled for Thursday, April 13th, 2023 at 10:00 AM at the Alabama State Port Authority in the International Trade Center building, 250 North Water Street, 1<sup>st</sup> floor – Killian Room, Mobile, Alabama 36602 ([30°41'50.03"N, 88° 2'24.94"W](#)). At the conclusion of the Pre-Bid/Proposal Meeting, a site visit will be offered to allow prospective Equipment Suppliers to observe the existing conditions of the project site on the McDuffie Terminal. Access to the site will require a TWIC card (please refer to Division III, Item SP-15). All bidders not possessing proper access credentials must contact the ASPA Project Manager at least 24 hours in advance to arrange an escort. **No same day escorts will be provided.** All escorted individuals are required to have a valid state or federal identification. All vehicles entering ASPA properties are required to have proof of vehicle registration and insurance.

All Equipment Suppliers submitting bids/proposals are to carefully examine the site of the proposed work and thoroughly review the contract requirements prior to submission of a bid/proposal. Each Bidder shall satisfy oneself as to the character, quality, and quantities of work to be performed, and as to the requirements of the proposed Contract. The submission of a bid/proposal shall be proof that the Equipment Supplier has made such examination and is satisfied as to the conditions to be encountered



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in performing the work and as to the requirements of the proposed Contract. Electing to not visit the site before bidding will not relieve the prospective bidders from the stated requirements to “satisfy oneself as to the character, quality, and quantities of work to be performed, and as to the requirements of the proposed contract”.

A Guarantee will be required with each bid/proposal as follows: (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.

Performance and Payment bonds will be required at the signing of the contract in an amount not less than One Hundred (100%) percent of the contract price.

No bid/proposal 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. Also, non-residents of the State must show evidence of having qualified with the Secretary of State to do business in Alabama.

Insofar as practical, the order of work will be as scheduled by the Equipment Supplier and approved by the ASPA Project Manager. **The Equipment Supplier is required to submit a schedule with their bid showing the full schedule of the fabrication and procurement process to delivery.** All deliveries shall be according to these specifications and all reference documents and coordinated with McDuffie Operations personnel.

Bids will be publicly opened at 2:00 pm on Thursday, May 11th, 2023 at the Alabama State Port Authority in the International Trade Center building, 250 North Water Street, 1<sup>st</sup> floor – Killian Room, Mobile, Alabama. 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. Note that this contract will be awarded based on a combination of cost, schedule, and past performance. As such, the reading of bid prices will be non-binding and the awarded entity will be notified once a minimum three-person panel reviews the proposal/bids and scores the proposals/bids in accordance with the parameters set forth in this Division I.



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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 in writing to the Cowles, Murphy, Glover & Assoc. Project Manager, John Glover, at [jglover@cmg-a.com](mailto:jglover@cmg-a.com). Replies will be issued by Addenda emailed to all parties recorded as having received the bidding documents. 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 10:00am on Thursday May 4th, 2023.

### 2.0 PREQUALIFICATION OF BIDDERS

No proposal will be considered from any Equipment Supplier unless he has complied with the requirements of Paragraph SP-04 of the DIVISION III Special Provisions.

### 3.0 SUBMISSION OF PROPOSALS

Before submitting a proposal, the Equipment Supplier shall comply with the following:

- a) The Proposals, including the acknowledgement of addenda, 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) Equipment Supplier shall attach all items included by SP-6.
- e) Certificate of Compliance with the Beason-Hammon Alabama Taxpayer and Citizen Protection Act (see page I-9)
- f) Include a copy of the proposed schedule showing the fabrication and procurement process from issuance of the Notice to Proceed through the delivery of the equipment.
- g) Include documentation as to the proposing entities' experience on similar types of projects. Any writeups should be less than one page. While this opportunity should not be viewed as a time to solicit additional work with the owner, the proposing entity is allowed to include promotional material that is pertinent to the project in lieu of or in addition to the one-page writeup. References should be provided.



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One copy of Item (a) through (f) should be placed in a sealed envelope with the bidder’s name, the project name and number, and the time and date of bid/proposal opening shown on the outside.

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/proposal 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:

**McDuffie Unloaders 1 and 3 Dual Barge Shifter Systems Equipment Supply**

**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 Article SP-3.

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



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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 award if mailed or 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.

**SCORING PARAMETERS**

The scoring of the bids proposals will be based on the parameters listed below and within this Division I.

<b>Item No.</b>	<b>Description</b>	<b>Percentage of Score</b>
1.	<u>Price</u> – The stated percentage of the scoring will be directly related to the prices listed within the bidder’s schedule of prices. The bidder shall utilize the provided schedule of prices to submit their cost proposal.	60
2.	<u>Schedule</u> – The stated percentage of the scoring will be directly related to the schedule and the total number of days shown on the schedule submitted by the bidder with the bid/proposal.	20
3.	<u>Past History</u> – The stated percentage of the scoring will be directly related to the bidder’s past history on similar projects. The information on which the scoring will be based will be the information included within the bid/proposal.	20





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**SCHEDULE OF PRICES**

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT
<b><u>Dual Barge Shifter Haul System Unloader No.1</u></b>				
1.0	Design	1 LS	Lump Sum	\$
1.1	Dual Barge Shifter Barge	1 EA	\$	\$
1.2	Barge Haul Winches	2 EA	\$	\$
1.3	1 1/8" Wire Ropes and Wire Rope Fittings	1 LS	Lump Sum	\$
1.4	40 Ton Snatch Block w/swivel	2 EA	\$	\$
1.5	40 Ton Four Roller Fairlead	5 EA	\$	\$
1.6	Dual Barge Shifter Barge Electrical Power Distribution (Lighting, Outlets, Disconnects, etc.)	1 LS	Lump Sum	\$
1.7	Cable Reel and Cable Guide	1 LS	Lump Sum	\$
1.8	Cable Reel Cable	1 LS	Lump Sum	\$
1.9	Construction Assembly Drawings & Manual	1 LS	Lump Sum	\$
1.10	Construction Assistance	1 LS	Lump Sum	\$
1.11	Construction QAQC	1 LS	Lump Sum	\$
1.12	Miscellaneous	1 LS	Lump Sum	\$
			<b>Sub-Total</b>	<b>\$</b>



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<b><u>Dual Barge Shifter Haul System Unloader No.3</u></b>				
2.0	Design	1 LS	Lump Sum	\$
2.1	Dual Barge Shifter Barge	1 EA	\$	\$
2.2	Barge Haul Winches	2 EA	\$	\$
2.3	1 1/8" Wire Ropes and Wire Rope Fittings	1 LS	Lump Sum	\$
2.4	40 Ton Snatch Block w/swivel	2 EA	\$	\$
2.5	40 Ton Four Roller Fairlead	6 EA	\$	\$
2.6	Dual Barge Shifter Barge Electrical Power Distribution (Lighting, Outlets, Disconnects, etc.)	1 LS	Lump Sum	\$
2.7	Cable Reel and Cable Guide	1 LS	Lump Sum	\$
2.8	Cable Reel Cable	1 LS	Lump Sum	\$
2.9	Construction Assembly Drawings & Manual	1 LS	Lump Sum	\$
2.10	Construction Assistance	1 LS	Lump Sum	\$
2.11	Construction QAQC	1 LS	Lump Sum	\$
2.12	Miscellaneous	1 LS	Lump Sum	\$
			<b>Sub-Total</b>	
			<b>Total Bid</b>	<b>\$</b>

\_\_\_\_\_ Dollars

(in words)



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- (1) The general requirements cost shall be absorbed into the listed line items with the schedule of prices, including insurances, overhead profit and all other miscellaneous fabrication activities involved with the specific equipment system supply phase including the drawings, installation manuals and construction related activities.
  
- (2) Miscellaneous (Items 1.12 and 2.12) should include any other items not specifically detailed in the schedule of prices but including in the complete supply of the dual barge shifter systems in accordance with the specifications.
  
- (3) All equipment supplied shall be warranted for the periods shown below:
  - a.    Entire Barge Haul System & Accessories after Commissioning - 5 Years
  - b.    Components repaired during Warranty Period - 1 Year or balance of warranty period, whichever is longer
  - c.    Dual Barge Shifter Barge - 10 Years
  - d.    Paint and Galvanizing - 10 Years
  - e.    Sheaves - 5 Years
  - f.    Cable Reel - 5 Years
  
- (4) All equipment supplied under this contract will be installed under a separate contract.

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

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

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

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

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

<b>Equipment Supplier's Signature:</b> _____  <b>Equipment Supplier Company</b> _____  _____ <div style="display: flex; justify-content: space-between; width: 100%;"> <span><b>Name</b></span> <span><b>Title</b></span> <span><b>Date</b></span> </div>		
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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 Penal sum 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 McDuffie Unloaders 1 and 3 Dual Barge Shifter Systems Equipment Supply in Mobile, Alabama, Project No.: 10873, Task No.: 2

**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	



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

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

**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.



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

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

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/Equipment Supplier)  
\_\_\_\_\_  
(Address of Contractor/Equipment Supplier)  
\_\_\_\_\_  
(City, State, Zip)

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

**McDuffie Unloaders 1 and 3 Dual Barge Shifter Systems Equipment Supply**  
**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/EQUIPMENT SUPPLIER 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  
(SEAL)

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

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

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

\_\_\_\_\_

\_\_\_\_\_  
Surety

ATTEST:

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

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

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

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

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

\_\_\_\_\_

\_\_\_\_\_

**NOTE: Date of BOND must not be prior to date of CONTRACT.**  
**If CONTRACTOR/EQUIPMENT SUPPLIER 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/Equipment Supplier)  
\_\_\_\_\_  
(Address of Contractor/Equipment Supplier)  
\_\_\_\_\_  
(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:

**McDuffie Unloaders 1 and 3 Dual Barge Shifter Systems Equipment Supply  
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.



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

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

ATTEST:

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

(SEAL)

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

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

\_\_\_\_\_

\_\_\_\_\_  
Principal

BY: \_\_\_\_\_(s)

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

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
Surety

ATTEST:

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

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

\_\_\_\_\_

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

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

\_\_\_\_\_

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



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**ACKNOWLEDGEMENT FOR CHANGE ORDERS**

**TO:** ALABAMA STATE PORT AUTHORITY

**RE:** McDuffie Unloaders 1 and 3 Dual Barge Shifter Systems Equipment Supply

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/Equipment Supplier 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/Equipment Supplier 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/EQUIPMENT SUPPLIER

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 \_\_\_\_\_, domiciled in the state of \_\_\_\_\_, Party of the Second Part, and hereinafter designated as "CONTRACTOR/EQUIPMENT SUPPLIER," 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/EQUIPMENT SUPPLIER," 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: McDuffie Unloaders 1 and 3 Dual Barge Shifter Systems Equipment Supply**

**Project #: 10873 Task 2**

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\ Equipment Supplier," 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 the 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.



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WITNESS:

Alabama State Port Authority

\_\_\_\_\_

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

WITNESS:

Contractor/Equipment Supplier  
Party of the Second Part

\_\_\_\_\_

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



**Alabama State Port Authority**  
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### **SP-01 DESCRIPTION OF WORK**

The work consists principally of providing bonds, labor, materials, equipment, and supervision necessary for the design, fabrication, delivery to McDuffie Terminal and store as directed by the Owner, installation procedure manuals/drawings, installation assistance, provide QA/QC responsibility over installation work (equipment to be installed under a separate contract), commissioning of two complete dual barge shifter systems at the Alabama State Port Authority's McDuffie Terminal in Mobile, Alabama. All equipment supplied under this contract will be installed under a separate contract by a contractor familiar with McDuffie Coal Terminal. All areas of the ASPA McDuffie Coal Terminal are restricted access facilities and require valid Port Access Credentials for entry.

### **SP-02 OWNER 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. Section 20-14 (Owner Purchase of Materials) of Division IV General Provisions is deleted in entirety.

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

The Contractor/Equipment Supplier 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 the timeframe stated in the schedule submitted with the bid/proposal. The time will start with the issuance of the Notice to Proceed. 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. 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/EQUIPMENT SUPPLIER**

Preference shall be given to resident Contractors/Equipment Suppliers, and non-resident bidders domiciled in a state having laws granting preference to local Contractors/Equipment Suppliers shall be awarded Alabama public contracts the same as Alabama Contractors/Equipment Suppliers bidding under similar circumstances; and resident Contractors/Equipment Suppliers in Alabama are to 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/Equipment Supplier 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/Equipment Supplier, 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/Equipment Supplier, 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/Equipment Supplier or any subcontractor under workers' or workmen's compensation acts, or other employee benefits acts.

### **SP-08 SUPERVISION**

The Contractor/Equipment Supplier shall place a competent superintendent on the Project who shall have experience in the type of work being performed under this Contract. A resume of the superintendent's experience shall be submitted for review prior to the placement of the named person on the project. The Contractor/Equipment Supplier shall also submit an organizational chart, which shall clearly show the Contractor's/Equipment Supplier'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/Equipment Supplier 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/Equipment Supplier'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/Equipment Supplier'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/Equipment Supplier shall not reassign a superintendent without the acknowledgement and approval of the Owner.

### **SP-09 CONTRACTOR'S/EQUIPMENT SUPPLIER'S REPRESENTATIVE**

A representative of the Contractor/Equipment Supplier shall be reachable by normal means of communication at all times work is being conducted and shall be on site while work is ongoing on site 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**

Alabama Port Authority (APA) will issue progress payment on this project. The Contractor will need to submit their proposed payment plan for approval by the Owner. The payment plan shall not exceed 70% of the total cost of the equipment prior to delivery to the site. Documentation as to the progress of the project must be demonstrated to match the requested payment percentage prior to approval of any progress payment being approved.

### **SP-11 INSURANCE**

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

1. Section 40-04 – Delete in its entirety
2. Section 40-08 – Delete in its entirety
3. Section 40-09 – Delete in its entirety
4. Section 40-10 – Delete in its entirety

### **SP-12 TAXPAYER AND CITIZEN PROTECTION ACT**

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 affidavit must be notarized. The following E-Verify website link is provided for convenience: <https://www.e-verify.gov/>

### **SP-13 GUARANTEE**

The Contractor/Equipment Supplier shall furnish to the Alabama State Port Authority a written guarantee in accordance with the requirements stipulated in the Division I Schedule of Prices and Division V Construction Specifications. This guarantee shall be issued from the date of final acceptance and shall cover any defective material or workmanship on the specified structure.

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

The Contractor/Equipment Supplier shall prepare a CPM Project Schedule using Microsoft Project and the schedule shall show all items of work necessary to bring the project to completion. The Contractor/Equipment Supplier shall submit electronic copies of 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 and shall be a requisite for the payment request to be processed.

### **SP-15 ACCESS TO ASPA RESTRICTED FACILITIES**

All individuals doing any work on this project and accessing the McDuffie Terminal, including operators, supervisors, maintenance personnel, truck drivers, etc. must have a valid Transportation Worker Identification Credential (TWIC) card, ASPA badge and an ASPA vehicle decal with no exceptions. Information regarding ASPA's access policy is provided on the ASPA website at the link below.

<https://www.alports.com/port-access/>

### **SP-16 TEMPORARY WATER AND ELECTRICAL POWER**

Delete

### **SP-17 INTENT OF PLANS AND SPECIFICATIONS**

The following is in addition to Article 60-03 of Division IV, General Provision:

Any detail which may be incomplete or lacking in the plans and specifications shall not constitute claim for extra compensation. Such detail shall be supplied by the Contractor/Equipment Supplier and submitted to the Engineer in advance of its requirement on the job. The true intent of the plans and specifications is to produce a complete working facility and incomplete detail will not abrogate this intent.



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

**10-02 AISC.** The American Institute of Steel Construction.

**10-03 ASTM.** The American Society for Testing and Materials.

**10-04 AWARD.** The acceptance, by the OWNER, of the successful bidder's proposal.

**10-5 BIDDER.** Any individual, partnership, firm or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

**10-6 CALENDAR DAY.** Every day shown on the calendar.

**10-7 CHANGE ORDER.** A written order to the Contractor/Equipment Supplier 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.

**10-8 COMMERCE.** The prime business of the OWNER, consisting of the transshipping and storage of goods and materials by highway, rail, barge, and ship.

**10-9 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.

**10-10 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.

**10-11 CONTRACT ITEM (PAY ITEM).** A specific unit of work for which a price is provided in the Contract.

**10-12 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.

**10-13 CONTRACTOR/EQUIPMENT SUPPLIER .** 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.

**10-14 DEPARTMENT.** The Alabama State Port Authority.



**10-15 DIRECTOR.** The Director of the Alabama State Port Authority, as constituted under the laws of Alabama.

**10-16 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.

**10-17 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.

**10-18 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.

**10-19 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.

**10-20 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.

**10-21 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/Equipment Supplier .

**10-22 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.

**10-23 LABORATORY.** The official testing laboratories of the OWNER or such other laboratories as may be designated by the Engineer.

**10-24 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.

**10-25 MATERIALS.** Any substance specified for use in the construction of the Contract work.

**10-26 NOTICE TO PROCEED.** A written notice to the Contractor/Equipment Supplier 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.

**10-27 OWNER.** The term OWNER shall mean the State of Alabama acting by and through the Alabama State Port Authority.

**10-28 PAYMENT BOND.** The approved form of security furnished by the Contractor/Equipment Supplier 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.

**10-29 PERFORMANCE BOND.** The approved form of security furnished by the Contractor/Equipment Supplier and his surety as a guaranty that the Contractor/Equipment Supplier will complete the work in accordance with the terms of the Contract.

