



Alabama State Port Authority
Specification Booklet

Project Name McDuffie Warehouse

Location Mobile, AL

Project # 10861 **Task #** 02

August 2022

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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

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 Wednesday, September 7, 2022. Sealed bid proposals can also be hand delivered from 1:45pm to 2:00pm on Wednesday, September 7, 2022, to the Alabama State Port Authority in the International Trade Center building, 250 North Water Street, 1st floor – Killian Room, Mobile, AL. Faxed or electronically submitted bids will not be accepted. ATTENDANCE TO THE BID OPENING IS NOT MANDATORY.

McDuffie Warehouse MOBILE, ALABAMA

The work consists principally of providing bonds, labor, materials, equipment, and supervision necessary for the construction of a 70,000 SF warehouse at the Alabama State Port Authority's McDuffie Terminal in Mobile, Alabama. All areas of the ASPA McDuffie Terminal are restricted access facilities and require valid Port Access Credentials for entry.

Specifications, proposal forms, bond forms, and plans will be available on the Alabama 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, Mike Thompson, Eng. at mike.thompson@alports.com or 251-441-7224.

A **MANDATORY** Pre-Bid Meeting is scheduled for Wednesday, August 24, 2022, at 10:00 AM at the Alabama State Port Authority in the International Trade Center building, 250 North Water Street, 4th floor, Mobile, Alabama 36602. At the conclusion of the Pre-Bid Meeting, a site visit will be offered to allow prospective Contractor's 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 PM 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 Contractors submitting bids 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 proposal shall be proof that the bidding Contractor 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. 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".



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All bidding Contractors must hold a current license from the State Licensing Board for General Contractors, Montgomery, Alabama with a classification being **BC-Building Construction, BC-S: Pre-Engineer - Metal Buildings or BCU4: Building Construction under Four Stories.**

A Guarantee will be required with each bid 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 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. This shall include evidence of holding a current license as required from the State Licensing Board for General Contractors, Montgomery, 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 Contractor and approved by the ASPA Project Manager. The Contractor is required to submit a schedule detailing the sequence of work and time frame for Contractor's activities within 10 calendar days of receipt of the Notice to Proceed. Contractor's attention is directed to the fact that the facility's cargo handling operation is a priority item, therefore, close coordination with McDuffie Operations and the project manager is required. All work shall be according to these specifications and all reference documents.

All individuals doing any work on this project, 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>

Bids will be publicly opened at 2:00pm on Wednesday, September 7, 2022, at the Alabama State Port Authority in the International Trade Center building, 250 North Water Street, 1st 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.



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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, Bruce Smith, at bsmith@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 Wednesday, August 31, 2022.

2.0 PREQUALIFICATION OF BIDDERS

No proposal will be considered from any Contractor unless he is licensed to do work in the State of Alabama and has complied with the requirements of Paragraph SP-04 of the DIVISION III Special Provisions.

3.0 SUBMISSION OF PROPOSALS

Before submitting his proposal, the Contractor 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) Contractors shall attach all items included by SP-6.
- e) Attach a copy of the State Contractor's License to Proposal.
- f) Certificate of Compliance with the Beason-Hammon Alabama Taxpayer and Citizen Protection Act (see page I-9)

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



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Proposal of:

Address:

Date:

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

Gentlemen:

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

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

McDuffie Warehouse
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.

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



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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.



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SCHEDULE OF PRICES

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT
1.0	General Construction Requirements (5%)	1 LS	Lump Sum	\$
2.0	<u>Site Work</u>			
2.1	Erosion Control	1 LS	Lump Sum	\$
2.2	Clearing/Grubbing/Demo	____ Acres	\$_____/Acre	\$
2.3	Grading & Excavation for Building Area	____ CY	\$_____/CY	\$
2.4	Structural Sand Fill for Building Area	____ CY	\$_____/CY	\$
2.5	Grading & Excavation for Pavement Areas	____ CY	\$_____/CY	\$
2.6	Grading & Excavation for Landscape Areas	____ CY	\$_____/CY	\$
2.7	Structural Sand Fill for Pavement Areas	____ CY	\$_____/CY	\$
2.8	Crushed Aggregate Base	____ TONS	TONS	\$
2.9	Asphalt Paving for Roadways	____ TONS	TONS	\$
2.10	Rigid Concrete Paving (Inside Warehouse)	____ CY	\$_____/CY	\$
2.11	Concrete for Warehouse Foundations	____ CY	\$_____/CY	\$
2.12	Concrete for Warehouse Perimeter Curb	____ CY	\$_____/CY	\$
2.13	Concrete for Office Foundations	____ CY	\$_____/CY	\$
2.14	Concrete for Sidewalks	____ CY	\$_____/CY	\$
2.15	Generator Foundation	____ CY	\$_____/CY	\$
2.16	Guard Shack Foundation	____ CY	\$_____/CY	\$
2.17	Site Utility Installation Allowance (Power, Water, Sanitary Sewer Connection,	1 LS	Lump Sum	\$



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	Fire Water, Fiber)			
2.18	Antenna Pole	1 LS	Lump Sum	\$
2.19	Security Fence	____ LF	\$ ____/LF	\$
2.20	Security Gates	1 LS	Lump Sum	\$
2.21	Guard Shack	1 LS	Lump Sum	\$
2.22	Generator	1 LS	Lump Sum	\$
2.23	Stormwater System Appurtenances	1 LS	Lump Sum	\$
3.0	<u>Landscaping</u>			
3.1	4" Top Soil for Landscape Areas	____ CY	\$ ____/CY	\$
3.2	Landscaping: Seeding		SY	\$
4.0	<u>Warehouse</u>			
4.1	Enclosed Warehouse Space (including MEP)	1 LS	Lump Sum	\$
4.2	Covered Warehouse Storage	1 LS	Lump Sum	\$
4.3	Climate Controlled Storage	1 LS	Lump Sum	\$
4.4	Warehouse Office	1 LS	Lump Sum	\$
4.5	Processing Area	1 LS	Lump Sum	\$
5.0	Miscellaneous	1 LS	Lump Sum	\$
TOTAL BID		\$		

- (1) This is a Lump Sum Bid for the work as shown on the drawings and as specified. The quantity under each item may be increased, decreased, or deleted after award of Contract in accordance with provisions of the Contract Documents. The Unit Prices are for adjustment only.
- (2) The Total Bid amount shall be the sum of Items 1.0 – 5.0. All optional items to be included in the contract shall be approved by the Owner.
- (3) The general requirements should include mobilization/demobilization, insurances, taxes, overhead profit and all other miscellaneous construction activities involved with the specific construction phase included in the drawings or specifications.
- (4) Miscellaneous (Item 5.0) should include final grading, sodding, seeding, and any other items not specifically detailed in the schedule of prices but including in the drawings or specifications.



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

ADDENDUM NO. _____

ADDENDUM NO. _____

ADDENDUM NO. _____

ADDENDUM NO. _____

Contractor's Signature:

Contractor
Company _____

Name

Title

Date



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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 Warehouse in Mobile, Alabama, Project No.: 10861, 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 penal 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.



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____ (b) The Contractor/Grantee is not a business entity or employer as those terms are defined in Section 3 of _____ the Act.

3. As of the date of this Certificate, Contractor/Grantee does not knowingly employ an unauthorized alien within the State of Alabama and hereafter it will not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama;
4. Contractor/Grantee is enrolled in E-Verify unless it is not eligible to enroll because of the rules of that program or other factors beyond its control.

Certified this _____ day of _____ 20 _____

Name of Contractor/Grantee/Recipient

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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CONTRACT DOCUMENTS

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PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That: _____
(Name of Contractor)

(Address of Contractor)

(City, State, Zip)

I, a(n) _____ (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 Warehouse
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 incur in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

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

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



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IN WITNESS WHEREOF, this instrument is executed this _____ day of _____, 20____.

ATTEST:

_____	_____
(Principal) Secretary	Principal
(SEAL)	_____ (s)
_____	_____
(Witness as to Principal)	(Address)
_____	_____
	Surety

ATTEST:

(Surety) Secretary	
(SEAL)	
_____	BY: _____
Witness as to Surety	Attorney-in-fact
_____	_____
(Address)	(Address)
_____	_____

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



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LABOR AND MATERIAL BOND

KNOW ALL MEN BY THESE PRESENTS:

That: _____
(Name of Contractor)

(Address of Contractor)

(City, State, Zip)

I, a(n) _____ corporation, hereinafter called Principal, and
(State of Domicile)

(Name of Surety)

(Address of Surety)

(City, State, Zip)

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

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

McDuffie Warehouse
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 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)

ATTEST:

Witness as to Surety

(Address)

Surety

BY: _____
Attorney-In-Fact

(Address)

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



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ACKNOWLEDGEMENT FOR CHANGE ORDERS

TO: ALABAMA STATE PORT AUTHORITY

RE: McDuffie Warehouse

Gentlemen:

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

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

CONTRACTOR

DATE

BY: _____

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," WITNESSETH, that in consideration of the covenants and agreements herein contained, to be performed by the parties hereto and of the payments hereinafter agreed to be made, it is mutually agreed as follows:

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

Project Name: McDuffie Warehouse
Project #: 10861 Task 02

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

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

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

WITNESS: Alabama State Port Authority

BY: _____

WITNESS: Contractor Party of the Second Part

BY: _____



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SPECIAL PROVISIONS

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Alabama State Port Authority Specification Booklet

Project Name McDuffie Warehouse

Location Mobile, AL

Project # 10861 **Task #** 02

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SP-01 DESCRIPTION OF WORK

The work consists principally of providing bonds, labor, materials, equipment, supervision, insurance and incidentals necessary to construct a 70,000 SF warehouse at the Alabama State Port Authority's McDuffie Terminal in Mobile, Alabama as indicated in the Contract Plans and Specifications.

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.

The following shall apply to Section 20-14 (Owner Purchase of Materials) of Division IV General Provisions:

- 1) 20-14.2 Purchase of Materials or Equipment – Delete in its entirety
- 2) 20-14.3 Payment of Materials or Equipment – Delete in its entirety
- 3) 20-14.4 Accounting Procedures – Delete in its entirety
- 4) 20-14.5 Procedures – Delete in its entirety
- 5) 20-14.7 Project Close-Out – Delete in its entirety

SP-03 COMMENCEMENT AND COMPLETION

The Contractor will be required to commence work under this contract in accordance with DIVISION IV GENERAL PROVISIONS Article 90-02 (NOTICE TO PROCEED), to prosecute said work with faithfulness and energy, and to complete the entire project within 365 calendar days after receipt of Notice to Proceed. The time stated for final completion shall include final clean-up of all work sites. Failure to complete work on schedule shall initiate liquidated damages, which will be assessed in accordance with the provisions of Paragraph 20-13 (LIQUIDATED DAMAGES) of DIVISION IV, GENERAL PROVISIONS. In addition, liquidated damages referenced in DIVISION V, CONSTRUCTION SPECIFICATIONS, shall also be initiated.

SP-04 QUALIFICATION OF BIDDERS

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

SP-05 ACCEPTANCE OR REJECTION OF BIDS

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

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

Preference shall be given to resident contractors, and non-resident bidders domiciled in a state having laws granting preference to local contractors shall be awarded Alabama public contracts the same as Alabama contractors bidding under similar circumstances; and resident contractors in Alabama are to be granted preference over non-residents in awarding of contracts in the same manner and to the same extent as provided by the laws of the state of domicile of the non-resident.

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

SP-07 INDEMNIFICATION

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

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

SP-08 SUPERVISION

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

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

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

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

SP-09 CONTRACTOR'S REPRESENTATIVE

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

SP-10 METHOD OF PAYMENT

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

SP-11 INSURANCE

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

- 1) 40-07 Ocean Marine Coverage – Delete in its entirety
- 2) 40-08 Railroad Protective Liability – Delete in its entirety
- 3) 40-10 Professional Liability Insurance – 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 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 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 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, 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

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

All electrical current required by the Contractor shall be furnished by the Contractor at his own expense. All temporary connections for electricity shall be subject to the approval of the Engineer. The Contractor shall at his own expense, install a meter to determine the amount of current used by him/her and will pay for such electricity at prevailing rates.

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 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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**GENERAL PROVISIONS, CLAUSES, REQUIREMENTS
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SECTION 10

DEFINITIONS OF TERMS

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

10-01 AASHTO. The American Association of State Highway and Transportation Officials, the successor association of AASHO.

10-02 ACCESS ROAD. The right-of-way, the roadway and all improvements constructed thereon connecting the site of work to a public highway.

10-03 ADVERTISEMENT. A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.

10-04 ALDOT SPECS. The State of Alabama Department of Transportation Standard Specifications for Roads and Bridges, latest edition.

10-05 AISC. The American Institute of Steel Construction.

10-06 AREA. American Railway Engineering Association.

10-07 ASA. American Standards Association.

10-08 ASTM. The American Society for Testing and Materials.

10-09 AWARD. The acceptance, by the OWNER, of the successful bidder's proposal.

10-10 AWPI. American Wood Preservers Institute.

10-11 BIDDER. Any individual, partnership, firm or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

10-12 CALENDAR DAY. Every day shown on the calendar.

10-13 CHANGE ORDER. A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and Contract time adjustment, if any, for the work affected by such changes. The work, covered by a change order, shall be within the scope of the Contract.

10-14 COMMERCE. The prime business of the OWNER, consisting of the transshipping and storage of goods and materials by highway, rail, barge, and ship.

10-15 CONSTRUCTION MANAGER. The individual, partnership, firm or corporation duly authorized by the OWNER to be responsible for construction management supervision of the Contract work and acting directly or through an authorized representative.

10-16 CONTRACT. The written agreement covering the work to be performed. The awarded Contract shall include, but is not limited to: The Advertisement; The Contract Form; The Proposal; The Performance Bond; The Payment Bond; any required insurance certificates; The Specifications; The Plans; Change Orders and any addenda issued to bidders.

10-17 CONTRACT ITEM (PAY ITEM). A specific unit of work for which a price is provided in the Contract.

10-18 CONTRACT TIME. The number of calendar days or working days, stated in the special provisions, allowed for completion of the Contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the Contract shall be completed by that date.