**10-30 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.

**10-31 PROJECT.** The agreed scope of work for accomplishing specific development.

**10-32 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.

**10-33 PROPOSAL FORM.** The approved, prepared form on which the OWNER requires that formal bids be submitted for the work contemplated.

**10-34 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.

**10-35 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.

**10-36 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.

**10-37 STATE.** The State of Alabama, the Party of the First Part to the Contract, acting by and through the Alabama State Port Authority.

**10-38 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.

**10-39 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/Equipment Supplier, with the approval of the OWNER.

**10-40 SUPERINTENDENT.** The Contractor's/Equipment Supplier'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.

**10-41 SUPPLEMENTAL AGREEMENT.** A written agreement between the Contractor/Equipment Supplier 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.

**10-42 SURETY.** The corporate body, licensed under the laws of Alabama, bound with and for the Contractor/Equipment Supplier for the acceptable performance of the Contract and also for the payment of all claims recoverable under the Contract Bonds.

**10-43 WORK.** The furnishing of all labor, materials, tools, equipment and incidentals necessary or convenient to the Contractor's/Equipment Supplier's performance of all duties and obligations imposed by the Contract, plans and specifications.

**10-44 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/Equipment Supplier 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/Equipment Supplier's control, Saturdays, Sundays and national holidays on which the Contractor's/Equipment Supplier'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/Equipment Supplier 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/Equipment Supplier 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, 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 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/Equipment Supplier to the Department as liquidated damages for the loss sustained by the State because of failure of the Contractor/Equipment Supplier 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	1,200.00

## **20-14 OWNER 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.

20-14.1.3 In order to achieve sales tax exemption and avoid jeopardizing immunity from sales taxes it is essential that the following procedures be followed.

### **20-14.2 Purchase of Materials or Equipment**

20-14.2.1 All purchase orders must be executed on the Owner's Purchase Order Letterhead/Form.

20-14.2.2 The purchase order form format is to be designed at the Owner's discretion with the Owner reserving approval rights concerning terms and conditions boilerplate.

20-14.2.3 The Contractor's/Equipment Supplier's organization will be designated as an agent of the Owner for Material and Equipment purchases and will provide the names of two individuals in the Organization who will be authorized to purchase on the behalf of the Owner.

20-14.2.4 Purchase Orders are to be numerically sequenced with two executed copies furnished to the Construction Manager, one copy of which will be forwarded to the Owner by the Construction Manager. If a Construction Manager is not assigned to the project, the copies should go directly to the Owner's Project Manager within the Engineering Services Division.

20-14.2.5 Owner Purchase Orders are invalid for gross amounts less than \$2,000.00. Any materials purchased directly by the Contractor/Equipment Supplier for the project shall be subject to Sales Tax and paid by the Contractor/Equipment Supplier.

### **20-14.3 Payment of Materials or Equipment**

20-14.3.1 All payments in connection with the purchase orders generated by Owner's Contractor/Agent will be in the form of a check from the Alabama State Port Authority to the appropriate vendors or suppliers.

20-14.3.2 Check Request Form will be furnished to the Contractor/Equipment Supplier by the Owner. The Check Request Form will be numerically sequenced and accounted for.

20-14.3.3 The Contractor/Equipment Supplier is responsible for preparing the Check Request Form for the Owner's signature.

20-14.3.4 An Invoice Transmittal Form is to be designed by the Contractor/Equipment Supplier with the Owner reserving the right of approval of the Invoice Transmittal Form design. It is a primary requirement that the Invoice Transmittal Form indicate that the Owner is the sole payer for materials or equipment. The Invoice Transmittal Form will be numerically sequenced and accounted for.

20-14.3.5 All Contractor/Equipment Supplier requests for payment for materials and equipment purchased under the provisions of this Article will be forwarded to the Construction Manager under cover of the Invoice Transmittal Form, submitted in

duplicate, with one copy retained by the Construction Manager and one copy retained by the Owner. The Invoice Transmittal shall be backed-up with signed receiving or delivery tickets, invoices and prepared Check Request Form plus one (1) additional copy of the Check Request Form which will be kept by the Construction Manager.

20-14.3.6 Upon signature by the Owner of the Check Request Form, a check from the Alabama State Port Authority will be issued directly to the vendor or supplier.

#### **20-14.4 Accounting Procedures**

20-14.4.1 The Contractor's/Equipment Supplier's Schedule of Values shall be broken down into three categories, if requested by Owner, showing Material, Equipment and with the remaining category containing labor, fee, rentals, overhead and other costs on a line item basis.

20-14.4.2 Check Request Forms generated by the Contractor/Equipment Supplier/Agent for the Owner shall be collated on a monthly basis and assembled into a credit amount showing amounts to be deducted from the current Payment Application and Contract Sum.

20-14.4.3 The Contractor's/Equipment Supplier's Payment Application will be adjusted on a monthly basis in accordance with the preceding monthly accumulated credit amounts for Owner purchases.

20-14.4.4 Discounts which accrue from Owner payments for prompt payment will accrue as 50% to the Owner and 50% to the Contractor/Equipment Supplier.

20-14.4.5 Retainage will not be withheld on Owner purchased Materials or Equipment.

#### **20-14.5 Procedures**

The Contractor/Equipment Supplier shall follow the procedures set forth below, but nothing herein shall be construed to reduce, limit or change the Contractor's/Equipment Supplier's overall responsibility for the quality, scheduling, coordination, warranty, overhead, profit or retainage, except as provided in subparagraph 20-14.4.5 of the complete Contract scope of work in accordance with all provisions of the Contract Documents.

20-14.5.1 Procurement of Material Selected by Contractor/Equipment Supplier.

With respect to any materials, equipment or product to be purchased by the Owner, the following procedures shall be followed:

1. Immediately upon notice to proceed or award of Contract, the Contractor/Equipment Supplier in conjunction with the Construction Manager shall develop a list of items to be purchased by the Owner for incorporation into the work.
2. When the type, quantity, and price of each lot of materials, equipment or product to be purchased on a single purchase order have been determined by the Contractor/Equipment Supplier, Contractor/Equipment Supplier shall complete the Owner Purchase Order Form and shall sign the form to certify that the material, equipment or product described on the form complies with the requirements of the Contract Documents. The Owner Purchase Order Form, signed by the Contractor/Equipment Supplier shall be forwarded to the vendor by the Contractor/Equipment Supplier. The total monetary value listed on the Purchase Order Form is the cost limitation established for the Purchase Order.



3. Simultaneously, with the Contractor's/Equipment Supplier/Agent's issuance of a purchase order form for major items the Contractor/Equipment Supplier shall then incorporate into his expediting schedule his activities showing purchase time, shop drawing time, submittal approval time, integrated into the updated project schedule and then tied into the activity requiring the purchase material.
4. The supplier shall deliver the material, equipment or product to the Contractor/Equipment Supplier in accordance with the provisions of the purchase order, and as required by the Contract Documents. Upon receipt of the materials the Contractor/Equipment Supplier shall inspect the materials, equipment or product as necessary to verify conformity of the material, equipment or product received with the Owner Purchase Order and with the shipping documents. The Contractor/Equipment Supplier shall provide to the Vendor written certification of receipt, or signed delivery ticket, of Each delivery of material, equipment or product which certification shall fully describe any shortages, defects, damage or non-compliance to the supplier within five days or receipt of Each delivery and shall arrange for the return and replacement of defective, damaged or non-conforming material, equipment or product on behalf of the Owner, in accordance with the provisions of the Contract Documents.
5. The supplier shall submit each invoice along with aforementioned proof of delivery for material, equipment or product procured pursuant to the provisions hereof to the Owner in care of the Contractor/Equipment Supplier/Consignee. The Contractor/Equipment Supplier/Consignee shall verify and certify to the Owner the accuracy and completeness of each invoice submitted by the supplier. Each certified invoice shall be submitted with appropriate Check Request Form no later than the Contractor's/Equipment Supplier's next monthly Application for Payment to the Owner.
6. After the Contractor's/Equipment Supplier's Application for Payment, along with Check Request Forms including certified supplier invoices and delivery tickets, has been approved for payment in accordance with the provisions of the General Conditions, the Owner shall make direct payments to the supplier, and the amount of each such payment, shall be deducted from the then-unpaid balance of the Contractor's/Equipment Supplier's Contract Sum. The amount deducted shall be in accordance with subparagraph 20-14.4.2.

#### 20-14.5.2 Owner-Purchased Materials

Materials used on the Project which are purchased by the Owner will be available at the location specified in the Purchase Order and in accordance with the periodically adjusted project schedule. The Contractor/Equipment Supplier shall review the updated and adjusted project schedule and will be responsible for coordinating the deliveries with the progress of the work. The Contractor's/Equipment Supplier's costs for storing, transporting, handling, protecting and installing Owner purchased material shall be included in the Contract Sum and paid for **when such material is installed**. The Contractor/Equipment Supplier shall be responsible for material furnished to it, and shall pay for storage charges incurred as a result of its failure to take delivery of Owner material on the assigned date.

The Contractor/Equipment Supplier shall be liable to the Owner for the cost of replacing or repairing material lost or damaged from any cause whatsoever after receipt by the Contractor/Equipment Supplier or after the Contractor/Equipment Supplier has failed to take delivery after the assigned date. The costs will be deducted from any monies due or to become due to the Contractor/Equipment Supplier, except those amounts covered under any claims payments made under insurance policies furnished by the Owner. In cases where lost or damaged material was not evident at the time such materials were received by the Contractor/Equipment Supplier, the Contractor/Equipment Supplier will be afforded the same protection by the Owner as the Owner has received from the original shipper and manufacturer. The Owner, in addition, agrees to provide the Contractor/Equipment Supplier with all necessary assistance in communicating with the manufacturer of any materials which fail to function properly once installed.

The Contractor/Equipment Supplier is responsible for providing and performance of warranty work in connection with the Owner purchased materials, for the time periods as required by the Contract Documents.

#### **20-14.6 Materials and Equipment Responsibility**

20-14.6.1 The Contractor/Equipment Supplier shall retain as part of his Bid and Fee the following responsibilities for care, custody and control of the Owner 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/Equipment Supplier orders non-specified, wrong size or dimensioned Material or Equipment it will be his responsibility to replace such at no cost to the Owner.

#### **20-14.7 Project Close-Out**

The Contractor/Equipment Supplier shall return to the Owner all blank Purchase Order Forms issued, but not used on the project.

(Rev. 3/31/11)

(rev 3/31/11)

## **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/Equipment Supplier, 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/Equipment Supplier 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/Equipment Supplier. Delivery of the fully executed Contract to the Contractor/Equipment Supplier 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. 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/Equipment Supplier 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/EQUIPMENT SUPPLIER COVERAGE**

The Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier shall provide such insurance protection for subcontractor and his employees by endorsement to the Contractor's/Equipment Supplier's policies or by taking out separate policies in the name of the subcontractor.

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

The Contractor/Equipment Supplier 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/Equipment Supplier'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/EQUIPMENT SUPPLIER'S PROTECTIVE LIABILITY**

The Contractor/Equipment Supplier shall take out and maintain during the life of the Contract a separate Owner's and Contractor's/Equipment Supplier'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/Equipment Supplier shall take out and maintain during the life of the Contract Business Automobile Liability insurance covering owned, non-owned and hired vehicles in an amount not less than \$1,000,000 for any one occurrence for bodily injury, including death, and property damage liability. The Owner and Engineer shall be identified as Additional Insureds, to the extent required by written Contract.

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

The Contractor/Equipment Supplier 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/Equipment Supplier 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 Act (USL&H), 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/Equipment Supplier shall provide Protection and Indemnity coverage, including crew, in an amount not less than \$2,000,000 for each loss.

*Only the Contractor/Equipment Supplier 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/Equipment Supplier subcontracts for this portion of the work, the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier subcontracts this portion of the work, the subcontractor shall not 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 (to be determined per project)**

The Contractor/Equipment Supplier 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/Equipment Supplier, and "all Subcontractors," as their interests appear. Policy shall be provided to the Owner prior to commencement of work.

When changes in scope of work by written Change Order or aggregate Change Orders equal 15 percent of the total Contract, the amount of coverage provided in the Builder's Risk/Installation Floater policy shall be increased accordingly and evidence of increased coverage delivered to the Owner.

#### **40-10 PROFESSIONAL LIABILITY INSURANCE**

The Contractor/Equipment Supplier 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/Equipment Supplier 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. Each Certificate

of Insurance shall note the project name, project number and task number for which the policy is applicable.

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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier'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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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 Supplier's equipment and personnel, is the most important consideration.

It is understood and agreed that the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier's performance of work that is otherwise provided for in the Contract, plans, and specifications, the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier, 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier's wish to exercise option (a), (b), or (c), the Contractor/Equipment Supplier shall be paid for the excavation or removal of such material at the applicable Contract price. The Contractor/Equipment Supplier 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/Equipment Supplier shall not be charged for his use of such material so used in the work or removed from the site.

Should the Engineer approve the Contractor's/Equipment Supplier's exercise of option (a), the Contractor/Equipment Supplier shall be paid, at the applicable contact 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/Equipment Supplier shall make no claim for delays by reason of his exercise of option (a), (b), or (c).

The Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier, and the rights of different Contractors/Equipment Suppliers 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/Equipment Supplier 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/Equipment Supplier'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/Equipment Supplier'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 each of the plans and specifications. He shall have available on the work at all times, one copy each of the plans and specifications. Additional copies of plans and specifications may be obtained by the Contractor/Equipment Supplier for the cost of reproduction.

The Contractor/Equipment Supplier 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/Equipment Suppliers in every way possible. The Engineer shall allocate the work and designate the sequence of construction in case of controversy between Contractors/Equipment Suppliers. The Contractor/Equipment Supplier 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/EQUIPMENT SUPPLIERS**

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/Equipment Supplier shall conduct his work so as not to interfere with or hinder the progress or completion of the work being performed by other Contractors/Equipment Suppliers. Contractors/Equipment Suppliers working on the same project shall cooperate with each other as directed.

Each Contractor/Equipment Supplier 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/Equipment Suppliers working within the limits of the same project.

The Contractor/Equipment Supplier 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/Equipment Suppliers 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/Equipment Supplier 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/Equipment Supplier, needed to layout and construct the work. The Contractor/Equipment Supplier 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/Equipment Supplier's guidance shall be scrupulously preserved by the Contractor/Equipment Supplier. In case of negligence on the part of the Contractor/Equipment Supplier, 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/Equipment Supplier 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/Equipment Supplier.

Inspectors employed by the OWNER are authorized to notify the Contractor/Equipment Supplier 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/Equipment Supplier as is required to make a complete and detailed inspection.

If the Engineer requests it, the Contractor/Equipment Supplier, 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/Equipment Supplier 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/Equipment Supplier'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/Equipment Supplier'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/Equipment Supplier 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/Equipment Supplier.

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

The Contractor/Equipment Supplier 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/Equipment Supplier 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. 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier will not be paid an additional amount for such work.

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

Should the Contractor/Equipment Supplier 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/Equipment Supplier of such noncompliance. Such notification shall specify a reasonable time within which the Contractor/Equipment Supplier shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the urgency that exists.

Should the Contractor/Equipment Supplier 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/Equipment Supplier.

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

If at any time during the prosecution of the project the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier the necessary instructions for correction of same, and the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier for keeping strict account of actual cost as required, then the Contractor/Equipment Supplier hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier'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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier'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/Equipment Supplier'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/Equipment Supplier'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/Equipment Supplier elects to furnish the specified "brand name", the Contractor/Equipment Supplier 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/Equipment Supplier propose to furnish an "or equal" material or assembly, he shall furnish the manufacturer's certificates of compliance as hereinbefore  
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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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier, as specified herein, and shall become property of the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier'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/Equipment Supplier shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier, 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier shall be responsible for any demurrage, damage, loss, or other deficiencies which may occur during the Contractor's/Equipment Supplier's handling, storage, or use of such OWNER-furnished material. The OWNER will deduct from any monies due or to become due the Contractor/Equipment Supplier any cost incurred by the OWNER in making good such loss due to the Contractor's/Equipment Supplier's handling, storage, or use of OWNER-furnished materials.

#### **70-09 RECEIVING MATERIALS AND EQUIPMENT**

The Contractor/Equipment Supplier 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/Equipment Supplier. All goods and materials stored out of doors will be properly and orderly supported. The Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier shall exercise the utmost care not to endanger life or property, including new work. The Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier, 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/Equipment Supplier 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/Equipment Supplier; 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/Equipment Supplier 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/Equipment Supplier will not be withheld when the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier shall complete such portions of the work on or before the date specified or as otherwise specified. The Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier at his expense.

The Contractor/Equipment Supplier 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/EQUIPMENT SUPPLIER'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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor/Equipment Supplier 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/Equipment Supplier shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding, 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/EQUIPMENT SUPPLIER'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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier of his responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier shall again notify Each such owner of his plan or operation. If, in the Contractor's/Equipment Supplier'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/Equipment Supplier's commencement of operations in such general vicinity. The Contractor/Equipment Supplier shall furnish a written summary of the notification to the Engineer.

The Contractor's/Equipment Supplier's failure to give the two days' notice hereinabove provided shall be cause for the Engineer to suspend the Contractor's/Equipment Supplier'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/Equipment Supplier 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/Equipment Supplier's operations.

Should the Contractor/Equipment Supplier 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/Equipment Supplier, 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/Equipment Supplier 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/Equipment Supplier, or his surety.

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

The OWNER will be responsible for furnishing all right-of-ways upon which the work is to be constructed in advance of the Contractor's/Equipment Supplier'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 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 final inspection and notify the Contractor/Equipment Supplier 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/Equipment Supplier or his surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor/Equipment Supplier 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/Equipment Supplier, 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/Equipment Supplier 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, bitumens, 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier's finding and will direct the Contractor/Equipment Supplier to either resume his operations or to suspend operations as directed.

Should the Engineer order suspension of the Contractor's/Equipment Supplier's operations in order to protect an archaeological or historical finding, or order the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier shall begin the work to be performed under the Contract within ten (10) days of the date set by the Engineer in the written notice to proceed, but in any event the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier'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/Equipment Supplier 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/Equipment Supplier falls significantly behind the submitted schedule, the Contractor/Equipment Supplier 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/Equipment Supplier shall notify the Engineer at least 24 hours in advance of resuming operations.

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

The Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier in accomplishing the work are not prescribed in the Contract, the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor/Equipment Supplier 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/Equipment Supplier to carry out orders given or perform any or all provisions of the Contract.

In the event that the Contractor/Equipment Supplier 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/Equipment Supplier has no control, the Contractor/Equipment Supplier 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/Equipment Supplier shall submit with his claim information substantiating the amount shown on the claim. The Engineer will forward the Contractor's/Equipment Supplier's claim to the OWNER for consideration. No provision of this article shall be construed as entitling the Contractor/Equipment Supplier to compensation for delays due to inclement weather, for

suspensions made at the request of the Contractor/Equipment Supplier, 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier'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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier'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/Equipment Supplier, 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/Equipment Supplier 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/Equipment Supplier.
- (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 or 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/Equipment Supplier 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/Equipment Supplier'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/Equipment Supplier, 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/Equipment Supplier 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/Equipment Supplier fail to complete the work in the time provided in his Contract.

The Contractor/Equipment Supplier 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/Equipment Supplier in the performance of a Contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, or freight embargoes.

Permitting the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier:

- (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/Equipment Supplier in default of the Contract for any reason hereinbefore, he shall immediately give written notice to the Contractor/Equipment Supplier and the Contractor/Equipment Supplier's surety as to the reasons for considering the construction in default and the OWNER's intentions to terminate the Contract.

If the Contractor/Equipment Supplier 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/Equipment Supplier'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/Equipment Supplier. 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/Equipment Supplier. If such expense exceeds the sum which would have been payable under the Contract, then the Contractor/Equipment Supplier 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/Equipment Supplier.

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/Equipment Supplier that are not incorporated into the work shall, at the option of the Contractor/Equipment Supplier, 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier shall be adjusted to reflect actual cost as shown by receipted bills and actual cost records.

The cost of demobilization of Contractor's/Equipment Supplier'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/Equipment Supplier.

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/Equipment Supplier 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/Equipment Supplier 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 D 1250 for asphalt or ASTM D 633 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/Equipment Supplier, 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier and shall thereupon become the property of the OWNER.

In addition to the reimbursement hereinbefore provided, the Contractor/Equipment Supplier 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/Equipment Supplier must be directly related to the deleted Contract item and shall be supported by certified statements by the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier.

- (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/Equipment Supplier shall receive the actual cost, and to this cost (sum) 5 percent will be added. The Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier has furnished the Engineer with the duplicate itemized statements of the cost of such force account work detailed as follows:
  - (1) Name, classification, date, daily hours, total hours, rate and extension for each laborer and foreman.
  - (2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.
  - (3) Quantities of materials, prices, and extensions.

- (4) Transportation of materials.
- (5) 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/Equipment Supplier's stock, then in lieu of the invoices the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier.

It is understood and agreed that the Contractor/Equipment Supplier 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/Equipment Supplier has furnished the Engineer with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
- (c) The Contractor/Equipment Supplier has furnished the Engineer with satisfactory evidence that the material and transportation costs have been paid.
- (d) The Contractor/Equipment Supplier has furnished the OWNER legal title (free of liens or encumbrances of any kind) to the material so stored or stockpiled.
- (e) The Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier before final payment can be made.

- (a) The Contractor/Equipment Supplier must publicly advertise the NOTICE OF COMPLETION furnished by the Engineer in accordance with Title 39, Code of Alabama, 1975.
- (b) The Contractor/Equipment Supplier must execute copies of CONTRACTOR'S/EQUIPMENT SUPPLIER'S AFFIDAVIT OF PAYMENT OF CLAIMS AND DEBTS on the form furnished by the Engineer.
- (c) The must have his surety execute copies of CONSENT OF SURETY TO FINAL PAYMENT on the form furnished by the Engineer.
- (d) The Contractor/Equipment Supplier must furnish a letter on his letterhead acknowledging that acceptance of final payment by the Contractor/Equipment Supplier constitutes a waiver of all claims, present or future, in connection with this project.
- (e) The Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier's receipt of the Engineer's final estimate. If, after such 30-day period, a dispute still exists, the Contractor/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier less all previous payments and all amounts to be deducted under the provisions of the Contract.

If the Contractor/Equipment Supplier 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/Equipment Supplier will be paid pursuant to a supplemental final estimate.

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

Contractor's/Equipment Supplier'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/Equipment Supplier 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/Equipment Supplier 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/Equipment Supplier's records, and shall be allowed to interview any of the Contractor's/Equipment Supplier'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/Equipment Supplier 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/Equipment Supplier and payee. Such requirements will also apply to Subcontractors and Sub-Subcontractors, etc. Contractor/Equipment Supplier will cooperate fully and will cause all Related Parties and all of Contractor's/Equipment Supplier'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/Equipment Supplier'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/Equipment Supplier 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/Equipment Supplier. Any adjustments and/or payments which must be made as a result of any such audit or inspection of the Contractor's/Equipment Supplier'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/Equipment Supplier.



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**DIVISION V**

**Technical Specification - Dual Barge Shifter/Haul System**

**PROJECT SUPPLY SCOPE:**

Supply of the following equipment defined within this Technical Specification:

- Two Dual Barge Shifter/Haul Systems Including:
  - Dual Barge Shifter (1 per system) Dual Barge Shifter to Include:
    - (4) Hydraulic Winches for Barge Restraint
    - Hydraulic Pump and Reservoir
    - Kevlar Ropes for Barge Restraint
    - Electrical Distribution/Panels/Power Cable Support
    - Lights and 120v Service Outlets for Operation
- Cable Reel (Power) (1) per system
- Haul Winches (2 per system, 4 required for Project)
  - 1 1/8" Winch Cable (2 per system, 4 required for Project)
  - 40 ton Snatch Block with swivel and schackle ( 2 per system, 4 required for Project)
  - 40 ton Four Roller Fairleads (5 for Barge Haul No. 1 and 6 for Barge Haul No.3, 11 required for Project)

**DIMENSIONS**

Dual barge shifter	<u>35' W x 40' L x 5' H</u>
#1 Wire Rope Length	<u>1,200</u> L.F.
#3 Wire Rope Length	<u>1,200</u> L.F.
#1 Cable Reel Cable	<u>300</u> L.F. TRAVEL
#3 Cable Reel Cable	<u>300</u> L.F. TRAVEL





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**SPEEDS**

Barge Haul Winch

Haul with rated load (2-1500 Ton Barges) 0-70 FPM

Haul with empty load (2-300 Ton Barges) 0-70 FPM

Barge Restraint Winches 21 FPM

Cable Reel 0-70 FPM

**ELECTRICAL SYSTEMS**

Cabel Reel Power Supply 480V, 3-phase, 60 Hz

Main Power Cable Reel Location See Plans

Drive Control System Vector Drive (barge haul winch control)

Barge restraint winch - Manual

**SITE CONDITIONS**

Ambient Temperature Range 10°F to +100°F

Humidity 20% to 100%

In Service Wind Sustained 25 MPH/Gust 35 MPH

Stowed Wind Sustained 163 MPH

**WARRANTY PERIOD**

Entire Barge Haul System & Accessories after Commissioning 5 Years

Components repaired during Warranty Period 1 Year or balance of warranty period

Barge 10 Years



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Paint and Galvanizing 10 Years

Sheaves 5 Years

Cable Reel 5 Years

**LOCATION OF DELIVERY:**

**McDuffie Island Terminal**

**1901 Ezra Trice Blvd.**

**Mobile, AL**



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## TECHNICAL SPECIFICATION

### Functional Requirement for the Dual Barge Shifter System

## 1 GENERAL

### 1.1 Project Description

Provide design, fabrication, delivery, installation procedure (drawings and sequence), installation assistance/observation, testing and commissioning of Two (2) dual barge shifter systems (includes power cable and cable reel, shifter barge, and barge haul winches and appertunances). The equipment shall be delivered in a fully assembled units/pieces and operational/tested condition.

### 1.2 Site

The equipment shall be delivered to the owner's site, McDuffie Coal Termianl Mobile, Alabama (or as directed by Owner) as referenced in the Special Conditions.

### 1.3 Requirements of the Owner

The Owner's requirement is for the equipment and installaion to be suitable in all respects for safe, efficient and continuous use under actual operational conditions in a modern, large capacity, international material handling facility for a period of not less than twenty (20) years subject to wear and tear (excluding categorically any fatigue failure), and routine maintenance.

For the purposes of this Contract acceptable routine maintenance shall be within the following general parameters.

- (1) For steel structures and related component parts, fittings and connections, acceptable routine maintenance shall be limited to the maintaining of the paint system as below stated. Reinforcing, cutting out and/or replacement of any corroded, fatigued or defective steel or its connections, etc. shall be considered defect remedial work and not maintenance.
- (2) For the paint system acceptable routine maintenance shall be:
  - Preparing and over coating the existing paint system at year 10 after the issuance of Certificate of Acceptance.
  - Removing defective parts of the paint system back to clean steel and repainting in isolated areas but not exceeding in aggregate more than 1% and 2% of the total surface area at years 5 and 10.
  - The removal of the paint system back to steel and replacement of the paint system in areas aggregating more than the above percentages of the total



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surface area of the painted part of the equipment shall be considered remedial works and not maintenance.

- (3) For items of electrical and mechanical equipment, controls, systems, components, fittings and connections, acceptable maintenance shall be the periodic and routine maintenance normally carried out on the various parts generally undertaken as established practices of the owner.
- (4) The foregoing shall apply notwithstanding any inconsistent requirement or information in any maintenance instructions provided by the Contractor or otherwise put forward by the Contractor and any such inconsistent requirement or information shall not be relied on by the Contractor, to relieve, limit or diminish any obligation or liability of the Contractor under the Agreement or otherwise including in relation to defects.





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## 2 OVERALL DESIGN CRITERIA

### 2.1 Barge Winches

The winches shall be electrically driven. The winch control shall be provided with fully digitalized controls and PLC. The proposed drive and control system shall be a proven system successfully operating at a similar facility.

### 2.2 Barge Sizes

The type of barge to be handled by the Barge Haul Winches shall be:

- 1 35' x 195' x 12' River Barges (1,500 tons)
- 2 Dual barge shifter 35' x 40' x 5'

### 2.3 Operating Environment For Design

- 1 The Equipment shall be operated and maintained on 24 hours per day basis in all weather conditions. All electrical, electronic, and mechanical equipment shall be non-hygroscopic, non-corroding and tropicalized for use in conditions stated elsewhere in this Specification.
- 2 Special considerations shall be given in all aspects of the design ensuring full operational capability and safety for round the clock operations, including operation in heavy rain conditions.
- 3 Ease of maintenance and safety of the maintenance staff shall be considered throughout the design to minimize downtime of the Equipment.

### 2.4 Mode of Operation

The Equipment shall be manually controlled. All functions of the Equipment shall be controlled by the local operator.

### 2.5 Statutory Requirements and Minimum Design Standard

1. The equipment, electrical, electronic equipment and its mechanism shall be designed and manufactured to comply in all aspects with the federal, state and local requirements of all latest, laws, ordinances, rules, orders, or other legal or regulatory institutes.
2. Where items are not covered by federal, state or local statutory requirements, the equipment and appurtenances shall be designed and manufactured to at least the standards as specified in this Specification. For items which are not specified above, then to at least the current applicable recommendations of the following organizations:

AISC American Institute of Steel Construction

AISI American Iron and Steel Institute



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ANSI American National Standards Institute  
AHJ Authority Having Jurisdiction  
ASCE American Society of Civil Engineers  
ASME American Society of Mechanical Engineers  
ASNT American Society of Nondestructive Testing  
ASTM American Society of Testing and Materials  
AWS American Welding Society D1.1  
CSI Construction Specifications Institute  
HI Hydraulic Institute  
ICEA Insulated Cable Engineers' Association  
IEEE Institute of Electrical and Electronics Engineers, Inc.  
IESNA Illuminated Engineering Society of North America  
IFI Industrial Fasteners Institute  
ISO International Organization for Standardization  
ITL Independent Testing Laboratory  
JIC Joint Industry Conferences of Hydraulic Manufacturers  
NACE National Association of Corrosion Engineers  
NEC National Electrical Code  
NECA National Electrical Contractors Association  
NEMA National Electrical Manufacturers' Association  
NESC National Electrical Safety Code  
NIST National Institute of Standards and Technology  
NSPE National Society of Professional Engineers  
OSHA Occupational Safety & Health Administration  
SAE SAE International  
SSPC The Society for Protective Coatings  
UL Underwriters Laboratory



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The Contractor shall define all standards used in the design of the Dual Barge Shifter System.

**2.6 Safety of Machinery**

**2.6.1 Conformity with all OSHA Requirements**

(1) The equipment shall comply with the requirements of the OSHA. The equipment shall be provided with a declaration of conformity. The Supplier/ Contractor are solely and entirely responsible for all aspects of this conformity declaration. A single electric power, control or hydraulic component failure or malfunction shall not damage the equipment or injure personnel. Component failure or malfunction shall be designed to safely stop the operation. If this is not possible, a redundant system shall be supplied. The redundant system shall both safely stop the equipment and prevent operation until maintenance personnel make corrections. A means shall be provided so the maintenance personnel may routinely check each redundant or backup system. The check procedure shall be included in the maintenance manual. No component shall change state as a result of a power failure. Powering or repowering the system shall not result in an unanticipated or potentially unsafe motion or condition.

**2.7 General Design Criteria**

**2.7.1 Barge Winch**

Major dimensions, clearances and performance requirements:

- (1) Rated Load 20,000 Pounds  
 Maximum Load 40,000 Pounds
- (2) Overall Travel Distance 500 feet
- (3) Speeds  
 - Winch 0-70 FPM with 20,000 Pound load on cable.

0-70 FPM with empty barge.

Accelerations shall be:

70 FPM with empty barge. Acc./Dec = 3.6s

70 FPM with 25,000 pounds. Acc./Dec = 1.5s

The above speeds must be achieved for operation under a sustained 35 MPH wind condition.

- (4) Length of Cable 1,160 L.F. 1-1/8" Ø x EIPS



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Operational Length of 420 L.F. 1-1/8" Ø x EIPS  
Cable

**2.7.2 Dimensional Restrictions**

- (1) The total length of the Barge Unloader # 1 Barge Haul Winch System shall not exceed 580'-0" +/- L.F. The total length of the Barge Unloader #3 Barge Haul Winch System shall not exceed 605'-0" +/- L.F.
- (2) The manufacturer shall submit his preferred design drawing to show operational clearances

**2.7.3 Existing Structure and Equipment**

- (1) Power Supply
  - (i) The power supply to the dual barge shifter shall be 480V 3 phase, 60HZ.
  - (ii) The high voltage cable shall be supplied by the Contractor along with the suitable cable reeling device and cable connection joint. A sufficient length of cable to cover a minimum 250 feet barge travel range either side of the central feed point shall be provided by the Contractor. Contractor shall bring the Barge trailing cable end to the unloader power supply and shall complete the cable connecting work with an approved cable joint kit. The cable joints made at site and high voltage wiring shall pass the inspection requirements of the local supply company and hi-pot test results shall be provided.
  - (iii) The high voltage trailing cable shall be round type HV flexible power cable.

**2.7.4 Climatic Conditions**

The equipment and other elements shall be designed and constructed to be fully capable of operating safely and withstanding the following climatic conditions.

- (1) Ambient temperature 10°F to +100°F
- (2) Relative humidity Max. 100%
- (3) Dew point Max. 80°F
- (4) Wind up to 35 MPH without special warning during operation.
- (5) Lightning Storm.

More stringent and specific requirements shall apply for individual subsystems and components, which are separately specified in each relevant clause of this Specification.



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### 2.7.5 Wind Conditions

The entire system with all of its machineries, components, fittings, or accessories shall be designed and constructed to withstand following wind loading conditions.

(1) For Operation:

Allow for wind loading of sustained wind speed of 35 MPH for safe load handling operation of the Dual barge shifter.

(2) For the stowed condition of the Dual barge shifter:

A wind loading of wind speed up to 163 MPH shall be allowed for the condition that the System is out of service and stationary without any tie downs.

### 2.7.6 Dual barge shifter

(1) The structural calculations of the dual barge shifter and mechanical components shall include stability calculations for all conditions – loaded and unloaded material barges, wind, etc.this criterion.

(2) Stability

- i. The Dual barge shifter shall remain stable with a safety factor of at least 2.0 in the most extreme adverse operating conditions
- ii. No damage shall be sustained when a dynamic snag load is applied in any position or direction.
- iii. The Equipment shall remain stable and not sustain any damage in the case when an emergency push button is pressed during operation with (2) two loaded barges at any position within the operational boundaries of the system.

(3) All other loading conditions forming the design criteria other than specified in this Specification shall be submitted to the owner for review.

## 2.8 Operationally Critical Components

(1) The Contractor shall submit the inspection and replacement schedule for operationally critical components to the owner. Inspection schedules shall contain detailed instructions about the components to be inspected along with the method and rejection criteria for inspection.