10-19 CONTRACTOR. The individual, partnership, firm or corporation primarily liable for the acceptable performance of the work Contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the Contract work.

10-20 DEPARTMENT. The Alabama State Port Authority.

10-21 DIRECTOR. The Director of the Alabama State Port Authority, as constituted under the laws of Alabama.

10-22 ENGINEER. The individual, partnership, firm or corporation duly authorized by the OWNER to be responsible for Engineering supervision of the Contract work and acting directly or through an authorized representative.

10-23 EQUIPMENT. All machinery, together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the work.

10-24 EXTRA WORK. An item of work not provided for in the awarded Contract is previously modified by change order or supplemental agreement, but which is found by the Engineer to be necessary to complete the work within the intended scope of the Contract as previously modified.

10-25 FEDERAL SPECIFICATIONS. The Federal Specifications and Standards, and supplements, amendments and indices thereto are prepared and issued by the General Services Administration of the Federal Government. They may be obtained from the Specifications Activity, Printed Materials Supply Division, Building 197, Naval Weapons Plant, Washington D.C. 20407.

10-26 FORCE ACCOUNT. The term used to describe a method of accounting which may be employed as a basis of payment to the Contractor for Extra Work.

10-27 INSPECTOR. An authorized representative of the Engineer assigned to make all necessary reviews of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.

10-28 INTENTION OF TERMS. Whenever, in these specifications or on the plans, the words "directed", "required", "permitted", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer is intended; and similarly, the words "approved", "acceptable", "satisfactory", or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer, subject to each case to the final determination of the OWNER.

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

10-29 LABORATORY. The official testing laboratories of the OWNER or such other laboratories as may be designated by the Engineer.

10-30 MAJOR AND MINOR CONTRACT ITEMS. A major Contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 10 percent of the total amount of the awarded Contract. All other items shall be considered minor Contract items.

10-31 MATERIALS. Any substance specified for use in the construction of the Contract work.

10-32 NOTICE TO PROCEED. A written notice to the Contractor to begin the actual work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the Contract time begins.

10-33 OWNER. The term OWNER shall mean the State of Alabama acting by and through the Alabama State Port Authority.

10-34 PAYMENT BOND. The approved form of security furnished by the Contractor and his surety as a guaranty that he will pay in full all bills and accounts for materials and labor used in the construction of the work.

10-35 PERFORMANCE BOND. The approved form of security furnished by the Contractor and his surety as a guaranty that the Contractor will complete the work in accordance with the terms of the Contract.

10-36 PLANS. The official drawings or exact reproductions, approved by the Engineer, which show the location, character, dimensions and details of the work to be done and which are to be considered as a part of the Contract, supplementary to the specifications.

10-37 PROJECT. The agreed scope of work for accomplishing specific development.

10-38 PROPOSAL. The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.

10-39 PROPOSAL FORM. The approved, prepared form on which the OWNER requires that formal bids be submitted for the work contemplated.

10-40 PROPOSAL GUARANTY. The security furnished with a proposal to guarantee that the bidder will enter into a Contract if his proposal is accepted by the OWNER.

10-41 SPECIAL PROVISIONS. Specific directions and provisions additional to these GENERAL PROVISIONS and to any CONSTRUCTION SPECIFICATIONS setting forth conditions or requirements of construction which are not satisfactorily covered by these GENERAL PROVISIONS or the CONSTRUCTION SPECIFICATIONS. SPECIAL PROVISIONS shall prevail over the GENERAL PROVISIONS and CONSTRUCTION SPECIFICATIONS because they set forth the final Contractual intent as to the matter involved.

10-42 SPECIFICATIONS. A part of the Contract containing the written directions and requirements for completing the Contract work. Standards for specifying materials or testing which are cited in the Contract specifications by reference shall have the same force and effect as if included in the Contract physically.

10-43 STATE. The State of Alabama, the Party of the First Part to the Contract, acting by and through the Alabama State Port Authority.

10-44 STRUCTURES. Port facilities such as wharves, piers, dolphins, bridges, culverts, catch basins, inlets, retaining walls, cribbing, storm and sanitary sewer lines, water lines, under drains, electrical ducts, manholes, handholes, lighting fixtures and bases, transformers, flexible and rigid pavements, buildings, vaults, and other man-made features of the port that may be encountered in the work and not otherwise classified herein.

10-45 SUBCONTRACTOR. Any properly qualified individual undertaking the performance of any part of the work under the terms of the Contract, by virtue of an agreement between himself and the Contractor, with the approval of the OWNER.

10-46 SUBGRADE. The soil which forms the pavement foundation.

10-47 SUPERINTENDENT. The Contractor's executive representative who is present on the work site during progress, authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

10-48 SUPPLEMENTAL AGREEMENT. A written agreement between the Contractor and the OWNER covering: (1) work that would increase or decrease the total amount of the awarded Contract by not more than 10 percent; or any major Contract item, by more than 25 percent, such increased or decreased work being within the scope of the originally awarded Contract, or (2) work that is not within the scope of the originally awarded Contract.

10-49 SURETY. The corporate body, licensed under the laws of Alabama, bound with and for the Contractor for the acceptable performance of the Contract and also for the payment of all claims recoverable under the Contract Bonds.

10-50 WORK. The furnishing of all labor, materials, tools, equipment and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the Contract, plans and specifications.

10-51 WORKING DAY. A working day shall be any day other than a national legal holiday, Saturday, or Sunday, on which the normal working forces of the Contractor may proceed with regular work for at least 6 hours toward completion of the Contract. Unless work is suspended for causes beyond the Contractor's control, Saturdays, Sundays and national holidays on which the Contractor's forces engage in regular work, requiring the presence of an inspector, will be considered as working days.

SECTION 20 PROPOSAL REQUIREMENTS AND CONDITIONS

20-01 PREQUALIFICATION OF BIDDERS

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

20-02 CONTENTS OF PROPOSAL FORMS

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

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

20-03 ISSUANCE OF PROPOSAL FORMS

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

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

20-04 INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES

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

20-05 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE

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

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

made available for the convenience of all bidders. It is further understood and agreed that each bidder is solely responsible for all assumptions, deductions, or conclusions which he may make or obtain from his examination of the boring logs and other records of subsurface investigations and tests that are furnished by the OWNER.

20-06 PREPARATION OF PROPOSAL

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

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

20-07 IRREGULAR PROPOSALS

Proposals shall be considered irregular for the following reasons:

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

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

20-08 PROPOSAL GUARANTY

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

20-09 DELIVERY OF PROPOSAL

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

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

20-10 WITHDRAWAL OR REVISION OF PROPOSALS

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

20-11 PUBLIC OPENING OF PROPOSALS

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

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

20-12 DISQUALIFICATION OF BIDDERS

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

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

20-13 LIQUIDATED DAMAGES

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

SCHEDULE OF LIQUIDATED DAMAGES

<u>Contract Bid Price</u>	<u>Amount of Liquidated Damages per Day</u>
\$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 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 for the project shall be subject to Sales Tax and paid by the Contractor.

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 by the Owner. The Check Request Form will be numerically sequenced and accounted for.

20-14.3.3 The Contractor 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 with the Owner reserving the right of approval of the Invoice Transmittal Form design. It is a

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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 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 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/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 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.

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

20-14.5 Procedures

The Contractor shall follow the procedures set forth below, but nothing herein shall be construed to reduce, limit or change the Contractor'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.

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 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, Contractor 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 shall be forwarded to the vendor by the Contractor. The total monetary value listed on the Purchase Order Form is the cost limitation established for the Purchase Order.

3. Simultaneously, with the Contractor/Agent's issuance of a purchase order form for major items the Contractor 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 in accordance with the provisions of the purchase order, and as required by the Contract Documents. Upon receipt of the materials the Contractor 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 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 of 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/Consignee. The Contractor/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 next monthly Application for Payment to the Owner.
6. After the Contractor'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 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 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 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 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 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

or after the Contractor 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, 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, the Contractor 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 with all necessary assistance in communicating with the manufacturer of any materials which fail to function properly once installed.

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

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SECTION 30**AWARD AND EXECUTION OF CONTRACT****30-01 CONSIDERATION OF PROPOSALS**

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

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

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

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

30-02 AWARD OF CONTRACT

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

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

30-03 CANCELLATION OF AWARD

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

30-04 RETURN OF PROPOSAL GUARANTY

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

30-05 REQUIREMENTS OF CONTRACT BONDS

In order to insure the faithful performance of each and every condition, stipulation, and requirement of the Contract and to indemnify and save harmless the OWNER from any and all damages, either directly or indirectly, (arising out of any failure to perform same), the successful Bidder to whom the Contract is awarded shall, within ten (10) days from the date of award, furnish at his expense and file with the OWNER an acceptable Surety Bond in an amount equal to one hundred percent (100%) of the Contract Bid Price of the Contract as awarded. Said

Bond shall be made on the approved bond form, shall be furnished by a reputable surety company authorized to do business in the State of Alabama, shall be counter-signed by an authorized agent resident in the State who is qualified for the execution of such instruments, and shall be attached thereto power of attorney of the signing agent.

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

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

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

30-06 EXECUTION OF CONTRACT

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

30-07 APPROVAL OF CONTRACT

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

30-08 FAILURE TO EXECUTE CONTRACT

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

SECTION 40 INDEMNIFICATION AND INSURANCE REQUIREMENTS

40-01 INDEMNIFICATION

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

40-02 CONTRACTOR COVERAGE

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

40-03 COMMERCIAL GENERAL LIABILITY

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

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

The Contractor shall take out and maintain during the life of the Contract a separate Owner's and Contractor's Protective Liability policy in the names of the Owner and Engineer in an amount not less than \$5,000,000. Policy shall be delivered to the Owner.

40-05 BUSINESS AUTOMOBILE LIABILITY

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

Where applicable, Contractor shall take out and maintain during the life of the Contract insurance providing coverage as required by Federal statute, including but not limited to U.S. Longshoremen and Harbor Workers 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 shall provide Protection and Indemnity coverage, including crew, in an amount not less than \$2,000,000 for each loss.

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

40-08 RAILROAD PROTECTIVE LIABILITY

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

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

NOTE #2: *Only the Contractor and/or Subcontractor performing the work within 50 feet of the railroad track shall be required to provide evidence of this coverage. In the event the Contractor subcontracts 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

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

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

40-11 PROOF OF CARRIAGE OF INSURANCE

The Contractor shall furnish to the Owner, in triplicate, Certificates of Insurance, signed by the licensed agent, evidencing the required coverage, along with letter of transmittal giving date of delivery. A copy of this letter shall also be delivered to the Engineer. The Owner reserves the right to require certified copies of any and all policies. 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 shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, drawings, specifications, and terms of the Contract.

50-02 ALTERATION OF WORK AND QUANTITIES

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

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

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

50-03 OMITTED ITEMS

The Engineer may, in the OWNER's best interest, omit from the work any Contract item, except major Contract items. Major Contract items may be omitted by a supplemental agreement. Such omission of Contract items shall not invalidate any other Contract provision or requirement.

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

50-04 EXTRA WORK

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

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

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

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

50-05 MAINTENANCE OF COMMERCE

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

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

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

When the Contract requires the maintenance of vehicular traffic on an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the Contract, plans, and specifications, the Contractor shall keep such road, street, or highway open to all traffic and shall provide such maintenance as may be required to accommodate traffic. The Contractor shall furnish, erect, and maintain barricades, warning signs, flagmen, and other traffic control devices in reasonable conformity with the manual of Uniform Traffic Control Devices for Streets and Highway (published by the United States Government Printing Office), unless otherwise specified herein. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways.

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

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

50-06 REMOVAL OF EXISTING STRUCTURES

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

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

Except as provided in the subsection titled RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK of this subsection, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be utilized in the work as otherwise provided for in the Contract and shall remain the property of the OWNER when so utilized in the work.

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

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

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

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

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

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

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

50-08 FINAL CLEANING UP

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

SECTION 60

CONTROL OF WORK

60-01 AUTHORITY OF THE ENGINEER

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

60-02 CONFORMITY WITH PLANS AND SPECIFICATIONS

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

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

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

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

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

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

60-03 COORDINATION OF CONTRACT, PLANS AND SPECIFICATIONS

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

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

60-04 COOPERATION OF THE CONTRACTOR

The Contractor will be supplied with five (5) copies 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 for the cost of reproduction.

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

60-05 COOPERATION BETWEEN CONTRACTORS

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

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

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

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

60-06 CONSTRUCTION LAYOUT AND STAKES

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

destruction of such stakes or markings, an amount equal to the cost of replacing the same may be deducted from subsequent estimates due to the Contractor at the discretion of the OWNER.

60-07 AUTOMATICALLY CONTROLLED EQUIPMENT

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

60-08 AUTHORITY AND DUTIES OF INSPECTORS

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

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

60-09 INSPECTION OF THE WORK

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

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

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

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

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

60-10 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK

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

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of the paragraph titled CONTRACTOR'S RESPONSIBILITY FOR WORK of Subsection 80.

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

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

60-11 LOAD RESTRICTIONS

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

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

60-12 MAINTENANCE DURING CONSTRUCTION

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

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

60-13 FAILURE TO MAINTAIN THE WORK

Should the Contractor at any time fail to maintain the work as provided in the paragraph titled MAINTENANCE DURING CONSTRUCTION of this subsection, the Engineer shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time

within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the urgency that exists.

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

60-14 PARTIAL ACCEPTANCE

If at any time during the prosecution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the OWNER, he may request the Engineer to make final inspection of that unit. If the Engineer finds upon inspection that the unit has been satisfactorily completed in compliance with the Contract, he may accept it as being completed, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the OWNER shall not void or alter any provision of the Contract or warranty.