(2) The objective is to assist the owner to establish a standard for maintenance and inspection of operationally critical components (ie. those components and structural connections where failure could have catastrophic consequences such as wire rope break or structure damage).



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### **3 DUAL BARGE SHIFTER STRUCTURAL SPECIFICATION**

#### **3.1 General Requirement**

- (1) The dual barge shifter shall have significant internal structure to resist impact forces of the loaded barges and tugs.
- (2) Structural steel beams shall be incorporated into the dual barge shifter structure at each end.

#### **3.2 Design**

- (1) The structure shall consist of reinforced plate and structural elements.
- (2) The plates, angles and beam connections between all members shall be welded and be capable of resisting all components of forces.
- (3) If the Contractor proposes to use flanged, bolted joints, they shall be made using ASTM A325 or A490 bolts.
- (4) Connections shall be detailed to provide a ductile structure capable of withstanding yielding without brittle failure. Transitions shall be gradual. Changes in thickness or width shall be achieved using tapered or curved surfaces.
- (5) Material used for longitudinal structural stiffeners shall be the same material (or have the same material yield strength) as the plate to which it is attached. The use of different grade steels in the cross section of main structural components will not be allowed by the owner.

##### **3.2.1 Equipment and Materials**

The following equipment/machinery shall be fitted to the dual barge shifter structure.

- (1) Hydraulic power unit and pump/piping distribution to winches
- (2) (4) Hydraulic winches
- (3) Electrical panels, conduit and conductors for power distribution to HPU, lighting, service outlets, etc.
- (4) 480V Power Cable with (2) shielded #12AWG twist pair (one for E-stop and one spare) and Cable guide
- (5) Lights and service outlets (120V)

##### **3.2.2 Fittings**

The following fittings shall be fitted to the main structure.

- (1) Stairs, ladders and platforms.
- (2) Lighting for operation, and stairs, ladders and platforms.
- (3) Service outlets (120v).
- (4) **Emergency stop buttons.**



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- (5) Drive Lock-Out Switches.
- (6) Fire extinguishers.

### 3.3 Material

#### 3.3.1 General

All materials used on the Dual Barge Shifter and equipment shall be new, of good quality and suitable for the duty intended. Mill certificates shall be obtained and records strictly maintained to match these to the various sections produced during manufacture. The steel materials for all the stressed members shall be selected from the materials which specification includes notch toughness for service in an environment with temperature in the range 10°F to 100°F.

#### 3.3.2 Steel

The steel used for the manufacture of the Dual barge shifter shall comply with a recognized engineering standard such as:

ASTM

Alternative codes will be accepted depending upon specifications and certification offered by the Contractor and approved by the Owner.

#### 3.3.3 Edge Finish

All edges of structures shall be free from sharp edges or burrs.

#### 3.3.4 Surface Finish

- (1) All welding spatter shall be removed from structure surfaces.
- (2) The metal surfaces shall be cleaned and treated as defined in 6.3 (Painting and Protective Coating).

#### 3.3.5 Draining and Inspection Manhole

- (1) The steel structure and mechanisms shall be designed to drain water effectively. Any draining water shall not affect safety of operations or maintenance work under heavy rain conditions. No water trap shall be permitted in any part of the Dual barge shifter structure.

### 3.4 Calculations

#### 3.4.1 Submission to Owner

- (1) Stability, dual barge shifter drive power calculations for all winches, and peak power consumption calculations shall be submitted for Owner's review prior to commencement of detailed design. Refer to Appendix 1 for detailed list of submissions



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- (2) Other data or design calculations at various stages of design shall be submitted from time to time as requested by the Owner as part of review process.

### 3.4.2 Audit

The Owner reserves the right to carry out a detailed structural and mechanical audit of the design proposed by the Contractor. To facilitate this audit, the Contractor shall supply, in logical order, and in complete packages, all relevant information on major elements and functional drives. This shall include

- Relevant drawings to show how the loads are being transmitted into the dual barge shifter structure, to permit an integrated design audit.
- Relevant calculations.
- Sufficient drawings to show how components elements make up the conceptual design.
- Calculations to justify the selection of proprietary items such as winches and components e.g. motors, couplings reducers brakes etc.

### 3.4.3 Calculations

The design for the structure shall be calculated using the methods and procedures defined by internationally recognized design standards. The calculations shall be prepared and presented in a clear and precise format and shall demonstrate all methods and assumptions used in each element of the design.

Other data or design calculations at various stages of design shall be submitted from time to time as requested by the Owner as part of review process.

### 3.4.4 Drawings

The Contractor shall provide copies of the drawings showing construction details to enable supervision of the fabrication and construction by either the Owner's representatives or Third Party Surveyors.

Drawings forming part of the design packages, forwarded for audit purposes shall be provided in pdf format at least ANSI D size so that they can be reproduced clearly upon receipt, to permit accurate examination and assessment.

[The Owner warrants that it will respect commercial confidentiality of drawings provided and will only use them for the purpose of assessing the design.]





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### **3.5 Loads**

#### **3.5.1 Load Combinations**

The design shall incorporate all loads and load combinations pertinent to all in service and out of service conditions of the dual barge shifter system. The loads due to temperature effects, and others based on the Contractor's experience shall be included in the analysis if they cause significant stresses. If rational analysis indicates loads larger than specified, the larger loads shall be used.

#### **3.5.2 Engineering Standard**

The Contractor shall comply with all codes and standards for calculation of stresses in structural components. Alternative standards are accepted providing the Contractor provides adequate justification and detailed reference.

### **3.6 Connection Designs**

- (1) Connections shall be designed to resist ALL loads imposed by the haul system but the connections shall be designed for not less than 75% of the allowable strength of the member. Notice that whenever the calculated stresses are less than 50% of the allowable stress, the 75% requirement applies.
- (2) Welded joint design shall conform to AWS D1.1 – latest edition.
- (3) Bolted joint design shall conform to the AISC Specification using 0.9 times AISC allowable values. Prying action due to distortion of the connection details shall be considered. Bolts governed by fatigue strength shall comply with ASTM A325.

#### **3.6.1 Pin Joints**

- (1) All pins shall have angled lubrication drillings to avoid any change in direction that will hinder flow of grease nipple to the bearing surface.
- (2) Eyebars and pin connected members shall be designed in accordance with the AISC Specification using 0.9 times AISC allowable values, and shall be checked for fatigue using either the allowable net section stress range for Class F details or the stress concentration factors and the stress range for Class B details at the face of the hole. If the net section is governed by fatigue, then all other proportions shall be increased on a basis consistent with the AISC requirements.

### **3.7 Dual barge shifter Structure Stiffness**

- (1) Deflection or oscillation of the structure shall not affect the Dual barge shifter capacity and operating efficiency (particularly positioning full barges for unloading).
- (2) The dual barge shifter structure shall be designed so as not to sustain damage in the event of puncture of any plates.



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### 3.8 Workmanship

- (1) The whole of the structural fabrication and assembly shall be performed in a thorough, workmanlike manner and shall follow the best modern practices in the manufacture of high-grade marine structures.
- (2) Welders, welding operators and tackers shall be certified, for the material, processes and type of welding being performed.
- (3) Certification of the qualifications of each individual welder shall be submitted by the Contractor. Welds installed using unqualified procedures or welding performed by non-certified welders shall be subject to removal by the Contractor at his own expense.
- (4) The Contractor's Quality Assurance team shall be required to keep an accurate log of the qualified welders on the job. This log will be subjected to examination at any time by the Owner or his site representative.
- (5) The Contractor's Quality Assurance team will ensure that all correct welding procedures are strictly followed by the welding personnel. Any welding work being seen to not meet accepted procedures shall be stopped immediately and logged as a non-conformance report. Continuation of this welding will then be subject to approval by the Owner's representative on site.
- (6) The Contractor's Quality Assurance team will ensure that all welding during low temperatures is carried out, as far as practicable, within an enclosed canopy to provide a controlled environment. The use of correct pre-heating procedures and welding rod hot boxes is essential and will be closely monitored by the Owner's Representative.
- (7) A325 and A490 bolts that are 7/8" in diameter or less may be tightened to the required tension by any standard method. A325 and A490 bolts greater than 7/8" diameter shall be tightened to the required tension by the calibrated wrench method only. The following supplemental requirements shall apply in addition to the requirements of the Specifications to structural joints using ASTM A325 or A490 Bolts:
  - (i) Hardened washers shall be placed under the both the head and the nut.
  - (ii) The Contractor shall notify the Engineer if the highest and lowest torques measured during wrench calibration varies by more than 10 percent of the lowest torque, so they may develop the appropriate solution. If the range exceeds this tolerance, field tightening may be erratic.
  - (iii) The "snug tight" tension shall be approximately 15 percent of the specified tension and shall be achieved using a calibrated wrench.
  - (iv) The sequence of bolt tensioning shall be shown on the manufacturer's drawings.



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- (v) After the snug tight condition is achieved, an initial tension of 75 percent of the final tension shall be developed in all the bolts. Only then shall the final tension be developed.
- (vi) The final tension shall be verified by testing 10 percent of the bolts after all the bolts are tensioned. If the verification indicates loss of tension in some bolts, the Contractor shall notify the Owner. The Owner and the Contractor will develop the appropriate action.
- (vii) Flange contact bearing surfaces shall have at least 75% of the bearing cross-sectional areas in contact. The outer surface of the flanges shall fit within 0.010in. for 75% of the length of the edge and not more than 1/32in. for the remaining 25% of the length.
- (viii) Bolt tension may be verified at locations selected by the Owner's Representative. Bolt tension verification shall be performed by the Contractor in the presence of the Purchaser's Representative and in such a manner that the torque can be wrench gage read during verification.

**(8) Weld Testing and Inspection**

All welds shall be subjected to inspection by methods and extent, reflecting the critical nature of the welded connection.

Welds shall meet the requirements for cyclically loaded structures of AWS D1.1-2006. The specific method of weld inspections shall be shown on the drawings. Weld inspection procedures shall be submitted to the Owner.

Testing, which shall be at the Contractors expense is required as follows:-

<b>Weld</b>	<b>Type of Testing/ Inspection</b>	<b>Acceptance Criteria</b>
All Welds	100% Visual	AWS 1.1 – 2006
Full Penetration Butt Welds (Compression)	25% UT	AWS 1.1 – 2006
Full Penetration Butt Welds (Tension – as determined by stress levels due to operating load combinations.	100% UT	AWS 1.1 – 2006
Full Penetration Butt Welds in Tension Bars (if applicable)	100% UT	AWS 1.1 –2006



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Fillet Welds or Partial Penetration Welds		
On FCM	100% of length MT	AWS 1.1 –2006
On Non- FCM	10% of length MT (as nominated by the Owner's Representative)	

Rejection of any portion of a weld inspected on a less than 100% basis shall require inspection of 100% of that weld.

Ultrasonic testing of tension welds shall be done by or under the direct supervision of an ASNT Certified LEVEL III \*or equivalent qualified person.

**3.9 Quality Control of Structure Fabrication**

- (1) Quality Control shall be the responsibility of the Contractor. The Contractor must implement a written quality control program and shall be part of the Contractor's Quality Assurance Manual that shall be submitted to the Owner for review within 1 month of the date of the Agreement. The Quality Assurance Manual shall also contain the Contractor's Inspection and Testing Specification.
- (2) The quality control program shall follow the applicable requirements laid out in 7.1.4. For the structural fabrication this shall include but not be limited to the following:
  - Inventory of incoming material, consumables components and machinery.
  - Traceability procedures for materials together with traceability identification codes, which shall be serial and indexed to the controlled manufacturing procedures.
  - Cutting, fit up, welding, forming and dimensions of structural components.
  - Welding and inspection procedures identifying clearly the type and extent of NDT inspection carried out on the dual barge shifter structure.
  - Welding and inspection personnel qualification and certification (see 3.12).
  - Welding, machining, measuring and inspection equipment maintenance and calibration.
  - Machining finishes surfaces, bolt tensioning procedures.
  - Procedures for non-conformance (NCR) and Punch List (PL) reporting and rectification of defects.



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- Design and manufacturing drawing control and procedures for revisions, updates and reissue of drawings
- Procedures for material cleaning, preparation blasting and painting.

**3.10 Temporary Structures**

**3.10.1 Temporary Structures**

Connections details of temporary structures (such as lifting lugs, etc) fitted onto Operationally Critical Components must be reviewed by the Owner.



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## 4 FUNCTIONAL SYSTEMS DEVICES AND EQUIPMENT

Lifting lugs shall be provided for all sub-assemblies such as cable reel, winches and hydraulic tanks/power unit etc. These should be installed on each assembly, clearly identified and marked (stamped) with SWL.

### 4.1 Dual Shifter Barge Haul Winch

#### 4.1.1 Barge Haul Winch

- (1) The winch shall consist of one (1) AC Motor, one (1) AC servo operated brakes, Reduction Gear and one (1) wire rope drum.
- (2) The winch drive reduction gearbox shall be totally enclosed, oil bath lubricated type.
- (3) Couplings which connect the gearbox to the winch drum shall be manufactured by an internationally recognized manufacturer of this type of component.
- (4) One (1), AC servo operated disc brakes shall be fitted on the pinion shaft. Each brake shall be rated at 150% rated motor torque and shall be capable of stopping and holding the maximum rated load from full rated speed. The calculated setting torque of each brake shall be at least 10% less than the full capacity of the brake.
- (5) A calculation of brake compliance for the defined duty shall be provided from the brake manufacturer.
- (6) Over-speed switch shall be fitted to the winch motor to shut down the drive and set the brakes if the load exceeds 115% of rated speed.
- (7) Heavy duty, pulse encoder, of IP55, shall be installed on the winch motor for closed loop speed feedback and control and a cam limit switch shall be installed at the rope drum shaft for limit switches and slow down checks. The encoder shall be mounted externally from the motor/fan casing.
- (8) The brakes, pads and disc shall be protected from the weather with an easily removable or accessible enclosure, so designed to allow access to all components for maintenance.
- (9) Wire ropes shall be stationary during the hauling motions and all dead-end wire ropes shall be terminated with Wedge Sockets.

#### 4.1.2 Power Feeder

- (1) Power and control cables shall be routed to and from the dual barge shifter by a proprietary cable system.
- (2) The Contractor shall submit design calculations which are approved by the cable manufacturer to demonstrate appropriate considerations in respect of the following parameters:
  - (1) Cable clearance and bend radius within the system, inclusive of manufacturers recommended allowances.



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- (2) Adequate allowance for cavity fill including manufacturers recommended safety factors. In any case less than 60% of the total cavity cross sectional area.
- (3) Even and symmetric weight distribution within each carrier cavity.
- (4) Appropriate consideration for separation of dissimilar cables and regard for cable replacement.
- (3) Cable carriers shall have extra slots for extra cables (in addition to the specified spare wires).
- (4) All cables shall be purchased from the cable carrier supplier and confirmed suitable for the application.
- (5) Manufacturer's recommendations shall be adhered to strictly for installation detail and tolerances. Platforms the may be used for access to the cable reel providing safe access and hand rails are fitted.
- (6) The system design shall not generate water traps internally, between cables and guides or barge structure.
- (7) Acceleration and Deceleration forces shall not result in cable loads which exceed the allowable values.
- (8) The winches shall be capable of accelerating, driving a distance of 250' and decelerating with and against the operating wind load without adverse heating of any component.
- (9) Drive components shall be protected by their location or by substantial fenders against damage.
- (10) A suitable securing device shall be provided for securing the dual barge shifter in its position in the dock.

**4.1.3 HV Cable Reel**

- (1) Cable reel
  - (i) The cable reel shall be installed on unloader structure. The drive control system of the cable reel shall be designed to minimize abrupt starting; braking and excessive slack / tension in the cable when the dual barge shifter passes the cable feed point. Sensors/switches to detect the above conditions shall be provided. Cable reel to operate in conjunction with the barge haul winches.
  - (ii) The mono spiral cable reel shall be manufactured entirely from stainless steel.
  - (iii) Cable guide wheels shall be installed near the reel to keep the high voltage cable aligned. The cable shall be designed to hang self supported for 250' from reel to dual barge shifter in each direction



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- (iv) The system shall be well protected from weather especially in the vicinity of the high voltage slip ring components and the slip ring enclosure shall be stainless steel.
- (v) The cable reel drive machinery and slip ring area shall be secured to allow access of authorized persons only. A high voltage warning sign shall be provided and fitted to the entrance of the secured area.
- (vi) A suitably sized space heater shall be provided for the slip ring.
- (vii) Limit switches to control barge haul winch motion near the traveling limit (limited by cable length) shall be provided.
- (viii) A manual operating station shall be provided to allow operation of the cable reel drive. This switch shall be enclosed in a lockable and weatherproof box mounted at dock level in the proximity of the cable reel and shall provide controls for forward, reverse and slack cable bypass.

(2) High Voltage (HV) Trailing Cable

- (i) The cable shall be round type with three conductors, with ground. Sufficient length of cable shall be installed to provide for the full length of 500' dual barge shifter travel, three dead wraps on the reel plus one safety wrap when full, fairlead from the ground and three turns on the stress relieving drum on the dual barge shifter. A distance of 60' should be allowed from the stress relief drum to the point of termination to the service cable.
- (ii) The high voltage trailing cable connection at the power supply on the dual barge shifter shall be a proprietary type of HV cable joint. The Contractor shall undertake termination of the HV cable conductors at the dual barge shifter into a special connector box supplied by the Contractor for this purpose. The Contractor shall bring the dual barge shifter trailing cable end to the dual barge shifter and shall complete the cable connecting work with an approved cable joint kit. The cable joints made at Site and high voltage wiring shall pass the inspection requirements of the local power company and —Hi-Potential test results shall be provided.





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### Mechanical System/Components

#### 4.1.4 Bearing, Seals

All the bearing shall be anti-friction bearings. For all types of bearings, effective means of lubrication and seal shall be provided.

Oil less bearing or oil less bushes are not permitted.

- (1) The bearing design shall be based on full rated speed and maximum load with the following life as a minimum requirement in accordance with noted service life  
Barge Haul Winch: 50,000 hours
- (2) Bearing housing or retainer shall be a split type or bolt-down type to facilitate fast inspection and replacement work.

#### 4.1.5 Gearing

- (1) Open gears are not permitted.
- (2) Gears shall be of helical or herringbone type and designed in accordance with the relevant BS, AGMA or DIN standards.
- (3) The durability rating for the barge winch shall be based on a minimum service factor of 1.3 for rated load and rated speed and a wear factor of 0.7.
- (4) All other gearing shall be selected or designed for a minimum service factor of 1.0.
- (5) The gearing for all main drives shall be totally enclosed in a split, oil tight steel box with oil bath lubrication

#### 4.1.6 Gear Reducers

- (1) All winch gearboxes shall be fitted with gear inspection windows and weatherproof breathers. The gearboxes shall be free from oil leakage.
- (2) The gearboxes shall be designed to allow easy replacement of gear or gear shafts without removing the whole gearbox assembly from its mounting base.
- (3) Drain pipes with shut off valves and end plugs shall be fitted to each gear box. An appropriate drain receiving space for each drain outlet shall be provided.
- (4) Particular care shall be taken during the overall design phase to ensure that adequate space and facilities are provided for the changing of oil seals, draining of oil into adjacent receptacles, checking of mounts and bolt on type covers for internal inspection of all gear teeth. All gearboxes shall be mounted with shims and adjusting blocks.



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### 4.1.7 Wire Rope Winch Drums

- (1) The barge hual winch drums shall be of rolled welded steel construction, stress relieved, statically balanced and complete with machined grooves for single layer winding of wire ropes.
- (2) The grooves on the drum shall be pitched so that there is clearance between neighboring turns of rope on the drum and also clearance between the part of the rope leading onto, or leaving the drum, and the adjacent coil throughout the whole range of operation.
- (3) The bottom of the grooves should have a circular arc over an angle of not less than 120 degrees and the radius of the groove should not be less than 5% nor more than 7½% larger than the nominal radius of the rope.
- (4) The diameter of the drum at the bottom of the groove shall not be less than 30 times the nominal rope diameter.
- (5) The maximum angle of fleet between the rope and a plane perpendicular to the longitudinal axis of the drum shall not exceed 3.5 degrees.
- (6) The drum shall be flanged at both ends.
- (7) The wire ropes shall be secured to the drum by a suitable clamping device.
- (8) The length of the winch drum and wire ropes shall be such that when the dual barge shifter is at its southern most point the north winch at least three full turns of rope shall remain on the drum, while the south winch shall have at least one empty groove and when the dual barge shifter is at its northern most point. The south winch shall have at least three full turns of rope remaining on the drum at the northern most point and and the north winch shall have at least one empty groove.
- (9) Wire rope winch drum shall have machined grooves sufficient to lay wire ropes in single layer. One extra turn for service and appropriate number of dead turns for each wire rope end shall be allowed for on the drum. Rope grooves shall be surface hardened to HB321 minimum.
- (10) Oil or grease tray of a removable type adequately segmented for easy removal by hand shall be provided under each wire drum to receive excess lubricant. Prevention against overflow of oily water out of trays during rainy operational condition shall be taken into consideration and proper valves shall be mounted to drain oily water.
- (11) Tubular Steel wire rope guards shall be fitted behind the wire rope drum to prevent rope jumping the grooves. The clearance between main host wire rope and the surface of the guards shall be equal to half of the wire rope diameter.

### 4.1.8 Wire Rope Sheaves

- (1) All wire rope sheaves shall be centrifugally cast or forged or machined steel construction with smoothly machined grooves. Fabricated or gravity cast sheaves are not acceptable.



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- (2) The bottom of the grooves shall have a circular arc over an angle of not less than 120 degrees, have an included angle of 52 degrees and the radius of the groove should not be less than 7½% nor more than 15% larger than the nominal radius of the rope with 11% being the optimum.
- (3) Wire rope sheaves shall have pitch diameter of 30 times the nominal rope diameter. Guide rollers (fairleads) shall have a minimum diameter of 5 times the rope diameter.
- (4) The maximum angle of fleet between the rope and a plane perpendicular to the axis of the sheave shall not exceed 2.5 degrees.
- (5) The surface of the groove of the sheave shall have a hardness value of minimum 280-320 on the Brinell Scale. The depth of the material hardened to this level shall be at least 5mm. Certification of Hardness is required. Rope Sheaves shall include requirement for 100% MT in the rope grooves and provision for one spare sheave of each type so that depth of hardness may be checked by destructive testing.
- (6) All running sheaves shall be fitted with anti-friction roller bearings with grease fittings for pressure lubrication.
- (7) Minimum designed life of the sheave, specifically the groove and bearing retainer, shall match the bearing life of 50,000 winch operating hours.
- (8) The pitch diameter shall be at least 30 times the wire rope diameter. An equalizer sheaves may have smaller diameter provided that the small radius will not reduce the safety factor of wire rope below specified value.
- (9) All sheaves shall be mounted by shaft and supported at both sides. Single side support with retainer ring is not allowed.
- (10) All sheaves shall be designed with easy access and with ample space for maintenance and repair. The clamp and retainer shall be fitted opposite to the wire rope pulling force direction. Clamp and retainer bracket shall easily be removed for sheave replacement.

#### 4.1.9 Wire Ropes

- (1) The factor of safety shall not be less than 5 for all ropes.
- (2) All the wire ropes shall be right regular lay wire rope unless agreed otherwise.
- (3) Wire rope lubricant shall be carefully selected to minimize dripping problems.
- (5) Wire rope dead end splice shall be a mechanical and the dead end fitting shall be articulated to allow rope end to move freely in long travel and cross travel directions.

#### 4.1.10 Couplings

- (1) All barge haul winch drive couplings shall be supplied by an internationally recognized manufacturer of couplings.



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- (2) Barge haul winch driving shafts shall be fitted with flexible couplings. All coupling bolts shall be locked with a proper anti-loosening system such as lock wires. Grease nipples shall be fitted at OEM's greasing locations.
- (3) Rotating Couplings shall be lubricated with special grease to prevent oil separation and leakage under the effects of centrifugal force.
- (4) Couplings shall be properly covered or guarded for safety. The cover or the guard shall allow easy access for lubrication of the coupling without removing entire cover or guard.

#### 4.1.11 Bolts

- (1) All bolts are to be manufactured in compliance with the SAE standards.
- (2) Tightening torque for all fitting bolts shall be clarified by the Contractor in a form of a bolt list clearly indicating bolt location, size, materials and quantities.

#### 4.1.12 Lubrication

- (1) All the moving parts shall be effectively lubricated.
- (2) All the lubricants specified by the Contractor shall be locally available in the country of operation and manufactured to the latest appropriate API service classifications. The lubricants initially filled in manufacturer's shops shall be pre-approved by the Owner for their compatibilities with those lubricants used by the Owner.
- (3) Any excess lubricant shall be trapped in removable trays or receivers.
- (4) Mechanical operating parts shall be lubricated by high pressure grease gun using corrosion, resistant grease nipples of the 'hydraulic' type to B.S. 1486: Part 1 with 'nipple grease straight' form heads.
- (5) All points on the dual barge shifter haul system requiring lubrication shall be easily accessible from permanent service platforms or walkways.
- (6) All grease points shall be clearly indicated and color coded in order that all grease points requiring the same lubricant can be readily identifiable.

## 4.2 Hydraulic System / Components

### 4.2.1 Standards

Hydraulic systems shall be designed in accordance with current Standards. As a minimum all components must be capable of operating continuously i.e. pumps, valves etc.

Due to the corrosive condition of the environment, cold drawn, carbon steel seamless tube, to DIN 239 Part 1 to be used and painted to specification. All couplings shall be ZINC plated passivated type for corrosion protection to DIN 2353



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#### **4.2.2 Components Sources**

All components shall be sourced from internationally approved suppliers, and the hydraulic systems shall use components, which are readily available in the location of operation.

#### **4.2.3 Operating Condition**

Under conditions of continuous operation, the pump inlet temperature of the fluid must not exceed 150 degrees F. The equipment shall operate efficiently in an ambient temperature range of 10°F to 100 °F. The system shall incorporate fluid over temperature protection, which shall operate to indicate the fault and stop the operation of the pump.

#### **4.2.4 Hydraulic Fluid Reservoir**

- (1) The type of hydraulic fluid for the initial fill by the Contractor must be pre-approved by the Owner.
- (2) All Hydraulic reservoirs/storage tanks shall be provided with adequate drainage facilities to permit the draining of the hydraulic fluid into waste oil receptacles through shut-off valves which can be easily accessed. Space shall be provided around and below the drain valve to allow this essential maintenance work without spillage.
- (3) Hydraulic reservoirs shall be fitted with level switches which are designed to switch off the associated pump when level falls below a pre-determined level. The purpose of this feature is to prevent continuous pumping of hydraulic oil in the event of hose or fitting failure.
- (4) The capacity of the fluid reservoir shall be sufficient to contain all the fluid that can flow from the system into the reservoir. The fluid level shall be maintained at a safe working height to prevent cavitation in the pump during the operating cycle.
- (5) Reservoirs shall be equipped with clearly viewed flush mounted or protected fluid level indicators. They must be provided with markings indicating high level when pumps are stopped and low level when the pumps are in operation.
- (6) Reservoirs shall be constructed to prevent entry of foreign matter, including fluid contamination and moisture.
- (7) Both fluid intake and return points shall terminate sufficiently below the minimum fluid level to prevent aeration.
- (8) All hydraulic reservoirs shall have an access suitable for cleaning purposes.

#### **4.2.5 Power Unit**

- (1) Positive displacement pumps and motors are preferred.
- (2) Submerged pumps are not permitted
- (3) Means and good access shall be provided for filling and draining pump and motor casings in accordance with the manufacturer's specifications.



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#### **4.2.6 Valve Mounting**

Wherever possible, valves shall be mounted so that their removal and replacement can be made without disconnecting pipe fittings. Adjustable valves shall be such that their settings, when made, will be maintained against vibration.

#### **4.2.7 Relief Valve**

- (1) A pressure relief valve capable of relieving the maximum flow at the outlet of the pump shall be provided on the delivery side of the pump and there shall be no other valve between the pump and the relief valve.
- (2) Relief valves shall reseal within 3% maximum of cracking pressure, and shall have a rated working pressure of not less than 150% of operating pressure. Relief valves subject to changeable backpressure shall be externally drained. Wherever possible, relief valves shall be used as safety reliefs and shall be set a minimum of 10% higher than maximum operating pressure. Solenoid operated directional valves shall have oil immersed or wet pin solenoids. Each solenoid shall have means for external mechanical actuation for testing. If internally drained, tank ports will not be subjected to more than 3,000 psi or maximum pressure allowed by manufacturer, whichever is less. External drain lines shall be designed to minimize pressure surges and reduce backpressure. Four-way valves shall spring center or spring offset to a failsafe position upon electrical failure.

#### **4.2.8 Flow Control Valve**

- (1) Variable flow control valves shall show the direction of operation for increase and decrease of throughput.
- (2) Flow control valves shall be pressure and temperature compensated over the full range of flow for which the valve is rated. Flow setting shall be adjustable and shall have facilities for locking when proper flow setting is reached. Flow control valves must be adjustable to zero flow.

#### **4.2.9 Check valves**

Check valves may be either ball type or piston type. Swing checks shall not be used. Check valves shall be spring loaded closed and have zero reverse flow.

#### **4.2.10 Piping**

- (1) Welded joints in hydraulic pipe work shall not be permitted.
- (2) All rigid piping shall be securely supported to minimize vibration or movement. The length and method of supporting flexible piping shall be such as to avoid sharp flexing and straining, particularly at the end fittings. The spacing between adjacent rigid pipes and between rigid pipes and the surrounding steelwork etc., shall be sufficient to allow the pipe couplings to be secured with ease and without damage to adjacent pipes or couplings.



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- (3) All the piping shall be securely fixed and located to the structure and shall withstand internal and external vibration and be protected so as to prevent damage from external forces.
- (4) Piping between actuating and control devices shall be as short as possible and pipes must be removable without dismantling equipment, components or adjacent piping.
- (5) Piping shall not be used to support valves or other equipment.
- (6) Where pressure-testing points are necessary, they shall be provided in accessible positions.
- (7) The bores of all pipes and fittings shall be thoroughly cleaned to ensure that all scale and foreign matter is removed prior to final assembly.

**4.2.11 Hoses**

- (1) Flexible hoses and couplings shall be in accordance with the requirements of the current Standards and shall be of an approved type and manufacturer.
- (2) Flexible hose shall be protected from mechanical damages due to interference with structure, equipment, or any moving parts.
- (3) Where the pressure adjustment is critical, a pressure gauge port with shut off valve shall be provided in the line so that the pressure can be checked without disconnecting the lines.
- (4) Hoses shall be designed for burst pressures of 10,000 psig and shall be tested at 5,000 psig.

**4.2.12 Assembly Test**

Components of the hydraulic system shall be hydrostatically tested to 150% of the safe working pressure.

All hydraulic pipes shall be flushed and capped to prevent contamination before installation.

**4.2.13 Catch Basins**

- (1) All hydraulic power units will have catch basins to collect leakage for the power unit and its components. The basin shall be sized to a minimum of 10% of the reservoir's volume.
- (2) Catch basins shall be fitted with a manual valve equipped with drains. The drains shall either be accessible from barge deck. Space shall be provided for a container to accept the drained fluid. Where the catch basin is compartmentalized, the various compartments shall be piped together to form a single drain point.

**4.2.14 Filters**

- (1) Filters shall be full-flow, non-bypass type complete with visual condition monitoring. The filter may generally be fitted either in the intake, pressure, or return lines and shall have a 10-micron nominal filtration rating. When the filter is installed in the



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pressure or return lines the pump intake shall be fitted with a wire mesh screen (125 mesh or finer).

- (2) The filter shall be easily accessible for element replacement purposes without having to drain the reservoir and/or system.
- (3) A magnet shall also be fitted in the bottom of the reservoir between the return side of the reservoir and the suction strainers. Magnets shall be easily removable for cleaning.

#### 4.2.15 Application for Dual barge shifter Haul Deck Winches

Dual barge shifter deck winches shall be hydraulic, see plans for winch model.

#### 4.2.16 Gauges

- (1) A high quality delivery pressure gauge shall be provided. The gauge shall be connected via a fail to-safe valve and damping loops, and rigidly mounted on a structure. It can only be read by operation of a fail-safe valve.
- (2) An oil level gauge on the reservoir shall be provided at a location convenient for inspection by direct eyesight.

#### 4.2.17 Covers

Any cover for the hydraulic system must be manufactured in order to allow prompt and direct access to manually check the solenoid valves. This should be allowed without the need to remove the whole cover.

Provide a weather cover over hydraulic power unit with adequate ventilation for hydraulic and electrical equipment located under cover. Cover shall be easily removable for maintenance personnel.

#### 4.2.18 Hydraulic Fluid

The type of hydraulic oil for the initial fill by the Contractor shall be pre-approved by the owner.

Hydraulic oil of appropriate grade for the ambient conditions experienced at the site of operation shall be installed in the hydraulic system by the manufacturer prior to shipment for factory testing purposes and shall remain in the system during transport to site. Prior to filling with hydraulic oil, the entire system shall be flushed to remove foreign materials and contamination. Oil cleanliness shall conform to ISO 4406 Code 16/13 or better.

### 4.3 Electrical and Electronic System / Components

#### 4.3.1 General

The Contractor shall be responsible for the safe and reliable operation of all equipment in accordance with the requirements of this Specification. The electrical installation shall provide reliable power for the precise handling of barges in continuous unloading operations.





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- (1) The drive system vendor shall undertake a complete power system analysis at the dual barge shifter/unloader operating site that includes existing or future terminal power distribution systems. The study shall include power flow, voltage drop and short circuit calculations to be used in the selection of the equipment power distribution equipment and coordination with the terminal power distribution system contractor or utility company. The results shall be submitted to the Engineer within 90 days of issue of the Letter of Acceptance.
- (2) The drive controls for the dual barge shifter winch drives shall be AC variable frequency or vector type using Insulated Gate Bipolar Transistor (IGBT) technology. The general requirement for the electrical drive controls is to provide reliable power for the precise handling of product barges through the use of power conversion assemblies controlling AC motors for the barge haul winches.
- (3) Drive controllers for the dual barge shifter haul winch motions shall be provide constant tension and synchronized. Deck barge winches motions will be manual location lever control.
- (4) All electrical installations shall be adequately earthed to protect electrical equipment from damage during lightning storm. Lightning arrestors shall be provided at the approximate locations on the structure of the unloader. It shall be connected directly to the ground and insulated from the structure.

#### **4.3.2 Power Supply Specifications**

- (1) Supply Voltage from Existing electrical building AC 480V 60 Hz, 3-phase
- (2) Main drives AC Motor voltage and control power voltage to be proposed by the Contractor.
- (3) Control Voltage shall be 24V or 120V 1-phase 60Hz.
- (4) AC Motors AC 480 V 3-phase 60 Hz
- (5) Access Lighting AC 120 V 1-phase 60 Hz Floodlighting
- (6) Receptacle Outlets AC 120V 1-phase 60Hz
- (7) Alarm, intercom, and other accessories AC 120 V 1-phase 60 Hz

#### **4.3.3 Protection against Power Surge**

All electrical and electronic equipment shall be protected by transient surge suppressor installed as close as possible to each component which requires protection from the surge in power and control circuit. Any electrical apparatus or device on the equipment which may introduce a surge shall be properly designed to suppress surge within its own environment and shall not cause any interference to other equipment or control functions of the Barge Haul Winch system. The following are, whilst not limited to, particular areas which require special attention in terms of the transient surge suppression.