60-15 FINAL CONSTRUCTION INSPECTION

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

60-16 FINAL ACCEPTANCE

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

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

60-17 CLAIMS FOR ADJUSTMENT AND DISPUTES

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

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

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

SECTION 70 CONTROL OF MATERIALS

70-01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS

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

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

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

70-02 SAMPLES, TESTS, AND CITED SPECIFICATIONS

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

70-03 CERTIFICATION OF COMPLIANCE

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

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

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

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

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

Should the Contractor propose to furnish an "or equal" material or assembly, he shall furnish the manufacturer's certificates of compliance as hereinbefore described for the specified brand

name material or assembly. However, the Engineer shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

70-04 PLANT INSPECTION

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

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

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

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

70-05 ENGINEER'S FIELD OFFICE AND LABORATORY

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

70-06 STORAGE OF MATERIALS

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

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

70-07 UNACCEPTABLE MATERIALS

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

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

70-08 OWNER-FURNISHED MATERIAL

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

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

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

70-09 RECEIVING MATERIALS AND EQUIPMENT

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

SECTION 80 LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

80-01 LAWS TO BE OBSERVED

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

80-02 PERMITS, LICENSES, AND TAXES

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

80-03 PATENTED DEVICES, MATERIALS AND PROCESSES

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

80-04 RESTORATION OF SURFACES DISTURBED BY OTHERS

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

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

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

80-05 SANITARY, HEALTH, AND SAFETY PROVISIONS

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

Attention is directed to Federal, State, and local laws, rules and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions which are unsanitary, hazardous, or dangerous to his health or safety.

80-06 PUBLIC CONVENIENCE AND SAFETY

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

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

80-07 BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS

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

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

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

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

Open-flame type lights shall not be permitted.

80-08 USE OF EXPLOSIVES

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

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

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

80-09 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE

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

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

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

80-10 RESPONSIBILITY FOR DAMAGE CLAIMS

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

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

80-11 THIRD PARTY BENEFICIARY CLAUSE

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

80-12 OPENING SECTIONS OF THE WORK FOR OCCUPANCY

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

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

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

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

80-13 CONTRACTOR'S RESPONSIBILITY FOR WORK

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

If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at his expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, 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 RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS

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

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

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

It is further understood and agreed that the Contractor shall, upon execution of the Contract, notify the owners of all utility services or other facilities of his plan of operations. Such notification shall be in writing. In addition to the general written notifications hereinbefore

provided, it shall be the responsibility of the Contractor to keep such individual owners advised of changes in his plan of operations that would affect such owners.

Prior to commencing the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify Each such owner of his plan or operation. If, in the Contractor's opinion, the owner's assistance is needed to locate the utility service or facility or the presence of a representative of the owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the Engineer.

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

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

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

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

80-15 FURNISHING RIGHTS-OF-WAY

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

80-16 PERSONAL LIABILITY OF PUBLIC OFFICIALS

In carrying out any of the Contract provisions or in exercising any power or authority granted to him by this Contract, there shall be no liability upon the Engineer, his authorized representatives, or any official of the OWNER either personally or as an official of the OWNER. It is understood that in such 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 of final acceptance. Such final acceptance, however, shall not preclude or stop the OWNER from correcting any measurement, estimate or certificate made before or after completion of the work, nor shall the OWNER be precluded or stopped from recovering from the Contractor or his surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill his obligations under the Contract. A waiver on the part of the OWNER of any breach of any part of the Contract shall not be held to be a waiver of any other or subsequent breach.

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

80-18 ENVIRONMENTAL PROTECTION

The Contractor shall comply with all Federal, State and local laws and regulations controlling pollution of the environment. He shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with silt runoff, fuels, oils, 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 is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

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

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

SECTION 90 PROSECUTION AND PROGRESS

90-01 SUBLETTING OF CONTRACT

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

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

90-02 NOTICE TO PROCEED

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

90-03 PROSECUTION AND PROGRESS

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

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

90-04 LIMITATION OF OPERATIONS

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

90-05 CHARACTER OF WORKERS, METHODS AND EQUIPMENT

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

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

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

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

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

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

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

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

90-06 TEMPORARY SUSPENSION OF THE WORK

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

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

If it should become necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. He shall take every precaution to prevent damage or deterioration of the

work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the site.

90-07 DETERMINATION AND EXTENSION OF CONTRACT TIME

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

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

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

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

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

including all Saturdays, Sundays, holidays, and no work days. All calendar days elapsing between the effective dates of the Engineer's orders to suspend and resume all work, due to causes not the fault of the Contract, shall be excluded.

At the time of final payment, the CONTRACT TIME shall be increased in the same proportion as the cost that the actually completed quantities bear to the cost of the originally estimated quantities in the proposal. Such increase in the CONTRACT TIME shall not consider either the cost of work of the extension of CONTRACT TIME that has been covered by a change order or supplemental agreement. Charges against the CONTRACT TIME will cease as of the date of final agreement.

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

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

90-08 FAILURE TO COMPLETE ON TIME

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

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

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

90-09 CONTRACT DEFAULT

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

- (a) Fails to begin the work under the Contract within the time specified in the "Notice to Proceed"; or
- (b) Fails to perform the work or fails to provide sufficient workers, equipment or materials to assure completion of work in accordance with the terms of the Contract; or

- (c) Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable; or
- (d) Discontinues the prosecution of the work; or
- (e) Fails to resume work which has been discontinued within a reasonable time after notice to do so; or
- (f) Becomes insolvent or is declared bankrupt, or commits an act of bankruptcy or insolvency; or
- (g) Allows any final judgment to stand against him unsatisfied for a period of 10 days; or
- (h) Makes an assignment for the benefit of creditors; or
- (i) For any other cause whatsoever, fails to carry on the work in an acceptable manner.

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

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

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

90-10 CONTRACT TERMINATION

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

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

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

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

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

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

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

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

SECTION 100**MEASUREMENT AND PAYMENT****100-01 MEASUREMENT OF QUANTITIES**

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

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

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

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

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

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

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

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

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

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

Bituminous materials will be measured by the gallon or ton. When measured by volume, such volumes will be measured at 60 degrees F, or will be corrected to the volume at 60 degrees F using ASTM 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, or by certified permanently installed commercial scales.

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

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

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

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

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

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

All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for

the weighing of materials for proportioning, or payment, shall be included in the unit Contract prices for the various items of the project.

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

100-02 SCOPE OF PAYMENT

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

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

100-03 COMPENSATION FOR ALTERED QUANTITIES

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

100-04 PAYMENT FOR OMITTED ITEMS

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

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

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

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

100-05 PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK

Extra work, performed in accordance with the paragraph titled EXTRA WORK of Subsection 50, will be paid for at the Contract prices or agreed prices specified in the change order or supplemental agreement authorizing such extra work. When the change order or supplemental agreement authorizing the extra work requires that it be done by force account, such force account shall be measured and paid for as follows:

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

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

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

- (b) Insurance and Taxes: For property damage, liability, and workmen's compensation insurance premiums, unemployment insurance contributions, and social security taxes on the force account work, the Contractor shall receive the actual cost, and to this cost (sum) 5 percent will be added. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such insurance and taxes.
- (c) Materials: For materials accepted by the Engineer and used, the Contractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth), to which cost (sum) 10 percent will be added.
- (d) Equipment: For any machinery or special equipment (other than small tools) including fuel and lubricants, plus transportation costs, the use of which has been authorized by the Engineer, the Contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is committed to the work.
- (e) Miscellaneous: No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.
- (f) Comparison of Records: The Contractor and the Engineer shall compare records of the cost of force account work at the end of each day. Agreement shall be indicated by signature of the Contractor and Engineer or their duly authorized representatives.
- (g) Statements: No payment will be made for work performing on a force account basis until the Contractor has furnished the Engineer with the duplicate itemized statements of the cost of such force account work detailed as follows:
 - (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 stock, then in lieu of the invoices the Contractor shall furnish an affidavit certifying that such materials were taken from his stock, that the quantity claimed, was actually used, and that the price and transportation claimed represent the actual cost provided above shall constitute full compensation for such work.

100-06 PARTIAL PAYMENT

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

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

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

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

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

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

100-07 PAYMENT FOR MATERIALS ON HAND

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

- (a) The material has been stored or stockpiled in a manner acceptable to the Engineer at or on an approved site.
- (b) The Contractor has furnished the Engineer with acceptable evidence of the quantity and quality of such stored or stockpiled materials.

- (c) The Contractor has furnished the Engineer with satisfactory evidence that the material and transportation costs have been paid.
- (d) The Contractor has furnished the OWNER legal title (free of liens or encumbrances of any kind) to the material so stored or stockpiled.
- (e) The Contractor has furnished the OWNER evidence that the material so stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

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

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

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

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

100-08 CONTRACT CLOSE-OUT

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

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

100-09 WITHHOLDING FOR CLAIMS AND LITIGATION

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

- (a) Refuse to close out the Contract retaining all monies unpaid until such time as all claims are dropped and litigation is resolved, or

- (b) Refuse to close out the Contract, retaining enough money to cover the total of all outstanding claims and amounts claimed by litigation until such time as all claims are dropped and litigation is resolved, or
- (c) Require the Contractor to post a letter of credit to each individual claimant or litigant and satisfactory to the claimant or litigant. Once such letters of credit have been posted and the OWNER is in receipt of written agreement from each individual claimant or litigant, the OWNER will proceed with Contract close-out and release of retainage in the normal manner.

100-10 FINAL PAYMENT

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

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

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

100-11 RIGHT OF AUDIT

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

Such audits may require inspection and copying from time to time and at reasonable times and places of any and all information, materials and data of every kind and character, including without limitation, records, books, papers, documents, subscriptions, recordings, agreements,

purchase orders, leases, Contracts, commitments, arrangements, notes, daily diaries, superintendent reports, drawings, receipts, vouchers and memoranda, and any and all other agreements, sources of information and matters that may in Owner's judgment have any bearing on or pertain to any matters, rights, duties or obligations under or covered by any Contract Document. Such records subject to audit shall also include, but not be limited to, those records necessary to evaluate and verify direct and indirect costs, (including overhead allocations) as they may apply to costs associated with this Contract.

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

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

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

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



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DIVISION 1 - GENERAL REQUIREMENTS

1.0 DESCRIPTION OF THE WORK

- 1.1 The work consists of, but is not limited to, furnishing of all labor, tools, equipment, materials, services, transportation and supervision necessary to complete the following items: site work, concrete foundations, perimeter grade beam, metal building, mechanical, plumbing, electrical, drainage appurtenances, and all other incidentals as shown on the respective design drawings and as further specified herein.

2.0 WORK INCLUDED

2.1 Site Improvements

- 2.1.1 Furnish and install site grading and drainage appurtenances.
- 2.1.2 Furnish and install sand fill and crushed aggregate base.
- 2.1.3 Furnish and install new paving.
- 2.1.4 Furnish and install new stone.
- 2.1.5 Furnish and install security fence and gates.
- 2.1.6 Furnish and install site utilities and radio antenna pole.

2.2 Furnish and Install Metal Building

- 2.2.1 Furnish and install building as shown on plans.
- 2.2.2 Furnish and install concrete foundations, concrete paving and perimeter grade beam for building as shown on plans.
- 2.2.3 Furnish and install mechanical ventilation, plumbing and electrical service.
- 2.2.4 Furnish and install new office finishes.
- 2.2.5 Furnish and install new handrails and stairs as shown on plans.



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2.2.6 Furnish and install backup generator.



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3 REFERENCE DOCUMENTS

Latest edition of the following:

ASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGC	Associated General Contractors of America
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
AWS	American Welding Society
CRSI	Concrete Reinforcing Steel Institute
NEC	National Electric Code
NEMA	National Electrical Manufacturer's Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
SBCCI	Standard Building Code
UL	Underwriters' Laboratories, Inc.

4.0 COOPERATION AND COORDINATION WITH OWNER

- 4.1 Contractor shall be responsible for providing any required temporary barricades or fencing for protection of adjacent property and the construction area.



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- 4.2 The Contractor is responsible for the coordination and protection of his work until acceptance by the Owner.

5.0 CONSTRUCTION AREA

- 5.1 The Contractor shall provide lights, barricades and warning signs, as necessary, to protect the required construction area. Contractor shall coordinate, with the Owner and his representatives, the area required for Construction purposes. An area for Contractor's field office and/or material storage shall be coordinated with Owner.

6.0 SHOP DRAWINGS

- 6.1 Shop drawings shall be submitted, as required, for Owner's review. The first submittal of the shop drawings will be the only time allowed by Owner for approval within the time schedule of the work, unless directed otherwise. Rejection and resubmittal of shop drawings due to Contractor error will not extend the completion date of the work. Resubmittal of shop drawings will be required until all corrections have been made.
- 6.2 The review of these drawings will not relieve the Contractor from responsibility or implemented deviations from drawings or specifications during his fabrication process; nor from the responsibility for errors in all types of shop drawings furnished by him.

7.0 MATERIALS AND WORKMANSHIP

- 7.1 All materials will be new, unless salvaged material is specified to be used, and the new materials shall be of the best quality of their respective kinds.
- 7.2 Where a specified manufacturer's name and/or number is mentioned herein or indicated on the drawings in connection with manufactured articles, materials or items of equipment, it shall be considered to set a standard for any requested substitute by the Contractor. However, it is intended that the exact item, service and/or material shall be provided.
- 7.3 Items of reputable manufacturers other than those names herein may be used if they are approved by the Owner prior to installation or use during the project.



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- 7.4 In connection with the use of any alternate item approved, it shall be the Contractor's responsibility to see that any such items meet all space requirements, and that any alterations are properly made.

8.0 CONSTRUCTION PHASING

- 8.1 Timely completion is an essential element of this Contract. The Contractor's proposed Work Progress Schedule (to be delivered to the Owner at the Preconstruction Conference) shall be developed taking into account all factors, which will affect phasing, or performance of the work.

8.1.1 Scheduling, sequencing, procedures and performance of work shall comply with all provisions of the general conditions and technical specifications.

- 8.2 The Contractor shall submit a construction sequence, which provides for completion of all items, as outlined above.

- 8.3 As noted in the specifications, the Owner reserves the right to decrease the Scope of Work by removing any of the items outlined in the Schedule of Prices. The Scheduled completion dates would require adjustment, accordingly.



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DIVISION 2 - SITEWORK

EXCAVATION, FILL, AND PREPARATION OF SUBGRADE

1.0 SCOPE OF WORK

- 1.1 The work included under this section shall consist of furnishing all the labor, tools, equipment, material, services and supervision necessary for the final grading of the new structures and excavations or backfill required to complete the foundation work.