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### 4.3.4 Wiring

- (1) The Contractor shall ensure that all heavy current low voltage power cables are sized to include suitable de-rating for the temperature and space factor. The mixing of control wires and power wires shall not be acceptable.

The Contractor shall submit all calculations on sizing of cables for review by the Owner.

- (2) Wire shall be connected only at the terminal blocks in panels, control box, joint box, or at the terminal for electrical equipment. Wire shall not be joined other than at proper terminals.

All conductor wires of shall be terminated at terminal strips and at components having screw type terminals with spade or ring tongue crimped solderless lugs.

All wire end terminations shall be checked and where necessary retightened prior to the Commissioning Test.

- (3) All the wires shall be run in trunking, conduit or stainless steel cable trays with cover except those wires used in moving application. It is preferable that all the wires are so designed and installed inside the interior of the Structural System. Excess / slack cables shall be provided at all bend points of the cable installation to allow for expansion / contraction of the cable trays. All the wire run through holes and openings of structure shall be protected from insulation damages due to mechanical contact with structures. Control and signal wires (including encoder cables) shall be separated from power wires and routed through flexible conduit to avoid any interference causing false signals. Multi-core cables may be run on cable trays or raceways with adequate cable clamps, and covered with sun-shield and mechanical protection covers.
- (4) All cable ties shall be heavy duty and UV tolerant without degrading over time.
- (5) At least 10% of control wires as spare wires shall be installed on all routes and specifically labeled as such.
- (6) Vertical long distance wiring shall be designed to prevent wire breakage due to suspension of self-weight of wires or cables.

### 4.3.5 Marking and Identification

- (1) All conductors (internal and external to panels), contactors, breakers, fuses etc shall be suitably labeled with their function name at both ends with hot foil printed, plastic tubing wire markers in accordance with electrical drawings and wire schedules. All terminal blocks shall be properly marked as to block number and terminal number per drawings. On all remote I/Os, every signal shall be labeled with its function name and address code. Color or alphanumeric coding shall comply with IEC 60446 (Basic And Safety Principles For Man-Machine Interface, Marking And Identification)
- (2) All terminal blocks shall be properly marked with the block number and terminal number as shown on the drawings.



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- (3) Groups of cables entering junction boxes, cabinets, panels and pull boxes shall be tagged as to location of the other end.
- (4) All panels, junction boxes and cabinets shall be marked on the outside using engraved plastic name tags fastened with stainless steel screws containing unit number and general function, name or description. Detailed wire schedules shall be provided in every panel and junction box.
- (5) Individual control devices in cabinets shall be labeled by number description in accordance with the drawings using durable, heat resistant labels with permanent markings, and fixed in a manner designed to combat extreme hot and cold conditions over long periods.
- (6) Major control cabinets shall be labeled with engraved plastic description tags fastened with stainless steel screws.
- (7) The method securing cables within the control panels shall utilize a proper and correct method of attachment. The use of self-adhesive pads to secure the cables to the panel walls shall not be acceptable.
- (8) If sticks on labels are used as an alternative to identify power and control items/devices in electrical panels, the labels shall be resistant to high temperatures and be good quality 3M type as a minimum.

#### 4.3.6 Conduit Cable Tray and Junction Box Panels

- (1) Conduit (rigid and flexible), with pull boxes at appropriate locations, shall be water proof and continuous. Inside of the conduit must be smooth, and inner edges of both ends must be rounded smooth.
- (2) Flexible conduit with proper fittings shall be used between rigid conduit and pull boxes or terminal boxes of motors, brakes, limit switches and all other independently installed electrical equipment which require adjustment, realignment or removal for maintenance or are subject to vibration.
- (3) Rigid conduits shall be rigidly fastened to the unloader structures.
- (4) All conduits shall be contained within the protection of the unloader structures.
- (5) No conduit is to be installed across walkways or working platforms or in any way that could be considered to impede access, safety operation, etc.
- (6) For conduit runs of more than 10 feet a pull wire shall be left in place.
- (7) Top entry in to terminal/junction boxes shall be avoided
- (8) A drain hole(s) shall be provided at the lowest point in each junction box.
- (9) Ladder type, open electrical cable tray shall be stainless steel (T304 Grade) and fixed to the structure using stainless steel bolts and nuts. The type and fixing of cable tray shall be reviewed by the Purchaser and a procedure for repairing damage or cut section edges shall be presented for approval.



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- (10) All exterior electrical panels and junction boxes shall be constructed from stainless steel (T304 Grade) NEMA 4X enclosure of a quality grade which will not display corrosion throughout the lifetime of the equipment. Vertically hinged doors shall be provided, having a facility to secure in the open position during maintenance activities. Panels which have doors secured by means of stainless steel clips and bolt are preferred. Environmental Protection shall be IP65 minimum and no fixing bolts shall be permitted to pass through the walls of the enclosure. It shall be possible to remove and replace all internal components without removing the back panel.
- (11) Small electrical termination/junction boxes for lighting may be manufactured from plastic material.

**4.3.7 Electrical Trunking**

- (1) Electrical trunking and trunking covers shall be stainless steel (T304 Grade) and free from sharp edges or sharp corners to protect the wires.
- (2) Trunking shall have appropriate partitions to separate power and control wires, and clamps to prevent excessive wire movement in the duct.
- (3) Trunking shall be designed to prevent water ingress. Nevertheless the trunking shall not trap any water in case of water ingress.

**4.3.8 Motors**

- (1) Motors shall be sized according to analysis of the system loads. The minimum rating and duty of the motors, designated according to NEMA standard, shall be as follows:

<b>Motors</b>	<b>Minimum Duty Ratings required</b>
Dual barge shifter Winches	S1 Continuous duty

- (2) Motor terminal box shall be fitted facing an open space for maintenance.
- (3) All the main motors shall be fitted with space heaters.
- (4) Cables fitted to motor terminal boxes shall be glanded.
- (5) Ample space shall be provided for inspection of AC Induction motor itself.
- (6) All motors shall be connected with an earthing wire from the motor body to the nearest support metal structure to provide a proper earthing connection.
- (7) Motor cables shall be braided screened to eliminate interference.
- (8) Outdoor motors shall be specified to provide a minimum of IP55 protection

**4.3.9 Brakes**

- (1) Ample space shall be provided around brakes for inspection and maintenance works.



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- (2) Brake discs shall be dynamically balanced.
- (3) Brakes disc shall not sustain damages due to an emergency stop operation.
- (4) Barge Haul Winch brakes shall be approved by the Owner. The deceleration shall be accompanied electrically when the motion has slowed down to essentially stopped condition
- (5) Brake linings to be of non-asbestos material.
- (6) The barge haul winch brakes shall be protected from ingress of grease from external rotating machinery.
- (7) The barge haul winch brakes shall be fitted inside an enclosure. The enclosure shall be designed to provide for ease of brake maintenance with suitable removable doors.

**4.3.10 Transformers (If Required)**

- (1) Transformers shall be dry type.
- (2) The location of transformers shall be selected not to raise panel temperature.
- (3) All transformers shall be connected with an earthing wire from the transformer body to the nearest support metal structure to provide a proper earthing connection.
- (4) Short circuit protection shall be provided on the load side / output of the transformers.

**4.3.11 Enclosures**

- (1) All external components mounted within outdoor enclosures must be designed to allow for wind driven rain and conform to minimum class of IP55.
- (2) Control boxes and junction boxes exposed to the weather shall be manufactured from stainless steel (T304 Grade). Other outdoor boxes such as enclosures for lights, switches and small terminal boxes, which are commercial products, shall be provided in IP55 rated cast iron, painted steel or in plastic material.

**4.3.12 Name Plates**

Electrical equipment shall be supplied with a nameplate immediately adjacent and symmetrical to the equipment. These nameplates shall contain appropriate inscriptions or identification markings to convey all relevant information appertaining to the characteristics of the equipment. The use of adhesive labels as identification shall not be acceptable.

**4.3.13 Encoders**

Electronic pulse encoders shall be used for position feedback for the dual barge shifter winches.



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**4.3.14 Circuit Breakers**

- (1) All electrical circuit breakers shall be molded type circuit breaker, except otherwise specified.
- (2) Circuit breakers shall be designed to isolate defective circuits such as over current or short circuit conditions.
- (3) When the molded type circuit breakers are tripped, the lever shall stay at mid position to show that it is tripped. The lever shall be pushed down once before it can be switched "on" again. Mid position of the lever is to show that the outgoing circuit is faulty.
- (4) Earth Leakage Circuit Breakers (ELCB) shall be used to protect the flood light system in individual branch so that only the affected area will lose the lighting and not the other healthy circuits.
- (5) Circuit breakers shall be fitted indoors only. If fitted outside, it shall be enclosed inside a waterproof stainless steel box.

**4.4 Operational Safety Interlocks**

- (1) The Contractor shall provide hardware/software status and an operational verification on all motion protection devices, such as, but not limited to; limit switches, proximity switches, encoders, and solenoid valves.
- (2) Interlock shall be provided to protect all the structural, mechanical and electrical/electronic system and system components.

**4.4.1 For Winch Operation**

- (1) Winch motion to stop:
  - i) With brake malfunction.
  - ii) With motor overheat.
  - iii) With the activation of an E.Stop command.
- (2) Dual barge shifter travel warning sound and warning lights shall be activated while the barge haul winch control lever is moved to either direction.



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## 5 COMMON ITEMS

### 5.1 Walkways, Stairs, Ladders and Platforms

#### 5.1.1 Applicable Code or Engineering Standard

- (1) Walkways, stairways and platforms shall be designed to avoid tripping, skidding, ducking or crawling. Clear headroom of 7 feet shall be maintained throughout the walkways, stairways and platforms. Special non-skidding treatment shall be applied for flat structural surface if used as walkways.
- (2) The design of walkways, stairs and ladders shall comply with the requirements of OSHA and all local regulations.

#### 5.1.2 Stairway Requirements

- (1) Access to the dual shifter barge shall be by stairways with appropriate landings throughout (ships ladder is acceptable).
- (2) Landings shall be provided for stairs at intervals in accordance with OSHA – Marine Terminals. The gradient of stairs shall be in accordance with OSHA – Marine Terminals.
- (3) Stairways shall be designed to avoid tripping, skidding, ducking or crawling. Clear headroom of 7 feet shall be maintained throughout the stairways.
- (4) The height of kick plate from the stairway tread level shall be minimum 4 inches. The kick plate shall be continuous along stairways, and constructed of minimum 4 inches wide steel strip of minimum thickness  $\frac{1}{4}$  inches.
- (5) Stairway treads shall be expanded metal or open grid metal construction, hot dip galvanized.
- (6) Stairs or ladders shall be provided to allow ample and safe access to shuttle barge, winches, sheaves, and control equipment, etc., where preventive maintenance is necessary. At least 3 feet clear passage around any machinery shall be provided.

#### 5.1.3 Ladder Requirements

- (1) Vertical ladders are allowed at the dolphins and haul system equipment and the rise shall not be more than 15 feet. Approval must be obtained from the Owner if vertical ladders are used elsewhere.
- (2) Ladders shall be provided to allow ample and safe access to all sheaves and ropes, etc., where preventive maintenance is necessary. At least 3 feet clear passage around any machinery shall be provided.

#### 5.1.4 Platforms Requirements

- (1) Platforms shall be designed to avoid tripping, skidding, ducking or crawling. Clear headroom of 7 feet shall be maintained throughout the platforms.



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- (2) Platforms shall be provided to allow ample and safe access to winches all sheaves and rope, etc., where preventive maintenance is necessary. At least 3 feet clear passage around any machinery shall be provided.

## **5.2 Illumination and Lighting**

### **5.2.1 Walkways, Stairs, Ladders, Cab Access**

- (1) The supply voltage for lighting sources shall be as specified in 5.3.2 (4) (Main Power Supply). Special consideration to be given to minimize phase unbalance
- (2) The lighting system shall provide adequate illumination for all ladders, platforms, walkways, and dual barge shifter deck.

### **5.2.2 Work Area Floodlights**

- (1) A floodlight system shall provide LED and adequate lighting to all work areas of the Dual Barge Shifter. An illumination level of 50 foot-candles or more at the ground level measured at 30 " above working surface of the barge deck.
- (2) All floodlights are to be fitted with safety chains to prevent from falling off the structure if the main fixings fail.
- (3) A photocell shall be installed to switch off floodlights in daylight but an override switch shall also be incorporated to energize the lights in case the photocell should fail to the open condition.

### **5.2.3 Access for Lights Maintenance**

All light fixtures shall have safe access for replacement of fixture.

## **5.3 Painting and Protective Coating**

### **5.3.1 Paint System General**

- (1) The Contractor shall submit the preparation, cleaning, painting and protection against corrosion as specified hereafter, of the whole of the work to be provided in the Specification.
- (2) Surface not required to be painted, but which are adjacent to steel work which is to be cleaned and painted, shall be protected by appropriate masking during cleaning and painting of the adjacent work.
- (3) Special care shall be taken during manufacture to ensure that foreign matter is excluded from all working parts of the barge.
- (4) All parts of the barge shall be surface treated during manufacture to ensure their protection from the effects of moisture during storage, transport and erection.

All bright surface and machined parts, including gear teeth, screws threads, etc., shall be protected by a suitable approved rust preventive compound. Particular care shall be taken with the protection of anti-friction bearings and enclosed gears and shafts.





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- (5) All metal surfaces shall be thoroughly cleaned to bare metal, removing rust, loose scale, dirt, grease, oil, dust and other foreign materials in accordance with 6-3.2 and 6-3.3 hereof. Particular care shall be used at joints and all other places to which access for cleaning is difficult.
- (6) Faying surfaces of structural members intended to be clamped together by bolts shall be shot blast cleaned as specified in Clause 6-3.3(3) hereof and shall be given one coat of Epoxy zinc rich-primer, 25 microns thick. Coatings shall be used on faying surfaces of slip critical connections only if they have been qualified to provide the slip coefficient required by the connection design.
- (7) Machined mating surfaces of all ferrous components (other than structural members) which are to be clamped together by bolts, in final assembly, shall be protected, as specified in Clause 6.3.1(4) above, after fabrication and just prior to final assembly shall thoroughly cleaned and smoothly coated with a suitable protective compound approved by the Purchaser.
- (8) All structural steel plates and sections which shall form sealed internal surfaces shall be blast cleaned and prime coated using "whole of plate" blasting and painting with a suitable weld-through primer. Angle or flat sections used for plate stiffening shall be similarly treated by mechanized treatment methods.

Providing damage to such prime coating during fabrication is minimal, in the opinion of the Purchaser, power brush and cleaning of such pre-primed surfaces with a suitable approved solvent may be accepted in lieu of a second blast cleaning.

- (7) For the purposes of this Specification 6.3, the term "External Surface" shall include the following areas :
  - (i) The exterior surfaces of all structural members.
  - (ii) The whole of the surface of any object such as an equalizing beam or bogie.
  - (iii) The whole surface of any component part such as a lug or cheek plate.
  - (iv) The outside surface of any gearbox, motor, brake, bearing spacer, collar, track wheel (excluding the actual tread), rope drum (excluding the rope groove) or other similar mechanical or electrical part which is not protected from the weather by being enclosed in a cabin or housing.
  - (v) The outside surface of any guard, cabin or housing.

### 5.3.2 Surface Preparation

- (1) All castings shall be properly fettled and cleaned. All runners, veins, pins, etc., shall be carefully chipped off so that no lumps or rough areas are left.
- (2) All welding slag and spatter shall be carefully cleaned off by chipping and power brush and, where necessary, grinding.



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- (3) All sharp edges shall be smoothly ground to a radius of not less than 1.6 mm.
- (4) Any areas of surfaces which are to be blast cleaned as specified in 6-3.3 hereof, and which show any traces of oil or grease, shall be thoroughly degreased prior to such blast cleaning, using an approved solvent.
- (5) The outside surface of sheet metal components, such as electrical cubicles, shall be dressed by means of a finishing machine or orbital sander to produce a smooth finish, free from weld protrusions, spatter, surface blemishes, etc.  

All sheet metal components and thin walled section (below 3 mm in wall thickness) shall be degreased by an approved process in accordance with BS5493 and shall then be pickled, to remove all mill scale, mill bloom, accordance with BS5493.

After appropriate neutralization and rinsing, such components, with the exception of those, which are to be galvanized, shall be given an approved chemical or electro chemical surface passivation and anti-corrosion treatments.
- (6) Particular care shall be taken to ensure that surfaces which have been prepared and cleaned for painting, other protective coating or treatment, are not re-contaminated by handling with bare hands or by exposure to any contaminating environment.