2.0 SITE INFORMATION

- 2.1 The soil data furnished is made available to the Contractor for information only. The data on indicated subsurface conditions are not intended as representations or warranties of the continuity of such conditions. It is expressly understood that the Owner will not be responsible for interpretations or conclusions drawn there from by the Contractor. The soils data is available upon request.

3.0 EXCAVATION

- 3.1 General. The term fill used hereinafter is defined as “unclassified excavation”. Excavation of every description, regardless of material encountered within the limits of the project, shall be performed to the lines and grades indicated or specified. Suitable excavated material shall be stockpiled or transported to and placed in fill areas within the limits of the work. (During construction, excavation and filling shall be performed in a manner and sequence that will provide drainage at all times.)
- 3.2 Stockpiling. Generally, it will be necessary to stockpile excavated materials prior to final placement or disposal. Suitable materials shall be kept segregated from unsatisfactory materials.
- 3.3 Structures. Excavation for structures shall be made accurately to the lines, grades, and elevations shown or as directed. Trenches and foundation pits shall be of sufficient size to permit the placement and removal of forms for



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the full length and width of structure footings and foundations as shown. Excavation to the final grade level shall not be made until just before the concrete is to be placed.

- 3.4 Temporary Excavations. Temporary excavation above the water table may proceed with vertical side slopes to depths of three (3) feet. Shoring will be required for vertical cuts to deeper depths. Large area excavations above the water table should have 2.5 to 1 (horizontal: vertical) side slopes or flatter as required for stability. Excavations deeper than the existing water surface shall require engineering design to address dewatering requirements and potential soil instabilities due to seepage pressures.
- 3.5 Permanent Slopes. Permanent slopes should not be steeper than 3 horizontal to 1 vertical for fill materials and compacted in-situ soils unless otherwise recommended by the geotechnical engineer. Permanent slopes of 4 horizontal to 1 vertical may be required for loose in-situ soils. Erosion protection shall be provided for slopes above mean low water elevation. Erosion protection may include placement of topsoil, erosion control netting, grass sod, seeding, or geotextile/rip-rap.
- 3.6 Trenches.

3.6.1 General.

- a. Perform all excavation of every description and of whatever substance encountered so that pipe can be laid to the alignment and depth shown on the drawings.
- b. Brace and shore all trenches, where required, in accordance with the Safety and Health Regulations for Construction, Occupational Safety and Health Administration, Department of Labor.
- c. Make all excavations by open cut unless otherwise specified or indicated on the drawings.

- 3.6.2 Width of Trenches. Excavate trenches sufficiently wide to allow proper installation of concrete, pipe, fittings, and other materials and not less than 12" clear of pipe and formwork on either side at any point. Do not widen trenches by scraping or loosening materials from the sides. Where supports, sheeting, and bracing



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are required, trench may be of extra width to permit the placing of the trench supporting material.

3.6.3 Trench Excavation in Earth. Earth excavation includes all excavation of whatever substance encountered. In locations where pipe is to be bedded in earth excavated trenches, fine grade the bottom of such trenches to allow firm bearing for the bottom of the pipe on undisturbed earth. Where any part of the trench has been excavated below the grade of the pipe, fill the part excavated below such grade with pipe bedding material and compact at the Contractor's expense.

4.0 BORROW MATERIAL

4.1 Selection of Borrow Material. Borrow material shall be in accordance with these specifications. Minimal borrow should be available on site. Additional borrow material is required; it shall be obtained from approved off-site sources by the Contractor. Service records of the source and analysis of the material by a reputable laboratory shall be submitted to the Engineer.

5.0 BACKFILL

5.1 Backfill Around Structures

5.1.1 General. Unless otherwise specified or indicated on the drawings, use suitable material for backfill, which was removed in the course of making the construction excavations.

5.1.2 Material. Approved selected materials available from the excavations may be used for backfilling around structures. Obtain material needed in addition to that of construction excavations from approved sites or other approved deposits. Furnish all borrow material needed for the work. Place and compact all material, whether from the excavation or borrow, to make a dense, stable fill. Use fill material which contains no vegetation, masses of roots, individual roots over 6" long or more than 1/2" in diameter, stones over 4" in diameter, or porous matter



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5.1.3 Placing Backfill.

- a. Do not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected without distortion, cracking, or other damage. Use the best of the excavated materials in backfilling within 2 ft. of the structure. Avoid unequal soil pressures by depositing the material evenly around the structure.
- b. Place fill and backfill in layers not more than 6" thick, except as specified otherwise herein, and compact each layer evenly to the specified density. Do not backfill against concrete without Engineer's approval.

5.2 Trench Backfill

5.2.1 General.

- a. Unless otherwise specified or indicated on the drawings, use suitable material for backfill, which was removed in the course of making the construction excavations. Start backfilling as soon as practicable after the pipes have been laid or the structures have been built and are structurally adequate to support the loads, including construction loads, to which they will be subjected, and proceed until its completion.
- b. With the exception mentioned below in this paragraph, do not backfill trenches at pipe joints until after that section of the pipeline has successfully passed any specified test required. Should the Contractor wish to minimize the maintenance of lights and barricades and the obstruction of traffic, he may, at his own risk, backfill the entire trench as soon as practicable after installation of pipe, and the related structures have acquired a suitable degree of strength. He shall, however, be responsible for removing and later replacing such backfill, at his own expense, should he be ordered to do so in order to locate and repair or replace leaking or defective joints or pipe.



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5.2.2 Materials. The nature of the materials will govern both their acceptability for backfill and the methods best suited for their placement and compaction in the backfill. Both are subject to the approval of the Engineer. Place no stone or rock fragment larger than 4" in greatest dimension in the backfill. Drop no large masses of backfill material into the trench in such a manner as to endanger the pipeline. Use a timber grillage to break the fall of material dropped from a height of more than 5 feet. Exclude pieces of bituminous pavement from the backfill unless their use is expressly permitted.

5.2.3 Zone Around Pipe Place bedding material to the level shown on the drawings and work material carefully around the pipe to ensure that all voids are filled. For backfill up to a level of 2 ft. over the tops of the pipe, use only selected materials containing no rocks, clods, or organic materials. Place the backfill and compact thoroughly under the pipe haunches and up to the mid-line of the pipe in layers not exceeding 6" in depth. Place each layer and tamp carefully and uniformly so as to eliminate the possibility of lateral displacement. Place and compact the remainder of the zone around the pipe and to a height of 1 ft. above the pipe in layers not exceeding 6" and compact to a maximum density of at least 95% as determined by ASTM D1557 modified.

5.2.4 Tamping

- a. Deposit and spread backfill materials in uniform, parallel layers not exceeding 12" thick before compaction. Tamp each layer before the next layer is placed to obtain a thoroughly compacted mass. Furnish and use, if necessary, an adequate number of power-driven tampers, each weighing at least 20 pounds, for this purpose. Take care that the material close to the bank, as well as in all other portions of the trench, is thoroughly compacted.
- b. When the trench width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe, backfill may, on approval, be compacted by the use of suitable rollers, tractors, or similar powered equipment instead of by tamping. For compaction by tamping (or rolling), the rate at which backfill material is deposited in the trench shall not exceed that permitted by the facilities



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for its spreading, leveling, and compacting as furnished by the Contractor.

- c. Wet the material by sprinkling, if necessary, to ensure proper compaction by tamping (or rolling). Perform no compaction by tamping (or rolling) when the material is too wet from rain or applied water to be compacted properly.

6.0 PREPARATION OF SUBGRADE

- 6.1 Ground surface on which fill is to be placed shall be stripped of live, dead, or decayed vegetation, rubbish, debris, boulders, and other unsatisfactory material; plowed, disked, or otherwise broken up; pulverized; and moistened or aerated as required just prior to placement of fill materials to assure adequate bond between fill material and the prepared ground surface. The exposed ground surface of area graded to elevations as noted above shall be compacted by means of a heavy vibratory roller working at slow speed. Compact to 95% standard proctor density as determined by ASTM D698.
- 6.2 Filling required to attain design subgrade elevations shall be performed utilizing a combination of "select sand" and "structural fill" as outlined in these specifications.
- 6.3 "Select sand" used to fill within saturated zones shall consist of a locally available borrow material herein defined as a medium to coarse sand fill containing less than 90% passing the No. 40 sieve and less than 5% passing a No. 200 sieve by weight. Select sand fill shall be placed in maximum loose lift thicknesses of 12" and compacted to 95% of the material's Standard Proctor Density as per ASTM D-698. Select sand fill may be used to obtain a maximum grade level of 12" below underside of railroad subbase.
- 6.4 "Structural fill" used to attain design grade elevations shall consist of a locally available borrow material herein specified as silty or clayey sand containing less than 95% passing a No. 40 sieve, and between 12 and 18% passing the No. 200 sieve, by weight. Maximum loose lift thicknesses of 12" shall be compacted to 98% of the soil's Standard Proctor Density as per ASTM D-698.



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7.0 STRUCTURAL FILLS

- 7.1 Fills shall be constructed from satisfactory materials free of organic material from the required excavations and from borrow, if necessary. The material shall be placed in successive horizontal layers of loose material not more than 10" in depth. Each layer shall be spread uniformly on a prepared surface, i.e., a soil surface that has been moistened or aerated as necessary and scarified or otherwise broken up in such a manner that the fill will bond with the surface on which it is placed; plowed, disked, or otherwise broken up; moistened or aerated as necessary; thoroughly mixed; and compacted to at least 98% standard proctor density. Compaction requirements for the upper portion of earth fills forming subgrade for base course shall be identical with those requirements specified herein. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.

8.0 SUBBASE PREPARATION

- 8.1 Construction. The final lift for subgrade shall not be more than 6" in depth. Subgrade shall be shaped to line, grade and cross section, and compacted as specified. This operation shall include plowing, disking, and any moistening or aerating required to obtain proper compaction. Soft or otherwise unsatisfactory material shall be removed and replaced with satisfactory excavated material or other approved material as directed. After rolling, the surface of the subbases for base shall not show deviation greater than 1/4" when tested with a 10 ft. straightedge applied both parallel and at right angles to the centerline of the area. The elevation of the finished subbase shall not vary more than 0.05 ft. from the established grade and approved cross section.
- 8.2 Compaction. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.
- 8.3 Densities. Subgrade for base course shall be compacted to at least 95% standard proctor density.



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9.0 FINISHING

The surface of all excavations, fills, and subgrades shall be finished to a reasonably smooth and compact surface substantially in accordance with the lines, grades, and cross sections or elevations shown. The degree of finish for all graded areas shall be within 0.1 ft. of the grades and elevations indicated except that the degree of finish for subgrades shall be as specified above.

10.0 SUBBASE AND FILL PROTECTION

During construction, fills and excavations shall be kept shaped and drained. Ditches and drains along subgrade shall be maintained in such a manner as to drain effectively at all times. The finished subgrade shall not be disturbed by traffic or other operation and shall be protected and maintained by the Contractor in a satisfactory condition until base course is placed. The storage or stockpiling of materials on the finished subgrade will not be permitted. No base course shall be laid until the subgrade has been checked and approved, and in no case shall base be placed on a muddy, spongy, or frozen subgrade.

11.0 DETERMINATION OF DENSITY

- 11.1 One density test per lift per 2500 square feet of fill material placed, shall be performed by owner. The contractor shall coordinate the testing with the owner, engineer and designated testing lab. Any areas not tested in accordance with specifications will be removed, reworked and tested in accordance with the specifications at "no additional cost to the owner".
- 11.2 The surface of the final subgrade elevation after excavation shall be tested the same as structural fill.
- 11.3 Results of compaction testing shall be forwarded to the Engineer on a regular basis such that prior to the placement of a lift, the results of the previous lift are known.

12.0 DISPOSAL OF UNSUITABLE OR EXCESS MATERIAL

The Contractor shall dispose of all unsuitable or excess materials resulting from



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the excavation that are not permitted or required in the fills or required in other features of the work. Materials shall be disposed of on the Owner's property.

13.0 MEASUREMENT

13.1 Borrow. The unit of measurement for borrow will be the cubic yard. Yardage of borrow to be paid for will be the number of cubic yards of borrow based upon in place measurement as determined by the average end area method.

14.0 SUBSIDIARY OBLIGATIONS

14.1 General. The following operations and construction will not be measured for direct payment, but will be considered subsidiary obligations of the Contractor, and will be covered under the contract prices for the structures involved or under the unit prices per yard as specified below.

14.2 Excavation. Excavation for drainage structures, foundations, and operations required in connection therewith, including bracing or sheeting, drainage, and pumping, will be covered under the contract price for drainage structures or the subject structure.

14.3 Backfill. Backfill for drainage structures and other structures below grade, including attendant operations, will be covered under the contract price for drainage structures or the subject structure.

14.4 Fill. Fill construction including the preparation of ground surface for placement of fill up to the finished subgrade elevation will be covered under the unit prices per cubic yard for Excavation or Fill.

14.5 Subgrade preparation. Subgrade preparation, including dressing, shaping, wetting, aerating, and compacting of the subgrade, will be covered under the unit prices per cubic yard for Excavation or Fill.

14.6 Water used for sprinkling and wetting materials during construction in connection with compaction of fills, unless otherwise specified, will be covered under the contract unit prices per cubic yard for Excavation or Fill.



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14.7 Disposal of Unsuitable Material will be covered under the unit prices per cubic yard for Excavation to required elevations.

15.0 REMOVAL AND DEMOLITION WORK

15.1 Scope of Work

The work included under this Section shall consist of furnishing all the labor, tools, equipment, material, services, and supervision necessary for the removal, and disposal of existing miscellaneous debris, and other items within the Contract limits shown on the Drawings and specified.

15.2 Protection of Existing Structures

The removal and disposal work required shall be performed in such a manner so as not to damage any existing structures that are to remain and any damage thereto caused by the Contractor's operations shall be repaired by the Contractor at no cost to the Owner.

15.3 Disposal of Removed Materials

Removed materials as noted herein or as may be designated by the Engineer shall remain the property of the Owner and shall be neatly stockpiled as directed. Material specified to be disposed of shall become the Contractor's property and shall be disposed of off Owner's property.

15.4 Existing Construction

It shall be the Contractor's responsibility to determine all necessary details of the existing construction as relative to its effects on his work.

16.0 EROSION CONTROL

16.1 During this site construction process and until all site drainage improvements are operational, the Contractor shall maintain an erosion control system satisfactory to the Engineer, the Owner, ADEM and all local authorities. Erosion control shall consist of silt fences, hay bales,



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ditches, pipes, inlets, and appurtenances required to prevent the transportation of sediments in stormwater runoff to the existing watercourse.

16.2 The Contractor shall provide, establish, maintain, and install erosion control as required by the parties noted above.

16.3 All erosion control shall be maintained by the Contractor during the contract period, and until contract acceptance.

16.3.1 The Contractor shall examine the site and site conditions.

16.3.2 Once the work has begun on a section it will be the responsibility of the Contractor to control all erosion during construction. This may include, but is not limited to, seeding, sodding, fences, berms, dikes, drains, netting, hay bales, sand bags, etc., as specified herein.

16.4 All practices and materials shall conform to the Alabama Highway Department Standard Specification for Highway Construction, Latest Edition.

16.5 A BMP plan shall be submitted to the Engineer for approval 15 days prior to the start of excavation and earthwork.

16.6 All materials shall comply with the plans and specifications. Certain materials can be substituted if authorized by the Engineer.

16.6.1 Hay bales may either be hay or straw containing 5 Cu. ft. of material.

16.6.2 Sand bags may be of cotton or burlap which will confine the sand inside the bag and be of a volume of approximately 1 Cu. ft.

16.6.3 Silt fences shall consist of a woven wire fabric mounted on wood stakes or posts with a polymeric filter fabric attached to the fence fabric. Filter fabric shall be a polymeric fabric formed from a plastic yam of a long-chain synthetic polymer composed of at least 85% by weight of propylene ethylene,



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amide, ester, or vinylidenechloride and shall contain stabilizers to make the filaments resistant to deterioration from ultraviolet and heat exposure for at least six months.

16.7 Performance Requirements

- 16.7.1 Sand bags shall be securely fastened when placed. The bags shall have a thickness of approximately 6".
- 16.7.2 Hay bales shall be securely anchored by the use of stakes and wire or other approved methods.
- 16.7.3 Silt fences shall be constructed at locations as required. Field splices can be made by overlapping the fabric a minimum of 3 ft. and securely fastening the fabric to the wire fence. Contractor shall maintain the fence until the contract has been accepted.
- 16.7.4 If the fabric should become damaged an additional layer of fabric can be attached with at least a 3 ft. overlap.
- 16.7.5 Temporary drainage sumps or sediment basins can be constructed near the ends of excavations or ditches to control silting.
- 16.7.6 Sumps shall be cleaned periodically by the removal of the silt to keep the sump functional.

- 16.8 The Contractor shall be responsible for protecting the site and all adjacent surface waters from any and all erosion. If erosion does occur, the Contractor shall repair all damage and provide all additionally needed topsoil at the Contractor's expense.

17.0 FENCE

17.1 SCOPE OF THE WORK



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17.1.1 The work included under this section shall consist of furnishing all labor, tools, equipment, materials, and supervision necessary to complete installation of all fencing as shown on the drawings.

17.2 PRODUCTS

17.2.1 General

17.2.1.1 Framework: ASTM A120 Schedule 40 pipe, hot-dip galvanized.

17.2.1.2 Fabric: Galvanized steel.

17.2.2 Components

17.2.2.1 Line Posts: Nominal 2.375" O.D. (3.65 #/ft. min.)

17.2.2.2 Corner and Terminal Posts: Nominal 2.875" O.D. (5.79 #/ft. min.)

17.2.2.3 Gate Posts: Nominal 4.0" O.D.

17.2.2.4 Top and Bottom Brace Rail: Nominal 1" O.D., plain end, sleeve coupled.

17.2.2.5 Fabric: 2" diamond mesh 9 gauge galvanized steel wire, interwoven, top selvage twisted tight and barbed, bottom selvage knuckle end closed.

17.2.2.6 Tension wire: 6 gauge.

17.2.2.7 Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners, and fittings shall be galvanized or stainless steel.

17.3 EXECUTION



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17.3.1 Installation

17.3.1.1 Set terminal gate and line posts plumb in concrete footings as shown on drawings. Slope top of concrete for water runoff.

17.3.1.2 Provide all other requirements as detailed on drawings.

18.0 CANTILEVER SLIDE GATE WITH OPERATOR

18.1 SECTION INCLUDES:

18.1.1 The work in this section shall include furnishing all labor, materials, equipment and appliances necessary to complete all Fortress Box Frame Roller Gate and Hydraulic Operator System(s) required for this project in strict accordance with this specification section and drawings.

18.2 REFERENCES:

18.2.1 Underwriters Laboratory Gate Operator Requirements (UL 325).

18.2.1.1 Operators shall be built to UL 325 standards and be listed by a testing laboratory. Complete all electrical work according to local codes and National Electrical code. All fieldwork shall be performed in a neat and professional manner, completed to journeyman standards.

18.2.1.2 Current safety standards require the use of multiple external sensors to be capable of reversing the gate in either direction upon sensing an obstruction. See 2.02 D.

18.2.1.3 Pedestrians should never use vehicle gates. Separate pedestrian gates must always be provided when foot traffic is present.

18.2.1.4 Current safety standards require gate operators to be designed and labeled for specific usage classes. Hydraulic Operator Model TYM-HYD-VF2/3 is compliant in usage Classes III and IV.

18.2.2 ASTM F 2200 – Standard Specification for Automated Vehicular Gate Construction. See 2.04 C.

18.2.3 American Welding Society AWS D1.2 Structural Welding Code. See 2.04 D.

18.2.4 ASTM A 123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel.



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18.3 SUBMITTALS:

18.3.1 Product Data:

- 18.3.1.1 Provide manufacturer's catalog cuts with printed specifications and installation instructions.
- 18.3.1.2 Deliver two (2) copies of operation and maintenance data covering the installed products, including name, address and telephone number of the nearest fully equipped service center.
- 18.3.1.3 Each operator shall bear a label indicating that the operator mechanism has been tested for full power and pressure of all hydraulic components, full stress tests of all mechanical components and electrical tests of all overload devices.

18.3.2 Shop Drawings:

- 18.3.2.1 Supply shop drawings showing the relationship of operating systems with gate components, including details of all major components.
- 18.3.2.2 Include complete details of gate construction, gate height and post spacing dimensions.

18.3.3 Each operator shall bear a label indicating that the operator mechanism has been tested for full power and pressure of all hydraulic components, full stress tests of all mechanical components and electrical tests of all overload devices.

18.3.4 Certifications:

- 18.3.4.1 The aluminum welders and welding process for gate manufacture must be certified per section 2.04 D.
- 18.3.4.2 Operator Manufacturer: A company specializing in the manufacture of hydraulic gate operators of the type specified, with a minimum of ten years experience.
- 18.3.4.3 Installer: A minimum of three years experience installing similar equipment.

18.4 PRODUCTS:

18.4.1 HYDRAULIC GATE OPERATORS:

- 18.4.1.1 Hydraulic Gate Operator TYM-HYD-VF2/3 with controller to be supplied by Tymetal Corp., 678 Wilbur Avenue, Greenwich, NY 12834 – (800)-328-4283.

18.4.2 OPERATION:



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18.4.2.1 Operation shall be by means of a metal rail passing between a pair of reinforced composite wheels with polyurethane treads. Operator motors shall be hydraulic, geroller type, and system shall not include belts, gears, pulleys, roller chains or sprockets to transfer power from operator to gate panel. The operator shall generate a minimum horizontal pull of 300 lb without the drive wheels slipping and without distortion of supporting arms. Operator shall be capable of handling gates weighing up to 5,000. The operator shall be speed controlled by an electronic Variable Frequency Drive (VFD) which will accelerate and decelerate the gate gradually to prevent shock loads to the gate and operator assembly. The maximum gate velocity of the TYM-HYD-VF2/3 operator shall be selectable between 2.2 ft/second and 3 ft/second. The operator shall contain an Emergency Fast Operation (EFO) mode wherein a separate continuous input allows the operator to override all safety inputs and run at the EFO speed. The gate velocity during Emergency Fast Operation (EFO) shall not be less than 3 ft/second. Upon starting, the VFD will gradually accelerate the gate to its maximum speed and when stopping, gradually reduce gate velocity to less than 1 ft/s, whereupon a limit switch will stop the electric motor. Two adjustable hydraulic brake valves (one for each direction) assist in slowing the gate to a precise stop.

18.4.2.2 Standard mechanical components shall include as a minimum:

- Supporting arms: Cast aluminum channel. Arms shall incorporate a fully bushed, 1 1/2" (38 mm) bronze bearing surface, acting on arm pivot pins. (item 2 below)
- Arm pivot pins: 3/4" (19 mm) diameter, stainless steel, with integral tabs for ease of removal.
- Tension spring: 2 1/2" (63 mm) heavy duty, 800 lb (363 kg) capacity.
- Tension adjustment: Finger tightened nut, not requiring the use of tools.
- Drive release: Must instantly release tension on both drive wheels, and disengage them from contact with drive rail in a single motion, for manual operation.
- Limit switches: Fully adjustable, toggle types, with plug connection to control panel.
- Chassis: 1/4" (6 mm) steel base plate and 12 Ga. (3 mm) sides and back welded and ground smooth.



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- h. Cover: 10 Ga. zinc plated steel with textured TGIC gray polyester powder coat finish. All joints welded, filled and ground smooth. Finished corners square and true with no visible joints.
 - 1. The cover shall have a detention quality mogul lock.
- i. Finish: Zinc plated steel with textured TGIC polyester powder coat finish, proven to withstand 1,000 hour salt spray test.
- j. Drive wheels: Two 8" diam (203 mm) AdvanceDrive wheels. High-strength composite hub with polyurethane over mold.
- k. Drive rail: Shall be extruded 6061 T6, not less than 1/8" (3.175 mm) thick. Drive rail shall incorporate alignment pins for ease of replacement or splicing. Pins shall enable a perfect butt splice.
- l. Hydraulic hose: Shall be 1/4" (6 mm) synthetic, rated to 3,000 psi (20.6 MPa).
- m. Hydraulic valves: Shall be individually replaceable cartridge type, in an integrated hydraulic manifold.
- n. Hose fittings: At manifold shall be quick-disconnect type, others shall be swivel type.
- o. Hydraulic fluid: High performance type with a viscosity index greater than 375 and temperature range -40° F to 158° F (-40° C to 70° C).
- p. A zero to 2,000 psi (13.7 MPa) pressure gauge, mounted on the manifold for diagnostics, shall be a standard component.
- q. The hydraulic fluid reservoir shall be formed from a single piece of metal, non-welded, and shall be powder painted on the inside and the outside, to prevent fluid contamination.

18.4.2.3 Minimum standard electrical components:

- a. Pump motor: 2 hp, 3450 RPM, 56C, TEFC, three phase. (Note, the VFD converts single phase input power to drive a three phase motor)
- b. All components shall have overload protection.
- c. Electrical enclosure: Type 1, metal, with hinged lid gasketed for protection from intrusion of foreign objects.
- d. Controls: Smart Touch Controller Board containing:
 - 1. inherent entrapment sensor;
 - 2. built in audible "warn before operate" system;
 - 3. built in timer to close;



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4. 32 character OLED display for reporting of functions and codes;
 5. multiple programmable user relay output options;
 6. anti-tailgate mode;
 7. built-in power surge/lightning strike protection;
 8. menu configuration, event logging and system diagnostics easily accessible with a PC and HySecurity's free Smart Touch Analyze and Retrieve Tool;
 9. RS-232 port for connection to laptop or other computer peripheral and RS-485 connection for network interface.
 10. Dual gate communication connection for bi-parting, sally port, or sequenced gates.
 11. Electromechanical and solid state relays.
 12. Radio option outputs.
 13. 21 inputs for site specific configurations.
 - e. Transformer: 75 VA, non-jumpered taps, for all common voltages.
 - f. Control circuit: 24 VDC.
 - g. Provide a terminal strip for connection of external interlocks.
- 18.4.2.4 Required external sensors: See 1.02 A2. Specify photo eyes or gate edges or a combination thereof to be installed such that the gate is capable of reversing in either direction upon sensing an obstruction.
- 18.4.2.5 Optional control devices: (consider one or more of the following: card reader, key-switch, radio control, pushbuttons, vehicle detectors, keypads or seven day timers).
- 18.4.2.6 208/230 VAC single phase and 208/230/460 VAC three phase available. 115 is not available. (50 Hertz is available specify voltage.)
- 18.4.3 FACTORY TESTING:
- 18.4.3.1 Fully assemble and test, at the factory, each gate operator to assure smooth operation, sequencing and electrical connection integrity. Apply physical loads to the operator to simulate field conditions. Tests shall simulate physical and electrical loads equal to the fully rated capacity of the operator components.
- 18.4.3.2 Check all operator mechanical connections for tightness and alignment. Check all welds for completeness and continuity.



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Check welded corners and edges to assure they are square and straight.

18.4.3.3 Inspect operator painted finish for completeness and gloss. Touch up imperfections prior to shipment.

18.4.3.4 Check all hydraulic hoses and electrical wires to assure that chafing cannot occur during shipping or operation.

18.4.4 BOX FRAME ROLLER GATES:

18.4.4.1 Tymetal Corp., 678 Wilbur Avenue, Greenwich, NY 12834 – (800) 328-4283, shall manufacture the Box Frame Roller Gate(s).

18.4.4.2 Approved Substitution: All other systems must be submitted to the design team in accordance with substitution requirements as set forth in the general provisions of the specification manual for approval prior to the bid date. Products submitted after the bid date will not be approved.

18.4.4.3 Gate manufacturer shall certify gate is manufactured in compliance with ASTM F 2200, Standard Specification for Automated Vehicular Gate Construction and the operators are UL 325 listed. See 1.02 B and 1.02 A respectively.

18.4.4.4 Gate manufacturer shall provide independent certification as to the use of a documented Welding Procedure Specification and Procedure Qualification Record to insure conformance to the AWS D1.2 welding code. Upon request, Individual Certificates of Welder Qualification documenting successful completion of the requirements of the AWS D1.2 code shall also be provided. See 1.02 C.