**5.3.3 Abrasive Blast Cleaning**

- 1. All un-machined steel and cast iron surfaces, apart from sheet metal components and thin walled sections (below 3 mm wall thickness) shall be abrasive blast cleaned, as specified hereunder, after all fabrication and hot work has been completed.
- 2. The use of pre-blast pre-painted workshop primed steel plate may be accepted, subject to all mechanical and heat affected areas being suitably re-prepared to the equivalent of the Sa2.5 by either abrasive blast cleaning or other mechanical methods prior to the application of subsequent coatings. The welding on of lugs, brackets etc. after the application of undercoats or topcoats is considered to be poor construction practice, comprises the paint system and must therefore be avoided. Only when it can be shown to be physically impossible to carry out blasting after fabrication, will blasting and prime coating prior to fabrication be permitted.
- 3. Contractor shall submit details of the blast cleaning proposed to be used, including type of equipment, type and grade of abrasive and profile height expected from use of such abrasive.
- 4. External surfaces as defined in 6.3.1(9) shall be dry abrasive blast cleaned to a white metal finish in accordance with SIS005900 Sa2.5.
- 5. Internal surfaces to be abrasive blast cleaned shall be dry abrasive blast cleaned to a finish in accordance with SIS005900Sa2.



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6. After blast cleaning, surfaces shall be fibre brushed or blown with clean dry air (provided adequate driers and oil mist filters are used in air lines) or vacuum cleaned to remove all blast products and abrasives from the entire surface, including pockets and corners.
7. Blast cleaning shall not be performed on surfaces that may in the opinion of the Purchaser's Representative, become wetted after blasting and before painting, or other protective coating, nor shall blasting operations be performed on surfaces the temperature of which is less than 3°C above the dew point of the surrounding air, or when the wet bulb temperature in the immediate neighborhood, as measured by a standard wet and dry bulb thermometer, differs from the dry bulb temperature by less than seven and one half (7.5) percent of the dry bulb temperature, nor shall blasting operations be performed when the temperature of the metal is higher than 38°C or lower than 10°C. Contractor shall ensure that all measuring equipment is available and tested to record the above conditions.
8. All shall be in accordance with paint manufacturers' recommendations and checked by Third Party Inspection Company
9. Adequate precautions shall be taken to ensure that no damage to or contamination of partially or entirely completed portions of the work, or to machinery, occurs from blast cleaning.
10. All free oil and moisture shall be effectively removed from the air supply lines of all blasting equipment, using adequate and approved filters and driers.
11. Blast cleaned surfaces shall be kept free of all contamination before painting, etc., as required by 6-3.2(5) above
12. Operators shall wear fabric gloves of an approved type during cleaning operations and any area inadvertently touched by bare parts of the body, shall be immediately solvent cleaned by approved methods.
13. All items of metal work to be painted shall be so treated not more than \*four hours after surface preparation of each item has been completed.
14. Any unpainted surfaces which have been subjected to conditions which might induce condensation of water thereon, or which have been left longer than the above specified \*four hours after blast cleaning, shall be again blast cleaned before being painted.
15. All painting shall be in accordance with paint manufacturers' recommendations and with the paint manufacturers' representative present on site during preparation and painting, verified by Third Party Inspection Company

**5.3.4 Painting General**

- (1) All painting and coating operations shall be performed in a neat, thorough workmanlike manner. All paint and coating materials shall be in a thoroughly mixed condition at the time of application and shall be thinned only in accordance with the manufacturer's instructions.



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(2) Paint or coating material shall not be applied unless the temperature of the metal surface and the atmospheric conditions satisfy the requirements specified in 6.3.3(6) above.

The first coating shall be applied as soon as possible after cleaning the surface, but in any case not longer than 2 hours after cleaning.

(3) All surfaces to be coated shall be completely free of moisture, foreign surface matter and abrasive dust at the time of application of each coat.

(4) Each coat shall be uniform and free from runs, sags and other imperfections.

Limitations on minimum and maximum inter-coat drying periods recommended by the paint manufacturer shall be strictly observed.

(5) All paints shall be of approved colors which will be defined by the Purchaser during the design phase.

The color of each coat shall differ from that of the previous coat to a sufficient extent to enable missed areas and uneven or inadequate covering to be readily apparent. The final coat shall be the specified color.

(6) All paint shall be applied to the thickness as specified, and such paint thickness shall be gauged by a certified thickness gauge supplied by the Contractor.

Paint shall be applied by approved spray equipment corresponding to the equipment recommended by the paint manufacturer for the particular type of paint.

It is preferred that as far as practicable, semi-hollow components such as switchboard cubicles and consoles and any other smaller items where difficulty could be encountered in obtaining even coverage, be painted by means of electrostatic spray equipment.

All welds and edges shall be double passed with each coat.

(7) The Contractor shall, at his own expense, take all precautions and provide all equipment, including ventilation plant, which may be necessary to obviate health hazards arising from the use of specified paints and coating materials in confined spaces or elsewhere.

(8) All joints, including bolt heads, bolt ends, nuts, washers and attachments, shall be painted, after the connection has been made, to complete the protection in the same system as that specified for the adjacent steel work.

(9) The Contractor shall submit full technical, application and service details from the manufacturer of the paints they propose to use.

(10) Proprietary Equipment



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The external surfaces of all mechanical and electrical equipment shall be protected by paint systems having durability comparable with that of the systems specified herein for other steel work in similar environment.

Any equipment having external surfaces of materials which are subject to corrosion and which shall be exposed to the weather shall be protected by an approved paint system equivalent in durability to that used on the main structures.

(11) Alternative Paint Systems

Contractor may offer alternative paint systems to those specified, but such will only be considered if evidence is submitted to support claims that the systems offered are of at least equivalent durability to that of the system specified.

**5.3.5 Paint Systems**

(1) External Steel Work

After preparation and cleaning in accordance with 6.3.2 and 6.3.3 above all external steel surfaces with the exception of (a) galvanized surface and (b) machined surfaces referred to in Clauses 6.3.1(4) and 6.3.1(8) shall be given the following protective treatment:

First Coat:

Apply one (1) coat of a zinc rich primer, to a minimum dry film thickness of 75 microns.

Second Coat:

Apply one (1) coat of epoxy micaceous iron oxide primer / under coat, to a minimum dry film thickness of 100 microns.

Third Coat:

Apply one (1) coat of a high performance anti corrosive barrier coating based on polyurethane enamel, to a minimum dry film thickness of 50 microns.

The topcoat colors shall meet ICTSI Terminal Equipment Color Specification. The Contractor shall submit color samples for the Purchaser's approval

N.B. Total Dry Film Thickness of system to be not less than 225 microns

(2) Internal Unsealed Surfaces

After preparation and cleaning in accordance with 6.3.2 and 6.3.3 above, all internal surfaces with the exception of (a) galvanized and non-ferrous surfaces (b) machined surfaces referred to in 6.3.1(4) and 6.3.1(8) hereof shall be given the following protective treatment:



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First Coat:

Apply one (1) coat of epoxy zinc rich primer, to a minimum dry film thickness of 50 microns.

Second Coat:

Apply one coat of epoxy micaceous iron oxide primer / undercoat to a dry film thickness of 100 microns minimum.

N.B. Total Dry Film Thickness of system to be not less than 150 microns.

(3) Galvanized and Non-Ferrous Surface, both Internal and External

Galvanized and non-ferrous components shall, after appropriate cleaning by an approved method, be given the following protective treatment:

Galvanized and Non-Ferrous Surfaces, both Internal and External

Surface Preparation:

Ensure that all surfaces are free from all grease, oil or other contaminants by application of a degreasing solution formulated from a blend of solvent and emulsifier. Apply Degreaser liberally ensuring that material does not spill on existing paintwork, working well into the surface to be degreased. Allow 5-10 minutes for the solvent to take place. Flush with clean fresh water and allow to dry thoroughly prior to application of the primer coating.

First Coat:

Apply one (1) coat of micaceous iron oxide primer / undercoat to a minimum dry film thickness of 50 microns.

Top Coat:

Apply one (1) coat of a high performance anti corrosive barrier coating based on polyurethane enamel, to a minimum dry film thickness of 50 microns.

N.B. Total Dry Film Thickness of system to be not less than 150 microns.

(4) Motor, Gearboxes, etc.

The external surfaces of all machinery such as motors, rope drums, gearboxes, couplings, etc. in exposed locations shall be given protective treatment as specified for external steel work, galvanized and non-ferrous surfaces in 6.3.5(1) and 6.3.5(3) above.

The external surface of such machinery enclosed in housings or enclosures shall be given the protective treatment specified for internal steel work, galvanized and non-ferrous surfaces in 6.3.5(2) and 6.3.5(3) above.

After preparation and cleaning in accordance with 6.3.2 and 6.3.3 above, all external surfaces of such machinery shall receive the following protective treatment:



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### First Coat:

Apply one (1) coat of an epoxy zinc rich primer, to a dry film thickness of 75 microns.

### Second Coat (Top Coat):

Apply one (1) coat of epoxy-based enamel, to a dry film thickness of 50 microns.

Where it can be shown that proprietary items such as electric motors have received the basic preparation, the Contractor may with the approval of the Purchaser's Representative on submission of technical details, complement such systems with additional coatings to bring the system up to the standard of the specified system.

The contractor shall remain responsible for ensuring paint system compatibility.

Painting of external surfaces of purchased components can comply to suppliers standard colors but the system must satisfy Technical Specification.

### 5.3.6 Galvanizing

#### (1) General

Components or surfaces required to be galvanized shall be prepared generally as specified in 6-3.2 hereof and shall than be either acid pickled in accordance with BS5493 or abrasive blast cleaned in accordance with Clause 6.3.3 hereof. Abrasive blast cleaning shall only be permitted on components or surfaces where there is no likelihood of distortion due to such cleaning method.

After such cleaning, all components or surfaces so required by this specification shall be given a hot dipped galvanized coating conforming to the requirements of BS5493

Galvanizing of any component or surface shall only be carried out after completion of all fabrication work on such component or surface. No welding on any pre-galvanized component or surface will be tolerated unless the component or surface is to be subsequently re-galvanized.

### 5.3.7 Reinstatement of Protective Coatings at Site

(1) Care shall be taken at all times to ensure that the protective coatings and treatment shall not suffer any damage during handling, transport and erection.

(2) After the components have been transported to the Site, assembled and welded where necessary, all protective coatings shall be carefully inspected and any areas where protective coatings have been damaged or found defective shall be clearly marked with orange colored spray paint or paint stick or chalk, for ready identification and remedial treatment.

All weld slag and spatter or heat affected coatings on surfaces that have not been adequately protected during field welding, shall be completely removed and any high points on field welds shall be ground completely smooth.

All such areas together with field welds, weld margins and burn marks shall be abrasive blast cleaned as specified in Clause 6.3.3 hereof, with due care of other areas of the coating to avoid further damage.



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All site abrasive blast cleaning shall be done with approved closed cycle vacuum blasting equipment.

- (3) Within two hours of cleaning as specified in 6.3.7(2) above, and before any contamination or discoloration can take place, the blast cleaned areas shall be recoated with the priming coat and to the thickness specified in 6.3.5 hereof for the relevant type of surface and location.

Undercoats and top coats of the type and thickness, as specified in Clause 6-3.5 hereof, for the relevant type of surface and location shall subsequently be applied, with suitable feathering of coats to avoid ledging. Manufacturer's recommendations regarding application and drying or inter-coat intervals shall be strictly observed.

- (4) Damage to paint coatings such as scratches or abrasions which, in the opinion of the Purchaser's Representative, do not penetrate the total paint system may, at the discretion of the Purchaser's Representative, be reinstated by cleaning with a suitable solvent and then touch up painting with the relevant primer(s), intermediate and top coats as directed by the Purchaser's Representative.
- (5) For all repair painting, the final coating shall comprise paint from the same batch as that originally used on the particular surface.
- (6) Cleaning and repair painting of the barge or its equipment shall be carried out only when the conditions specified for the original cleaning and painting in 6.3.3(6) and 6.3.4(2) hereof, are satisfied.

Painting shall not be permitted if there is dust being deposited on the surface to be painted or conditions are not in accordance with Clause 6.3.3(6).

### 5.3.8 Manufacturer's Name Plates

- (1) Manufacturer's nameplate could be placed on the Barge structure only. The size and location must be approved by the Purchaser.
- (2) A plate showing year and place of manufacturing, mfg. no., for the Barge shall be fitted the barge structure.
- (3) Manufacturer's name plate shall be fitted on each major electrical and mechanical component showing type, capacity, serial number, manufacturer's number manufacturing date etc, for future reference.

### 5.3.9 Other Signs

- (1) Each machinery shall be properly labeled for its direction of motion or operation and for any precautions to be taken before operation or maintenance.
- (2) All labels and caution plates shall be in English language.

## 5.4 Emergency Stop Push Buttons & Drive Lock Out

The Emergency Stop circuit shall be a hard wired independent circuit that will stop all motions and isolate power to all barge haul drives, inverters and brake contactors.





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#### **5.4.1 Locations**

Total of Tow (4) Emergency Stop push buttons shall be installed on the Dual Barge Shifter. Emergency Stop push buttons shall be located near each winch and clearly visible by the winch operator.

#### **5.4.2 Type**

(1) Emergency stop pushbutton (self-latching) mushroom head switches shall be provided. All Emergency Stop buttons shall be recessed to prevent them from being actuated accidentally.

#### **5.4.3 Emergency Stop Signs**

Adequate signs shall be provided in English to clearly identify their locations to personnel and clearly visible by winch operator. The size of the signboard shall be 12"x12" minimum.

### **5.5 Service Outlets**

#### **5.5.1 Location**

(1) Four independent weathertight GFCI service outlets (one pair) 120V, 1-phase, local type shall be provided and mounted on opposite corners of the barge.

#### **5.5.2 Type Model**

Matching plug of industrial type GFCI for each outlet shall be supplied by the Contractor,

### **5.6 Fire Extinguishers**

All fire extinguishers shall be placed in a properly designed holder so that they are firmly secured and easily accessible. A 'fast releasing' type clip or fastener shall be installed at the upper part of the holder so that the fire extinguisher could be released quickly. This holder shall be welded onto a permanent structure member of the Barge.

#### **5.6.1 Locations**

(1) Each corner of the Barge— four (4) of 20lb capacity.

#### **5.6.2 Type-Model**

All the fire extinguishers shall be CO2 type



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## **6 PROJECT QA & ADMINISTRATIVE REQUIREMENTS**

### **6.1 Document Submission (Project)**

#### **6.1.1 Project Organization Chart (Shop & Site)**

- (1) The Contractor shall submit to the Purchaser a project organization chart within one (1) month after the date of the Agreement.
- (2) The schedule shall show the organization of the Contractor's resources, which he intends to employ in the total project from shop manufacturing through to the site commissioning phases. This will clearly identify the departments involved, the people responsible for each and the number of personnel directly involved in administering the project.

#### **6.1.2 Project Schedule (Shop & Site) (Program)**

- (1) The Contractor shall submit to the Purchaser a project schedule within one (1) month after the date of the Agreement.
- (2) The project schedule shall be presented in the form of a timed schedule covering all activities appertaining to the manufacture of the Barge(s). The contents shall include but not be limited to the following: -
  - i) Contract start date.
  - ii) Engineering Design Period.
  - iii) Submission of Drawing/Design Calculations.
  - iv) Procurement of Materials and Components.
  - v) Manufacturing Periods for the main Structural Sections.
  - vi) Erection in the Contractors Facility.
  - vii) Shop Test and Commissioning.
  - viii) Transportation Period.
  - ix) Site Commissioning.
  - x) Completion Date(s)
- (3) The Program shall be provided in "MS Project" format and shall be presented in a way that clearly shows each activity connected in a logical program sequence. Each activity shall show the duration, early start and early finish and shall identify the critical path of the project.

#### **6.1.3 Project Progress Report**

- (1) The Program shall subsequently be updated and submitted to the Purchaser at intervals of no more than 1 month throughout the course of the project until the Taking-over Certificate has been issued.



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- (2) The monthly update will show actual progress against the original baseline so that effect of any slip or improvement in progress can be easily identified.

### 6.1.4 Quality Assurance Program/ Manuals

- (1) Contractor shall submit to the Purchaser a quality assurance program for review within one (1) month after the date of the Agreement.
- (2) The program shall consist of General Quality Assurance Program, which states Contractor's general practice and organization to assure quality during design, procurement, fabrication and erection periods, and a Specific Quality Assurance Program.
- (3) The Specific Quality Assurance Program is particularly for the Barges and Related Equipment in this Contract, which shall include drawings / data submittal schedule for review of drawings by the Purchaser and key inspection and test items during fabrication and delivery up to hand over of the Barge or other Goods to the Purchaser with proposed timing and locations of conducting such inspection and test.

This Program must cover all the inspection and review items as set out in the Appendix "Inspection Control Sheet" and Appendix "Minimum Requirement for Drawings / Calculations / Data Submission".

An organization chart with names of the quality assurance team personnel for the Agreement for each major stage of fabrication, delivery, commissioning and Defects Liability Period shall be included in this Program.

### 6.1.5 Daily Plan and Report (Site Work)

For the duration of the period of site work at the Purchaser's Site, the Contractor shall submit, at daily intervals in a form approved by the Purchaser, his progress of activities and tests carried out. This daily plan shall also indicate weather conditions, number of Contractors personnel and sub-contractors engaged at site together with the activities planned for the next day.

## 6.2 Document Submission (Technical)

### 6.2.1 Submission Schedule

The Contractor shall submit technical information at the times outlined below for the Purchaser's review.