18.4.5 GATE CONSTRUCTION DETAILS:

18.4.5.1 Gate Frame:

18.4.5.1.1 All welds on the gate frame shall conform to Welding Procedure Specification and Procedure Qualification Record to insure conformance to the AWS D1.2 Structural Welding Code. All individual welders shall be certified to AWS D1.2 welding code. See 1.02 C.

18.4.5.1.2 The gate frames shall be fabricated from 6063-T6 aluminum alloy extrusions. The primary members (top and bottom) shall be "P" shaped in cross section with no less than 2" on a side and weighing not less than 1.6 lb/lf. The vertical members at the ends of each panel



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section shall be 2"x2" in cross section weighing not less than 1.1 lb/ft. Intermediate vertical members shall alternate between 1"x2" and 1"x1" in cross section weighing not less than 0.82 lb/lf and 0.52 lb/lf, respectively. They shall be spaced at a distance not to exceed the overall height of the box frame. The gate shall be constructed in "box" form with the width between the frames measuring 24" from outside to outside. Between these frames there shall be a continuous series of 1"x1" diagonal and horizontal bracing with the diagonals welded at approximately 45 degrees to the frames.

18.4.5.1.3 Box Frame trolley assemblies shall be bolted to the box frame at intervals as specified on the bid drawings. Each assembly shall consist of a galvanized steel carriage to which two (2) wheel assemblies are secured. Each wheel shall be rated for a minimum load capacity of 2,000 lb.

18.4.5.1.4 Safety guides of 3/8" x 3" galvanized steel bar with attached guide wheels shall be provided at a maximum of 10'-0" on center along the entire gate length.

18.4.5.1.5 Wheel assemblies shall be covered by a single 11 gauge galvanized steel cover at each location.

18.4.5.2 Gate Track:

18.4.5.2.1 The gate shall roll on two parallel tracks, which are embedded in concrete so that the top of the track is level with the ground surface. The track shall consist of two (2) parallel W4 x 13 A36 steel beams (may be provided by others). The tracks shall be hot dipped galvanized and set so as to vary no more than 1/4" in width between tracks with the maximum width as shown in the bid drawings (i.e.: +/- 1/8" for each track).

18.4.5.3 Diagonal Bracing:

18.4.5.3.1 Diagonal "X" bracing of 3/16" or 1/4" diameter stainless or galvanized steel cable shall be installed throughout the gate to brace the gate panels and to provide a ready means for vertical adjustment.

18.4.5.4 Gate Filler:

18.4.5.4.1 Chain Link: 2" x 2" x 9 gauge aluminized steel chain link fabric shall extend the entire length of the gate (if

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operated gate, counterbalance must also have fabric to prevent reach through and comply with ASTM F 2200, see 1.03 C.1) Fabric shall be attached at each end of the gate frame by standard fence industry tension bars and tied at each 2" x 2" (51mm x 51mm) vertical member with standard fence industry ties. ASTM F 2200 requires attachment method that leaves no leading or bottom edge protrusions (cannot exceed 0.5 inch).

18.4.5.4.2 The gate filler shall extend to a minimum height of 72" above grade and shall be sized to prevent a 2¼" diameter sphere from passing through openings anywhere along the length of the gate frame.

18.4.5.5 Finish:

18.4.5.5.1 Gate to be mill finish aluminum or color coated with polyester powder as specified. If powder coated, the gate (including track member) and all accessories shall be pretreated chemically by sand blasting or other acceptable method to ensure proper coating adherence. Gate posts (to be supplied by others) shall be galvanized or coated as specified by the design team.

18.4.5.6 Gate Lock:

18.4.5.6.1 (Optional) Gate system shall be furnished with an electro-mechanical lock. Lock shall be supplied with status indication and with a six tumbler mechanical lock. All gates shall be keyed alike. Lock requires additional 115V power supplied by others.

18.5 EXECUTION:

18.5.1 SITE INSPECTION:

- 18.5.1.1 Final grades and installation conditions shall be examined. Installation shall not begin until all unsatisfactory conditions are corrected.
- 18.5.1.2 Locate concrete mounting pad in accordance with approved shop drawings.
- 18.5.1.3 Make sure that gate is level and operating smoothly under manual conditions before installation of gate operators. Do not proceed until gate panel is aligned and operates without binding.

18.5.2 INSTALLATION:



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18.5.2.1 Equipment in this section shall be installed in strict accordance with the company's printed instructions unless otherwise shown on the contract drawings.

18.5.2.2 The gate and installation shall conform to:

18.5.2.2.1 ASTM F 2200 standard specification for automated vehicular gate construction.

18.5.2.2.2 UL 325 standards.

18.5.2.2.3 Installer shall insure that the electric service to the operator is at least 20 AMPS. Operator wattage is 2400.

18.5.2.2.4 The installing contractor shall be responsible to ensure that appropriate external primary entrapment safety devices be installed for the specific site conditions to protect against all potential entrapment zones. Proper operation of these safety devices shall be verified and training as to the operation and maintenance of these devices for the users and owners shall be documented.

18.6 SYSTEM VALIDATION:

18.6.1 The complete system shall be adjusted to assure it is performing properly. Test gate operator through a minimum of ten full cycles and adjust to ensure operation without binding, scraping or uneven motion. Test limit switches for proper "at rest" gate position.

18.6.2 All anchor bolts shall be fully concealed in the finished installation.

18.6.3 For operated gate systems - test and explain safety features:

18.6.3.1 Each system feature and device is a separate component of the gate system.

18.6.3.2 Read and follow all instructions for each component.

18.6.3.3 Ensure that all instructions for mechanical components, safety devices and the gate operator are available for everyone who will be using the gate system.

18.6.3.4 The warning signs shipped with the gate operator must be installed in prominent position on both sides of the gate.

18.6.4 Ensure the owner is clear with regard to the safety points concerning the basic operational guidelines of the safety features of the gate operator system. These safety points are listed in the gate operator manual and must be read prior to system use.



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19.0 CANTILEVER SLIDE GATE WITH SWING GATE CHAIN LINK

19.1 SECTION INCLUDES:

- 19.1.1 The work in this section shall include furnishing all labor, materials, equipment and appliances necessary to complete all Heavy Duty Swing Gates required for this project in strict accordance with this specification section and drawings.

19.2 REFERENCES:

- 19.2.1 Underwriters Laboratory Gate Operator Requirements (UL 325). See 3.01 C.
- 19.2.2 ASTM F 2200 Standard Specification for Automated Vehicular Gate Construction. See 3.01 C.
- 19.2.3 American Welding Society AWS D1.2 Structural Welding Code. See 1.03 C.1.
- 19.2.4 ASTM F 900 Standard Specification for Industrial and Commercial Swing Gates. See 3.01 B.
- 19.2.5 American Society of Civil Engineers – ASCE-7 Wind Load Requirements. See 1.03C2

19.3 SUBMITTALS:

19.3.1 Product Data:

- 19.3.1.1 Provide manufacturer's printed specifications and installation instructions.

19.3.2 Shop Drawings:

- 19.3.2.1 Supply shop drawings showing the gate system, including details of all major components to be provided.
- 19.3.2.2 Include details of gate construction, gate height, and post spacing dimensions.

19.3.3 Certifications:

- 19.3.3.1 Gate manufacturer shall provide independent certification as to the use of a documented Welding Procedure Specification and Procedure Qualification Record to ensure conformance to the AWS D1.2 welding code. Upon request, Individual Certificates of Welder Qualification documenting successful completion of the requirements of the AWS D1.2 code shall also be provided. See 1.02 C.



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- 19.3.3.2 Gate is to be designed to meet specified ASCE-7 wind load requirements with the gate in the closed and latched condition only. Typical gate design is expected to operate satisfactorily in winds up to 30 MPH. Depending on gate panel infill, winds higher than 30 MPH may cause gate operational problems (operator entrapment sensing may trigger; gate panel may not engage receiver). For sites with higher operational, non-typical, or specified wind loadings, manufacturer should be advised of the site conditions and a specifically engineered design will be offered.

19.4 PRODUCTS:

19.4.1 SWING GATE MANUFACTURER:

- 19.4.1.1 The swing gate shall be manufactured by Tymetal Corp., 678 Wilbur Ave, Greenwich, NY 12834 – (800) 328-4283.
- 19.4.1.2 Approved Substitution: All other systems must be submitted to the design team in accordance with substitution requirements as set forth in the general provisions of the specification manual for approval prior to the bid date. Products submitted after the bid date will not be approved.

19.4.2 GATE CONSTRUCTION DETAILS:

19.4.2.1 Gate Frame:

- 19.4.2.1.1 The gate frame shall be fabricated from 6063-T6 aluminum alloy extrusions. The top member shall be a 3" x 5" (76mm x 127mm) aluminum structural channel/tube extrusion weighing not less than 3.0 lb/lf (4.4kg/m). The bottom member shall be a 2" x 5" (51mm x 127mm) aluminum structural tube weighing not less than 2.0 lb/lf (2.9kg/m).

19.4.2.1.2 Vertical Members:

- 19.4.2.1.2.1 (Chain Link): The vertical members at the ends of the opening portion of the frame shall be "P" shaped in cross section with a nominal base dimension of no less than 2" x 2" (51mm x 51mm) and weighing not less than 1.6 lb/lf (2.3kg/m). The intermediate vertical members shall alternate between 2" x 2" (51mm x 51mm) and 1" x 2" (25mm x 51mm) in cross section weighing not less than 1.1 lb/lf (1.6kg/m) and 0.82 lb/lf



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(1.2kg/m) respectively. The spacing for the vertical intermediates shall be less than 50% of the gate frame height.

19.4.2.1.3 All welds on the gate frame shall conform to Welding Procedure Specification and Procedure Qualification Record to ensure conformance to the AWS D1.2 Structural Welding Code. All individual welders shall be certified to AWS D1.2 welding code. See 1.03 C.1.

19.4.2.1.4 Each gate leaf shall be provided with a minimum of two pivoting hinges to allow proper operation, and shall be connected to the gate side of the hinge by means of two through-bolts.

19.4.2.2 Diagonal Bracing:

19.4.2.2.1 Diagonal "X" bracing of 3/16" or 1/4" diameter stainless or galvanized steel cable shall be installed throughout the gate to provide additional vertical adjustment.

19.4.2.3 Posts:

19.4.2.3.1 Gate hanger posts shall be sized in accordance with gate dimensions as specified by the manufacturer. Height of the post and depth of footing shall be as specified by the engineer.

19.4.2.4 Lock:

19.4.2.4.1 Single gates shall have a latch assembly to provide a means for locking with a padlock.

19.4.2.4.2 Double gates shall have a drop-bar mechanism extending into the ground, and a center locking kit to provide a means for locking with a padlock.

19.4.2.5 The gate shall be completed by installation of approved filler as specified.

19.4.2.5.1 Chain Link: 2" x 2" x 9 gauge aluminized steel chain link fabric shall extend the entire length of the gate panel. Fabric shall be attached at each end of the gate frame by standard fence industry tension bars and tied at each 2" x 2" (51mm x 51mm) vertical member with standard fence industry ties. ASTM F 2200 requires attachment method that leaves no leading or bottom edge protrusions (cannot exceed 0.5 inch).



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19.4.2.6 Finish:

19.4.2.6.1 Gate to be mill finish aluminum or color coated with polyester powder as specified. If powder coated, the gate (including track member) and all accessories shall be pretreated chemically by sand blasting or other acceptable method to ensure proper coating adherence.

19.5 EXECUTION:

19.5.1 INSTALLATION:

- 19.5.1.1 Excavate, place concrete and install specified sized posts as detailed, and in accordance with approved shop drawings. Install hinges on gate frame and gateposts. Make final adjustments to maintain alignment of gate leaves. Install equipment of this section in strict accordance with the company's printed instructions unless otherwise shown on the contract drawings.
- 19.5.1.2 The gate and installation shall conform to ASTM F 900 standards for aluminum swing gates. See 1.02 D.
- 19.5.1.3 If the gate system is automated, the gate and installation shall comply with UL 325 Gate Operator Requirements and ASTM F 2200, Standard Specification for Automated Vehicular Gate Construction. See 1.02 A and 1.02 B.

19.5.2 SYSTEM VALIDATION:

- 19.5.2.1 The complete system shall be adjusted to assure it is performing properly.
- 19.5.2.2 The system shall be operated for a sufficient period of time to determine that the system is in proper working order.
- 19.5.2.3 For operated gate systems - test and explain safety features:
 - 19.5.2.3.1 Each system feature and device is a separate component of the gate system.
 - 19.5.2.3.2 Read and follow all instructions for each component.
 - 19.5.2.3.3 Ensure that all instructions for mechanical components, safety devices and the gate operator are available for everyone who will be using the gate system.
 - 19.5.2.3.4 The warning signs shipped with the gate operator must be installed in prominent position on both sides of the gate.



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19.5.2.3.5 Ensure the owner is clear with regard to the safety points concerning the basic operational guidelines of the safety features of the gate operator system. These safety points are listed in the gate operator manual and must be read prior to system use.

DIVISION 3 - NOT USED



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DIVISION 4 – CONCRETE

SECTION 4A – FORMWORK

1.0 SCOPE OF THE WORK

1.1 The work included under this section shall consist of furnishing all labor, tools, equipment, materials, and supervision necessary for the complete installation of all concrete formwork, all as specified herein and indicated on the drawings.

1.2 The work included, but is not limited to, the following:

1.2.1 Foundation formwork.

1.2.2 Ground slab formwork.

1.2.3 Removal of formwork.

2.0 APPLICABLE SPECIFICATIONS

2.1 The Contractor shall follow the practices and standards described in the latest editions of the following specifications, which are made a part of this Specification.

2.1.1 American Concrete Institute (ACI) 347 Recommended Practice for Concrete Formwork

3.0 FORM MATERIALS

3.1 Exposed Concrete

3.1.1 Form material for all exposed vertical surfaces shall be plywood forms, form lining, or steel forms with Owner approval, each as defined below.

a. Plywood forms shall be minimum 5/8" thickness, and not less than 5-ply, and especially cured moisture-resistant.

b. Form lining shall be fiberboard, not less than 3/16" thickness, or especially cured moisture resistant exterior plywood, not less than



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3-ply or $\frac{1}{4}$ thickness, or plywood, minimum 5-ply, and minimum $\frac{3}{4}$ " thickness for steel forms.