### 6.2.2 Conceptual Design

The Contractor shall provide evidence to the Purchaser that the requirements of the Specification are met by calculation but formal document submission and schedule for same shall be discussed and mutually agreed at the design review meeting. The design shall show clearly by drawings and description the following details: -



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- General arrangement of the Dual Barge Shifter Barge
- Barge Haul Winch System
- Power Cable Reel and guides
- Rope reeving arrangement
- Barge structure
- Hydraulic System Inc. Schematic Diagram
- One Line Electrical Schematic Drawing

**6.2.3 Drawings and Calculations for the Purchaser's Review**

Following review and acceptance of the conceptual design and prior to the fabrication or ordering of components, the Contractor shall submit detailed drawings and calculations in digital format for review to the Purchaser. This information shall include but not be limited to the following: -

- (1) Structural, mechanical and electrical calculations on all aspects of the Barge design, for example
  - Stability calculations
  - Wind Load Analysis, methods and wind load calculations
  - Barge structure stress calculations
  - Load combinations for various design criteria.
  - Barge Haul Winch Motor sizing calculations
  - Brake Sizing and capacity calculations
  - Barge Winch and Shifter Barge electrical load calculations.
  - Lighting calculations.
  - Hydraulic System sizing calculation
- (2) General arrangement and design drawings showing all elements, sub elements, component parts, layouts, structure details, connections of the Crane.  
The drawings shall include but not be limited to those items listed in the List contained in the Appendix.
- (3) General arrangement drawings, calculations and drawings other than listed in above list, which clarifies further details, shall be submitted from time to time at the request of the Purchaser for review.
- (4) Contractor shall submit any other documents as requested from time to time by the Purchaser.



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The Purchaser's comments on the drawings or submittals shall not waive Contractor's duties or obligations to achieve satisfactory performance of the Barge and all other Goods as set out in the Conditions of Contract, specifically Clause 3 and to otherwise comply with the Contract. The Purchaser undertakes no duty to the Contractor to identify nor notify to the Contractor any errors or omissions in the Contractor's design.

One month before the shipment of the first Barge(s), the Contractor shall submit to the Purchaser four (4) sets of all drawings reviewed and if necessary revised according to the Purchaser comments or for other agreed reasons

### 6.2.4 Lubricant List

- (1) The Contractor shall supply a complete list of oil and lubricants to be used on the Barge three (3) months prior to the test of the Barge in Contractor's shop for the Purchaser's approval.
- (2) The list shall specify the system to be lubricated, it's volumetric capacity, Typical Manufacturer, Lubricant name, Specification and Grade.
- (3) All the oil and lubricant used for the barge shall be selected from those available locally in country of operation and used by the Purchaser.

### 6.2.5 Tests on Completion

- (1) No later than four (4) months before the arrival of the first Barge(s), The Contractor shall submit to the Purchaser for his approval a "Tests on Completion" Procedure.
- (2) The Tests on Completion Procedure shall be in a form of a document and shall contain detailed field and function check procedure to fully demonstrate that the Barge and other Goods meet the requirements of the Agreement including suitability of the Barge for hopper barge unloading operations. All barge functions and features shall be checked. The procedure shall describe the tests to be performed, the indications to be measured and the method by which they are measured. It shall contain the design or acceptable values of each measurement along with blanks in which the tester can enter the measured values.
- (3) Provision shall be made within the procedure for the tester and the Purchaser's Representative to initial and date each separate test.
- (4) The Tests on Completion Procedure shall be duly completed by the Contractor following each individual test or each series of tests conducted at the Contractor's facility or at site. Where necessary the Purchaser's Representative shall verify the results.
- (5) The Contractor shall submit the completed Commissioning Test Procedure no later than one (1) month after the notification of successful completion of the Commissioning Test for the Goods in question.



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#### **6.2.6 Up-Dated Drawings**

- (1) No later than one (1) month after the date of the Agreement, the Contractor shall submit to the Purchaser full details of the Contractor's system of drawing management, which shall be maintained throughout the project.
- (2) The Contractor shall demonstrate to the Purchaser that a logical system of drawing administration exists. And shall clearly establish to the Purchaser, the procedures and current practices in place which deal with alterations, modifications and re-issue of drawings from the design stage through to the as built drawings.

#### **6.2.7 Training Program**

- (1) No later than three (3) months before the arrival of the Barges, the Contractor shall provide a comprehensive training program to cover the theoretical and practical training requirements for the operators, electrical and mechanical tradesmen and electronic technicians. The program shall be aimed at all aspects of the Barge in the respective disciplines in order to provide the trainees with a sound basic knowledge of the Barge(s) and their systems
- (2) The Contractor shall use the training personnel from the sub-contracted suppliers where possible and shall not rely upon untrained trainers or site commissioning personnel.
- (3) The scope of training to be conducted for the disciplines shall be generally as outlined in 7.6.
- (4) The language used for the training shall be according to the language used in the country of operation.

#### **6.2.8 Operation Manuals**

- (1) The Contractor shall provide 6-sets each of operating instruction manuals (English language) to the Purchaser two (2) months before the date of the first Barge departure from the Contractor's manufacturing site.
- (2) The operating instruction manual shall clearly state the startup procedure of every device on the Barge including all bought-in equipment, and all the points to be observed or checked during the start up.
- (3) Corrections shall be made by the Contractor to the Manuals for any changes made in the instructions during the commissioning period, and the revised instruction manuals shall be submitted one (1) month after the notification of successful completion of the Tests on Completion of the first Barge(s)
- (4) Two sets of above instructions shall be submitted in a CD ROM format.

#### **6.2.9 Maintenance Manuals**

- (1) The Contractor shall provide 6-sets each of maintenance manuals (English and Polish language) to the Purchaser two (2) months before the date of the first Barge departure from the Contractor's manufacturing site.



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- (2) The maintenance manual shall include a complete list of wearing parts showing the allowable limit of wear for each part. The manual shall provide comprehensive 'full function' test documents in accordance with format currently in use at Purchaser's engineering department. Full function test document shall be designed so as to determine integrity and correct operation of all system functions, safety circuits and operating speeds of the Barge.

Maintenance and service documents shall be separated into the appropriate hourly or date time intervals. The Purchaser will provide sample service and function test documents following placement of Contract.

- (3) The manual shall include maintenance intervals and procedures for all the bought-in equipment, and also calibration instructions and standards for meters, gauges and any components which require periodical calibration to allow calibration by the Purchaser's maintenance staff.
- (4) The relevant parts of manuals shall be revised and resubmitted as soon as practicable by the Contractor for any changes in system or component design.
- (5) Two sets of manuals in CD ROM shall be submitted.

**6.2.10 As-Built Drawings**

The Contractor shall submit to the Purchaser 3 sets A1 size copies and two sets in CD ROM (English version, pdf format) of the following as-built drawings within 30 days after the date of issue of the Taking-over Certificate for the first Barge(s) to achieve Completion.

- (1) All drawings that were previously submitted for the Purchaser's review and revised as built as at the shipment date.
- (2) Detailed drawings for wearing parts showing machining tolerances, wherever applicable, and wear limits:
  - i) Brake drums (or discs)
  - ii) Brake pads or shoes
  - iii) Sheaves
  - iv) Anti-friction bearings
  - v) Table for consumable parts of electrical machineries
  - vi) All other wearing parts.
- (3) Detailed electrical control circuit drawings, and wiring diagrams.
- (4) Full details of all bought-in equipment, drawings instructions, etc.



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- (5) List of structural connection bolts and machinery fitting bolts with tightening torque value for each location/size.

The Contractor shall revise and resubmit drawings for replacement in case any modification or revision is made on the Works after the initial submission.

### 6.3 Shop Inspection and Tests

#### 6.3.1 Shop Inspection and Verification

- (1) Inspection and testing of the Barge shall be performed by the Contractor to verify or demonstrate the Barge's conformance to this Specification and the other Contract Documents, following the approved Specific Quality Assurance Program as stated in 7.1.4.(3).
- (2) Without limitation to the Purchaser's rights under the Agreement, the Contractor and the Purchaser shall agree to the content, nature and extent of the review, inspection and tests to be carried out to any of the Works at each of the following stages:
- i) Design.
  - ii) Fabrication and assembly;
  - iii) Pre-shipment;
  - iv) Upon Delivery;
  - v) Tests pursuant to the Conditions of Contract, which, if successful will lead to the issue of a Taking-over Certificate.
  - vi) Such further tests as otherwise may be required that in the opinion of the Purchaser are pursuant to the Conditions of Contract.
- (3) The Contractor shall notify the Purchaser of the date and place of each key inspection or test, at least three (3) weeks prior to the date when the key inspection or test is to be made.
- (4) Inspection and test items shall generally include (but not limited to) the following fundamental items.
- i) Materials and components sources and identification of standards applied.
  - i) Workmanship overall.
  - ii) Inspection of Operational and Maintenance Safety, Test of all safety equipment and safety devices.
  - iii) Inspection of Operational Efficiency, Functional Test of all components equipped for operation.
  - iv) Inspection of Maintenance Efficiency, Functional Test and inspection of all equipment for maintainability.





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- v) Rated Load Tests, 1/2 Loads Tests, 1/4 Load Tests and No Load Tests including Anti-sway Function Test and Measurement of Speeds and accelerations.
  - vi) Overload Tests including Stability Test and Measurement of Structural Deflection.
  - vii) Accessories Inventory.
  - viii) Operating Instruction and Maintenance Manual Review.
  - ix) Weight verification as necessary.
  - x) Statutory inspection and tests.
  - xi) Wheel Load Verification (see 7.3.2 (6))
- (5) The Purchaser reserves the right for itself or any party authorized by the Purchaser to inspect the Barge or other Goods at any time including during fabrication and delivery.
- (6) Any inspection or test results verified by the Purchaser shall not waive Contractor's duties or obligations to achieve satisfactory performance of the Barge in actual operation as set out in the Conditions of Contract or any other obligation or liability of the Contractor.
- (7) At the same time, Contractor shall submit a list of calculated maximum structural stresses at critical points of the Barge structure.
- (8) The Contractor shall verify the calculated stress level by actually weighing these moving weights after the fabrication and assembly are completed.
- (9) The Contractor shall be responsible for maintaining the calculated stress level within allowable limits. If there are differences between the designed weights and the actual measured weights, the Contractor shall re-submit calculations of all stress levels based on the true weights to show that the levels are maintained within requirements. Any stress levels over the allowable limit will require a redesign to be carried out by the Contractor.

**6.3.2 Pre-Shipment Inspection and Test**

- (1) The Barge is to be fully erected in the Contractor's facility and tested prior to shipment.
- (2) The Contractor shall prepare a shop assembly and Barge erection program including all tests and dimensions to verify the proper installation and assembly of the Barge's components. The drawings shall include assembly procedures, drawings, dimensional acceptance criteria, structural member dimensional checks, structural frame alignment dimensions, structural pin and bore fits, structural bolt torques and machinery alignments.



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- (3) The Barge shall be fully lubricated in accordance with the manufacturer's recommendation prior to any shop testing. A lubrication checklist shall be included in the test documentation.
- (4) The assembled Barge shall be inspected and tested at the Contractor's assembly facility. All installations and functions shall be verified for compliance to the Specification.

#### **6.4 Shipment, Delivery and Site Work**

##### **6.4.1 Clearance for Shipment**

- (1) The Barge(s) shall be totally assembled in the Contractor's yard and tested for functions of all the devices before shipment. Heat run tests and operational check of interlocks and safety devices shall be performed through the permanent control gear and components installed on the barge in the Contractor's yard.
- (2) The Engineer shall check pre-shipment test data and issue a formal approval before the barges are loaded for delivered.

##### **6.4.2 Site Safety and Security**

- (1) The Contractor shall comply with the Purchaser's security requirements for making entry or exit to and from the Port, and inside the Port.
- (2) The Contractor and its subcontractors shall be responsible for protecting their own plant, tools, temporary site offices and other belongings from weather, fire or theft. The Barge and other Works shall be protected by the Contractor from fire, collision and any other possible risk until the Barge or other Works are Taken-over by the Purchaser.
- (3) Erection All Risk insurance, Third Party Liability insurance, Workmen's Compensation insurance and other necessary insurances shall be secured and maintained by the Contractor

##### **6.4.3 Contractor's Representatives**

- (1) One principal site engineer shall be dispatched prior to arrival of the Barge(s) to plan and coordinate the work and to communicate with and report to the Purchaser. He shall stay in the Purchaser's locality for the entire period from delivery to Taking-over of the Barge to the Purchaser.
- (2) A sufficient number of qualified start-up engineers and training engineers shall be dispatched to the Port to handover the Barges in an expeditious manner.

Site Inspection and Tests, Certification

##### **6.4.4 Tests on Completion**

- (1) The Barge or other Works shall be verified at Site as operational and safe under any load conditions prior to the Tests on Completion. Only minor items pertaining to maintainability which do not affect the safety of operations or maintenance work may



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be allowed by the Purchaser as a pending item for correction at the time of the Commissioning Certificate. These items shall form part of the Defects List.

- (2) The Tests on Completion which will be as defined in the agreed Tests on Completion Procedure. (See Clause 7.2.8) The Contractor shall show the Purchaser by documentation or by physical demonstration (in either case as determined by the Purchaser) that all functions of the Barge or other Works are safe and conform to the Agreement. The Contractor shall correct or modify whatever aspect is found unsafe. The Barge(s) and shall pass the statutory tests, which will be carried out and witnessed by the Purchaser's Representative.
- (3) Application for inspection for the Commissioning Tests must be submitted to the Purchaser's in writing at least 2 days prior to the intended inspection date.

### 6.4.5 Defects List

- (1) The Purchaser or his representative shall be allowed to gain access to any part of the Barge(s) or other Goods during their assembly at the Contractors facility and at any other time for the purposes of inspecting part or completed works. If in their opinion certain parts of the works do not meet with the requirements of the Agreement, or is deemed as bad practice or poor workmanship, then these shall be noted as a defect and informed to the Contractor in a list.
- (2) The compilation and provision of this list by the Purchaser or his representative will in no way relieve the Contractor from his obligation to provide defect free Barge(s) or other Goods.

### 6.4.6 Rectification Report

- (1) The Contractor will be obliged to correct these defects and any other defects before the Tests on Completion or within an appropriate timeframe approved by the Purchaser.
- (2) The rectification of defects in the defects list shall be carried out in a thorough and workmanlike manner. The Contractor shall prepare and submit to the Purchaser a rectification report that confirms defect completion together with a description of the action taken.

## 6.5 Training & Support

### 6.5.1 Training On-Site (Operators)

The Contractor shall carry out the operator training of the Purchaser's staff during the on-site commissioning period and for a period of seven (7) days following the Tests on Completion of the Barge or other Works. The training shall be conducted by qualified Contractor's trainers. The training shall cater for approximately eight (8) groups of operators and the content shall include but not be limited to the following: -

- (1) Instruction and hands-on training of the barges start-up procedure.
- (2) Instruction on lighting control.



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(3) Instruction and hands-on training of normal shutdown procedure.

(4) Instruction on the use of equipment for emergency.

Emergency stop buttons

Escape route

Fire-fighting equipment

### 6.5.2 Training On-Site (Maintenance)

The Contractor shall carry out the maintenance training of the Purchaser's staff during the commissioning period and for a period of seven (7) days following the Tests on Completion of the Barge or other Works. The training shall be conducted by suitable Contractor and Barge or other Goods component supplier trainers. The training shall cater for approximately four (4) groups of electrical maintenance staff, and four (4) groups of mechanical maintenance staff and the content of the training shall include but not be limited to the following: -

(1) Instruction and hands-on training of starting and shutdown procedure.

(2) Instruction and explanation of all the devices on the Barge (separately for electrical and mechanical staff).

(3) Instruction of Start-stop procedure and checking points of all the devices or systems on the Barge.

(4) Inspection and Maintenance of Operationally Critical Components.

(5) Instruction on troubleshooting and repair.

(6) Instruction on emergency equipment.

Emergency stop buttons

Escape route

Fire-fighting equipment

(7) Instruction on routine maintenance of devices and preventive maintenance plan, including explanation of special tools, gauges or jigs.

## 6.6 Spare Parts

### 6.6.1 Ordered Spare Parts

(1) The Contractor shall warrant in writing its capability for providing spare parts, spare components, repair and/or replacement services for a period of 15 years after date of issue of the Taking-over Certificate for each barge.



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**6.6.2 Spare parts for Commissioning Work**

- (1) The spare parts for the commissioning work shall be provided by the Contractor.
- (2) The Contractor shall indemnify the Purchaser against any cost, loss or damage if the operational Barge(s) suffers stoppage due to the unavailability of an Ordered Spare Part which has been consumed by the Contractor during the commissioning period and not replaced before the issue of the Commissioning Certificate.



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## 7 APPENDICES

### 7.1 Appendix 1 – Document Submittals

List of Drawings / Calculations to be reviewed by the Purchaser (Minimum Requirements)

(Information required to be submitted after confirmation of order)

#### 1. Drawings and Specifications

1. General Arrangement
2. Main Power Cable Reel General Arrangement
3. Walkways, Stairs & Platforms Layouts and Details
4. Rope Reeving Diagram with Rope End Fixing Details
5. Barge Haul Winch Drive Arrangement
6. One Line Diagram
7. Electrical Schematic Diagram
8. PLC Ladder Logic Diagram
9. Control Panels General Arrangement
10. Power Cable Specification and Sectional Dimension Drawing
11. All main structure general and detailed drawings.
12. All other structural general and detailed drawings as requested by Purchasers Purchaser reviewing engineer.
13. All other mechanical general and detailed drawings as requested by Purchasers Purchaser reviewing engineer.
14. All other electrical arrangement drawings as requested by Purchasers Purchaser reviewing engineer.

#### 2. Calculations and Data

1. Stability Calculations
2. Peak Power Consumption Calculations
3. Stress Calculation for Critical Areas of Structure
4. Barge Haul Winch Braking Capacity (under various wind load conditions up to braking limit)
5. Barge Haul Winch Drive Motor sizing calculations
6. Barge Haul Winch Selection & Configuration Data
7. Structural Maintenance Program



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8. All other structural, mechanical, and electrical calculations as requested by Purchaser's reviewing engineer.