- 3.1.2 An attempt shall be made to eliminate as many small sections as possible. If steel forms are used, they shall not contain more than 6.0 linear feet of form joint per square yard of concrete.

3.2 Unexposed Concrete

- 3.2.1 Forms for concealed concrete shall be smooth and round undressed square-edge lumber of plywood, or other material that will produce equivalent finish.

- 3.2.2 If soil conditions are acceptable to the Owner and the soil condition will permit; excavations may be neat cut in the soil to accurate sizes as specified on the drawings. The sides of these excavations shall be lined with a waterproof paper.

3.3 Coatings

- 3.3.1 All contact surfaces shall be coated before the placement of any reinforcement, with non-staining colorless mineral oil, form lacquer, or other Owner approved non-staining form oil. The form oil shall be applied per manufacturer's specifications and shall be applied with a brush or spray so as to cover the form evenly without excess drip. Form coating material used to coat formwork to facilitate the removal thereof shall not bond with, or cause softening or permanent staining of the concrete surface.

- 3.3.2 Reused forms shall have nails withdrawn and contact surfaces thoroughly cleaned before re-use. Those, which have been coated, shall be given an additional application of the coating.

- 3.3.3 Plywood, previously mill-oiled, need not be re-oiled unless required by the Owner.

- 3.3.4 Pressed wood fiberboard shall not be oiled.



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4.0 SPECIAL MEMBERS

- 4.1 Wood strip, blocking, molded members, etc., shall be placed in forms as required to produce finished surfaces shown on drawings or specified herein.
- 4.2 All exposed corners, vertical or horizontal, in concrete work shall be chamfered 1" x 1" unless otherwise shown on the drawings. Horizontal surfaces to be chamfered may be rounded with a steel concrete trowel at time of concrete placement if approved by Owner.
- 4.3 Form ties shall be factory-fabricated, removable or snap-off metal ties of design that will not allow deflection and will not spall concrete upon removal. Solid backing shall be provided for each tie. Ties shall be fitted with devices that will leave holes in the concrete surface not less than 3/8", no more than 1" in diameter, and not less than 1" deep.
- 4.4 Provide for installation of inserts, hangers, ties, anchor devices, anchor bolts, dowels, conduit or other embedded items required for other work. Properly locate in cooperation with other trades and secure in position before placement of concrete.

5.0 DESIGN

- 5.1 Forms shall be designed, constructed, and maintained so as to insure that after removal of forms the finished concrete will have true surfaces free of offset, waviness, or bulges and will conform accurately to the indicated shapes, dimensions, lines, elevations, and positions on the drawings.
- 5.2 Studs and wales shall be placed to prevent deflection of form material. Forms and joints shall be sufficiently tight to prevent leakage of grout and cement paste during placement of concrete. Joints in forms shall be arranged vertically and horizontally to conform to the pattern of the design. Juncture of formwork panels shall occur at architectural lines, vertical control joints, including alignment with masonry control joints and construction joints. Forms placed on successive units for continuous surfaces shall be fitted to accurate alignment to assure smooth completed surfaces free from irregularities. Temporary openings shall be arranged in wall forms and where otherwise required to facilitate cleaning and inspection.



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6.0 REMOVAL

- 6.1 Removal of forms shall be in a manner to insure the complete safety of the structure and the concrete has had time to harden adequately.
- 6.2 Supporting forms or shoring shall not be removed until structural members have acquired sufficient strength to support safely their own weight and any construction and storage load to which they may be subjected. If a testing laboratory is involved, then forms shall be removed in accordance with requirements of the testing laboratory in regards to time and strength of concrete.
- 6.3 Forms used for curing shall not be removed before expiration of curing period unless specified otherwise.
- 6.4 Care shall be taken to avoid spalling the concrete surface or damaging concrete edges. Wedges or bars must not be inserted between forms and finished surfaces.
- 6.5 Tie-rods to be entirely removed from the wall shall be loosened 24 hours after concrete is placed, and form ties, except for a sufficient number to hold form in place, may be removed at that time. Ties wholly withdrawn from wall shall be pulled toward the face that will be concealed from view in the permanent work. Cutting ties back from face of wall will not be permitted.
- 6.6 Wood forms shall be completely removed in order that no material will be left for termite infestation.
- 6.7 Under normal conditions, the minimum period elapsing before forms may be removed shall be governed by the following schedule. Its use will not operate to relieve the Contractor of responsibility for the safety of the structure.



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Elapsed Time (Days)

Side Forms: Footings 1

Side Forms: Columns and Beams 7

Note: When temperature drops below 40°F. supports shall remain in place an additional time equal to period structure has been exposed to the low temperature.



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SECTION 4B – CAST-IN-PLACE CONCRETE

1.0 SCOPE OF THE WORK

- 1.1 The work included under this section shall consist of furnishing all labor, tools, equipment, materials, services, and supervision necessary for the complete installation of all reinforced cast-in-place concrete, all specified herein and indicated on the drawings.
- 1.2 The work includes, but is not limited to, the following:
 - 1.2.1 Concrete footings.
 - 1.2.2 Concrete ground slabs.
 - 1.2.3 The placing, curing, and finishing of all cast-in-place concrete, as indicated on the drawings and specified herein.
 - 1.2.4 The setting of all reinforcing, inserts, anchor bolts, sleeves, blocks, and miscellaneous embedded items as indicated on the drawings, and specified herein.

2.0 APPLICABLE SPECIFICATIONS

- 2.1 The Contractor shall follow the practices and standards described in the latest edition of the following specifications, which are made a part of this Specification:
 - 2.1.1 American Concrete Institute:
 - ACI 211 Recommended Practice for Selecting Proportions for Nominal Weight Concrete.
 - ACI 214 Recommended Practice for Evaluation of Compression Test Results of Field Concrete.
 - ACI 304 Recommended Practice for Measuring, Mixing, and Placing Concrete.
 - ACI 305 Recommended Practice for Cold Weather Concreting.
 - ACI 306 Recommended Practice for Hot Weather Concreting.

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ACI 315 Manual of Standard Practice for Detailing Reinforced Concrete Structures.

ACI 318 Building Code Requirements for Reinforced Concrete.

ACI 347 Recommended Practice for Concrete Formwork.

2.1.2 Refer to ACI318 – “Building Code Requirements for Reinforced Concrete” for a complete listing of applicable specifications of the American Society for Testing and Materials (ASTM).

2.1.3 All applicable local and state codes and regulations.

2.1.4 Latest edition of OSHA Safety and Health Regulations.

2.1.5 In case of conflict between the referenced standards, the more stringent requirements shall govern.

3.0 CONCRETE MATERIALS

3.1 Standards of the American Society for Testing and Materials indicated in the following paragraphs shall be the latest editions.

3.2 Cement – Cement shall be Portland cement conforming to the requirements of ASTM C-150, Type 1, and be free from dirt and damp set. In the event field conditions require and the Owner approves, high early strength Portland Cement ASTM C-150, Type III, may be used.

3.3 Fine Aggregate: Fine Aggregate for normal weight concrete shall be clean sand, conforming to the requirements of ASTM C-33.

3.4 Coarse Aggregate: Coarse aggregate for normal weight concrete shall be crushed stone, gravel, or a combination of crushed stone and gravel, conforming to ASTM C-33, size number 67, ¾” to No. 4.

3.5 Water – Water shall be fresh clean, clear and free from oil, acid, alkali, organic material, and any other deleterious matter in injurious quantities.



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3.6 Admixtures

3.6.1 Air-entraining materials shall conform to ASTM C-260 and shall be used in accordance with the manufacturer's recommendation. The Contractor shall submit the manufacturer's certificate of the chloride content of the admixture and whether or not chloride was added during its manufacture.

3.6.2 Water-reducing admixture, if used, shall be "Pozzolith, Normal Admixture", by Master Builders Company, Cleveland, Ohio, or Owner-approved equal, and shall be used in accordance with ASTM C-494. Testing for air content shall be in accordance with ASTM C-231.

3.6.3 Any other admixtures proposed shall be approved by the Owner in writing before using and shall conform to ASTM C-494. Calcium chloride shall not be used.

3.7 Bonding Material – Sikadur Hi-Mod", as manufactured by Sika Corporation, Lyndhurst, New Jersey, or Owner-approved equal shall be used as an epoxy bonding material to adhere new concrete to concrete having its initial set. Bonding material shall be used in any construction joints which are not detailed on the drawings and which are approved by the Owner. Construction joints detailed on the drawings do not require bonding.

3.8 Expansion Joint Filler – Preformed expansion joint filler, 1/2" thick, unless otherwise indicated, shall be non-extruding and resilient type conforming to ASTM D-994, ASTM D-1751, or ASTM D-1752, unless noted otherwise.

All expansion joints in base slabs on grade shall be fiber expansion joints as deep as the slab thickness and flush with the top of the slab meeting the requirements of ASTM D-1751. In joints exposed to the weather the joint filler shall be depressed 1/2" below the top of the slab and the depression filled with joint sealant.

3.9 Joint Sealer – Joint sealer shall be cold applied, elastomeric sealant, conforming to ASTM D-1850. Sealant shall be applied per manufacturer's specifications using their recommended primer.



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- 3.10 Curing Compound - Liquid membrane-forming curing compound shall conform to ASTM C-309, Type 1-D (clear or translucent with fugitive dye), or Owner approved equal, and to the testing requirements of ASTM C-156.
- 3.11 Membrane Waterproofing or Vapor Barrier - Membrane waterproofing shall be polyethylene sheeting conforming to Commercial Standard CS-238, or ASTM C-171 Type 1, regular, not less than 0.006-inch (6 mils) nominal thickness. The sheeting is to be lapped not less than 12" with the top lap placed in the direction of the placing of the concrete and sealed in accordance with manufacturer's recommendations. The membrane shall be placed on all earth surfaces that are to receive concrete.
- 3.12 Curing-Sealing (Hardening) Compound - This compound shall be "Demicon Cur-Hard", as manufactured by Hausman Corporation, Chemical Division, P.O. Box 416, Toledo, Ohio, 43601, or Owner-approved equal solution of magnesium fluosilicate or sodium silicate (minimum of 35% of 42% Baume Sodium Silicate).
- 3.13 Grout
- 3.13.1 Epoxy grout shall be high strength epoxy grout, installed in strict accordance with manufacturer's recommendations. "Five Star Epoxy Grout", manufactured by U.S. Grout Corporation, Old Greenwich, Connecticut, or Owner-approved equal, is recommended.
- 3.13.2 Non-shrink grout shall be ready-to-use non-metallic aggregate product requiring addition of only water at site, and shall attain a minimum compressive strength of 5000 psi. "Five Star Grout" as manufactured by U.S. Grout Corporation, "Masterflow 928" as manufactured by Masterbuilders Company, or Owner-approved equal, is recommended.
- 3.14 Waterstops - Waterstops, except where otherwise indicated, shall be 6" polyvinyl chloride (PVC) with a center bulb and two end bulbs, or ribbed type with a center bulb. All PVC waterstops shall be manufactured from virgin materials. Dimensions of the waterstops shall not be less than 3/8" for web thickness and 5/8" for bulb diameter. Splicing of the PVC waterstops shall be done with a special thermostatically controlled splicer, furnished by the manufacturer, and shall be done strictly in accordance with the manufacturer's instructions.



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4.0 CONCRETE MIX

- 4.1 Mix Design – The mix design shall produce concrete having a slump of not more than 3" for floor slabs and not more than 4" for all other work, and a minimum 28-day compressive strength of 4000 psi. Outside concrete shall have an air content of 4%, +1. The minimum content shall be 6 sacks (564 lbs.) of cement per cubic yard of concrete. The maximum water content shall not exceed 5 gallons per bag of cement.

5.0 PROPORTIONING CONCRETE

- 5.1 Control: The proportion of all materials entering into the concrete shall be determined from a design mix by an approved commercial testing laboratory. The Contractor shall provide all necessary equipment and plant to determine and control the actual amounts of material entering into each batch. The proportions will be changed whenever, in the opinion of the Engineer, such change is necessary in order to maintain the standard of quality required by these specifications.
- 5.2 Properties of Concrete: All concrete placed under this contract shall meet all of the requirements hereinafter specified.
- 5.2.1 Class: AA
- 5.2.2 Max. water per bag cement: 5.0 gallons
- 5.2.3 Min. bags of cement per cubic yard: 6
- 5.2.4 Min. compressive strength at 28 days: 4000 psi
- 5.2.5 Range in slump: 2" – 4"
- 5.2.6 Class "AA" concrete shall be "air entrained concrete" and the concrete shall have air content of 3.0% with a 0.5% tolerance as determined in accordance with specifications of ASTM C231. The testing for air content will be performed by an independent laboratory paid by the Owner. Class "AA" concrete shall be used for all major structures in the project.



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6.0 CONCRETE PLACEMENT

- 6.1 The placing of all concrete shall be in accordance with the requirements of ACI Standard 304.
- 6.2 Concrete shall not be placed until all reinforcing bars, pipes, conduits, anchor bolts, and other embedded work has been inspected, approved, and definite instructions give by the Owner to proceed with the work.
- 6.3 Excessive water and debris shall be removed from forms and excavations before concrete is placed therein.
- 6.4 Before placing the concrete and reinforcing steel, the contact surfaces of all forms, unless otherwise directed, shall be thoroughly wetted with water or coated with approved form oil. The form oil shall be applied with a brush or spray so as to cover the form evenly without excess drip. Form coating material used to coat formwork to facilitate the removal thereof shall not cause softening or permanent staining of the concrete surface. Reused forms shall have the contact surfaces cleaned thoroughly; those, which have been coated, shall be given an additional application of the coating.
- 6.5 Unless otherwise noted on the drawings all vertical surfaces of the concrete work must be formed except that sides of spread footings may be neat cut in the soil if the soil conditions are acceptable to the Owner.
- 6.6 All concrete materials, reinforcement, forms fillers vapor barrier, and ground with which concrete is to come in contact shall be free from frost. No concrete shall be laid on frozen soil. When concrete is poured during freezing weather, adequate protection against frost action shall be approved by the Owner before any concreting is done.
- 6.7 Dropping of the concrete in excess of 4 feet, depositing in large quantities at any point and running or working it along the forms or any method tending to cause loss or segregation of the aggregates or separation or distortion of the forms will not be permitted. A tremie or other approved means shall be used for pouring where depth is in excess of 4 feet. Concrete shall be placed monolithically between construction joints indicated.



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- 6.8 Between construction joints concreting shall be a continuous operation such that concrete is plastic at all times and flows readily into spaces between reinforcement. Fresh concrete shall not be placed on poured concrete sufficiently hardened to cause formation of seams or places of weakness. No concrete that has partially hardened or been contaminated by foreign material shall be used. If a section cannot be placed continuously or monolithically, construction joints shall be located at points indicated on the drawings or approved by the Owner. A minimum of 24 hours shall elapse between placements of concrete in adjacent pours.
- 6.9 Immediately after placing, concrete shall be consolidated by vibrating equipment supplemented by hand spading and rodding where vibrating is not feasible. Concrete shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms. Vibrators must be capable of maintaining a speed of not less than 8000 impulses per minute when submerged in concrete. Use of external form vibrators or tapping forms is not acceptable. Vibrators shall be inserted vertically (not dragged horizontally) at such intervals as to insure uniform consolidation throughout the entire section of concrete being placed. The number of vibrators used shall be sufficient to consolidate the concrete properly. At least one standby vibrator shall be on hand at all times.
- 6.10 The methods and recommended practices described in AC Standard 305 shall be followed for cold weather concreting and ACI Standard 306 shall be followed for hot weather concreting.
- 6.11 All concrete shall finish to the lines and elevations shown on the drawings. All construction joints shall be keyed as indicated on the drawings. If the Contractor desires additional construction joints or different locations for the joints, he shall obtain written approval from the Owner for such changes.
- 6.12 Concrete shall not be carried in or transported through any aluminum items.



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7.0 JOINTS

- 7.1 Construction joints shall be formed as indicated on the drawings and as directed by the Owner. Joints shall be made and located as to least impair the strength of the structure. The rate and method of placing concrete and the arrangement of joint bulkheads shall be such that the concrete between construction joints shall be placed in a continuous operation. When concreting is resumed, the surface of the concrete at all joints shall be thoroughly cleaned and all laitance removed. In addition, vertical joints shall be thoroughly wetted, but not saturated, and slushed with a coat of neat cement grout before placing new concrete. Reinforcing shall continue across joints unless otherwise shown. Keys and dowels shall be provided as indicated or as directed by the Owner.
- 7.2 In general, formed construction joints or keys shall be: in width one-third of the thickness of the concrete and, in depth, one-sixth the thickness of the concrete. All keys shall be continuous and none smaller than 2" in width and 2" in depth shall be used.

8.0 EMBEDDED ITEMS

- 8.1 The Contractor shall examine the drawings and specifications for other work to ascertain any conditions that may affect his work. In laying out his work, the Contractor shall make provisions for installation of all appurtenances.
- 8.2 The Contractor shall furnish and install all embedded items to include but not limited to inserts, anchors, anchor bolts for structural steel and any other miscellaneous metal as may be required for the installation and attachment of other work. The embedded items shall conform to the requirements of Section – Miscellaneous Metals. Such miscellaneous items shall be set accurately to template, built into the concrete plumb and maintained so during the pour by securely wiring as may be necessary. Bolts shall project from the face of the concrete the distance called for on the details or a sufficient distance to allow for the proper attachment intended. All threads shall be oiled and protected by waterproofing caps.



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8.3 The Contractor shall provide such openings as are required for the passing of work through the concrete.

8.4 Great care shall be taken to keep such items embedded in the concrete and openings provided through the concrete at the proper locations. The concrete shall be thoroughly spaded and worked around and under such items so that there will be no voids.

9.0 GROUT

9.1 Cement grout, if required, shall be field mixed combination of cement, concrete sand and water approved by the Owner prior to placing. Minimum cement shall be eight bags of cement per cubic yard of finished mixture.

9.2 All column bases shall be grouted solid with high strength non-shrink grout, ready-mixed material requiring only mixing water at the jobsite. Non-shrink grout shall contain non-metallic aggregate as specified.

9.3 Before placing grout the surface shall be cleaned of all dirt, oil, grease, concrete laitance and all loose material shall be removed.

9.4 The grout shall be placed by whatever means are most practicable, depending on the type of equipment to be grouted. The grout shall completely fill the space to be grouted, be thoroughly compacted, and free of air pockets.

9.5 Unconfined areas of non-shrink grout surfaces shall be cut back flush with the base plate and coated with a plastic mortar consisting of one part Portland cement and two parts concrete sand.

10.0 CURING

10.1 All concrete shall be maintained above 50°F. in a moist condition and cured for a period of at least the first seven days after placing by one of the approved methods listed herein. If high-early strength concrete has been used, the curing period shall continue for minimum of three days. During the curing period no part of the concrete shall be permitted to become dry.

10.2 All concrete shall be cured in keeping with the methods listed below.



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- 10.2.1 Ponding or continuous sprinkling with water.
- 10.2.2 Wet sand or absorptive burlap kept continuously wet.
- 10.2.3 Waterproof paper conforming to ASTM C171, or polyethylene film with edges lapped and sealed in such a manner as to prevent moisture escaping from the concrete.
- 10.2.4 Liquid curing compounds sprayed uniformly in a single coat on all surfaces immediately following the final finishing operation. Liquid curing compounds shall not be used on any surface against which additional concrete or other cementitious finishing materials are to be bonded nor on floor surfaces which receive liquid surface-hardening treatment.
- 10.2.5 Steel forms heated by the sun and all wood forms in contact with the concrete during the curing period shall be kept wet. If forms are to be removed during the curing period, one of the above curing materials or methods shall be employed immediately. Such curing shall be continued for the remainder of the curing period.
- 10.2.6 The methods and recommended practice for protecting and curing concrete as described in ACI 305, and ACI 306 shall be followed when the temperature of the surrounding air is below 40 F. or above 90 F. Air and concrete temperatures at times of placing are to be taken and reported on cylinder break forms. No dependence shall be placed on salt or other chemicals for the prevention of freezing.
- 10.2.7 Methods should be taken to protect the concrete from mechanical injury or by action of the elements until such time as the concrete is thoroughly set.
- 10.2.8 Projecting inserts, anchor bolts, etc., shall be protected from disturbances until the concrete has sufficiently set to hold such items immovable.
- 10.2.9 All concrete ground slabs, etc., shall be barricaded immediately after the surfaces are finished and no traffic, other than for curing purposes, shall be allowed on the surfaces until the concrete has obtained (by compressive strength test) 60% of its 28-day strength.



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11.0 CONCRETE FINISHES

11.1 Standard Finish for Exposed Concrete Surfaces (Excluding Ground Slab)

11.1.1 As soon as the forms have been removed, the concrete surfaces to be left exposed shall be carefully examined and cavities, stone pockets, irregularities, honeycombing, tie holes, and other defects, which in the opinion of the Owner do not justify rejection of the work, shall be pointed with mortar before the concrete is thoroughly dry. The mortar mix for patching shall be determined by trial usually one part cement and two parts coarse sand to obtain a good color match with the concrete when both patch and concrete are cured and dry. The amount of mixing water shall be as little as consistent with the requirements of handling and placing the mortar.

11.1.2 Concrete surfaces, which are to be exposed in the finish construction, shall receive a "rubbed" finish. After the mortar pointing has set, the entire area shall be thoroughly covered with water by means of brush and rubbed with carborundum brick or other approved method to remove all blemishes and to provide a uniform finished appearance to blend in with surrounding concrete surfaces. After rubbed surfaces have dried wipe with burlap to remove any loose powder.

11.2 Smooth Monolithic Ground Slab Finish

11.2.1 After the concrete has been screeded; the surface shall be floated with mechanical floats equipped with vibrators, only to the extent necessary to obliterate the screeding irregularities.

11.2.2 The slab shall be burnished, by steel troweling, to a hard, smooth and impervious surface. After the first troweling, allow the slab to stand until it has set sufficiently to finish hard and smooth, then apply a second steel troweling. In all cases, the slabs shall be troweled twice, and more often if necessary, to produce the required surface texture. There shall be no evidence, after the slab is finished, of kneeboard impressions, trowel marks or chattered areas.



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11.2.3 The sprinkling, shaking or applying in any form of dry cement on a prefinished concrete surface is prohibited.

11.2.4 Concrete ground slab shall be finished level unless noted otherwise with a tolerance of 1/8" in 10 ft. If variations greater than this exist, the Owner may direct the Contractor to grind the floor to bring the surface within the stated requirements. Patching of low spots shall not be permitted. Grinding shall be done as soon as possible, preferably within three days, but not until the concrete is sufficiently strong to prevent dislodging coarse aggregate particles.

11.2.5 Immediately after finishing, all grade and ground slabs shall receive a liquid curing and sealing compound conforming to ASTM C309, Type 1, clear or translucent. Surface preparation and application shall conform to manufacturer's specifications, but in no case shall application be greater than 350 sq. ft. per gallon. All slabs shall receive a second coat of curing and sealing compound just prior to acceptance of the concrete work.

12.0 INSPECTION AND TESTING

12.1 The materials and workmanship to be furnished under this specification shall be subject to inspection in the mill, shop, and field by the Owner.

12.2 Inspection and acceptance, or failure to inspect, shall in no way relieve the Contractor or the mill and shops from their responsibility to furnish materials and workmanship in accordance with contract requirements. When materials and/or workmanship do not conform to the specification requirements the Owner reserves the right to reject such material and/or workmanship at any time before final acceptance of the concrete work.

12.3 The Contractor shall make the necessary arrangements with the Owner-approved testing laboratory to facilitate concrete sampling and test.

12.4 An independent testing laboratory shall perform compressive strength tests, air entrainment tests and slump tests for each 50 cubic yards of concrete poured but not less than once for each day of concrete pouring. All tests shall be made at the expense of the Owner.



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- 12.5 Compressive strength tests shall be conducted in accordance with ACI318, "Concrete Quality". Tests shall be made on four field specimens, one for testing at seven days and two for testing at 28 days. If the 28-day breaks are good, the fourth cylinder may be discarded. If the 28-day breaks are deficient, the fourth cylinder shall be broken as instructed.
- 12.6 Slump tests shall be made in accordance with ASTM C143 for each set of cylinders submitted to the laboratory.
- 12.7 Air entrainment tests shall be made in accordance with ASTM C138, C173, or C231 for each set of cylinders.
- 12.8 If the ultimate compressive strength of any cylinder falls below specified strength, an investigation shall be made to determine cause of decrease. If it is attributed to a change in materials, a new design of mix shall be made. If low strength and quality of the structure in question, the Owner may require, at no additional cost to the Owner, tests to be made on portions of the structure containing questionable concrete. Such tests shall include one or more of the following: (1) Impact (Swiss) hammer tests, (2) cored cylinder test per ASTM C42, or (3) load actual structure per ACI 318. In that portion of the structure, which contains defective concrete, the defective concrete shall be removed and replaced, or reinforced as directed by the Owner, at Contractor's expense, including cost of tests. If cored tests indicate that the concrete adequately meets the specified strength, the test results of test cylinders will be waived.
- 12.9 Reports of all test and control measures shall be submitted to the Owner in triplicate. Reports shall show the in-place location of concrete.
- 12.10 The minimum compressive strength of test cylinders shall be 4000 psi, unless noted otherwise
- 12.11 Record the atmospheric and concrete temperatures on all test reports.

13.0 CONCRETE DISPOSAL

- 13.1 The Contractor is prohibited from dumping, wasting, or discarding unacceptable or excess concrete or washing out concrete trucks within the property limits of the Owner(ASPA).



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SECTION 4C – REINFORCING STEEL

1.0 SCOPE OF THE WORK

1.1 The work included under this section shall consist of furnishing all labor, tools equipment, materials, services, and supervision necessary for the complete installation of all reinforcing steel work, as indicated on the drawings and specified herein.

1.2 The items of work to be performed shall include, but are not limited to:

1.2.1 Foundation reinforcement.

1.2.2 Ground slab reinforcement.

1.2.3 Miscellaneous Concrete Structure Reinforcement.

2.0 APPLICABLE SPECIFICATIONS

2.1 The Contractor shall follow the practices and standards described in the latest editions of the following specifications, which are made a part of this Specification.

2.1.1 American Concrete Institute:

ACI318 – Building Code Requirements for Reinforced Concrete.

2.1.2 Refer to ACI 318 – “Building Code Requirements for Reinforced Concrete” for a complete listing of applicable specifications of the American Society for Testing and Materials (ASTM)

2.1.3 All applicable local and state codes and regulations.

2.1.4 Latest edition of OSHA Safety & Health Regulations.

2.1.5 In cases of conflict between the referenced standards, the more stringent requirements shall govern.



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3.0 REINFORCING MATERIALS

3.1 Standards of the American Society for Testing and Materials indicated in the following paragraphs shall be the current editions.

- 3.2 All reinforcing steel shall be new, deformed billet steel bars conforming to ASTM A615. Grade of reinforcing steel shall be 60 ksi.
- 3.3 The Contractor shall include all spacers, chairs, bolsters, ties, and other devices necessary for proper placing, spacing, supporting and fastening reinforcement in place. When the legs of any support devices rest directly on formwork, which, after stripping, will expose the concrete to permanent view, these devices shall be zinc-coated after fabrication or provided with plastic button tips at the wire ends to prevent staining of the concrete by rust. Sand chairs shall be used to support reinforcing on earth surfaces.

4.0 SHOP DRAWINGS AND SUBMITTALS

- 4.1 Shop drawings, including placement diagrams, shall be prepared by the fabricator in accordance with the drawings and the standards in ACI 315, "Manual of Standard Practice for Detailing Reinforced Concrete". All dimensions and sizes of reinforcement on the drawings shall be strictly adhered to and shall not be changed without written approval of the Owner.
- 4.2 The Contractor shall submit to the Owner one sepia and three blue line copies of the steel lists and placing plans of all reinforcing steel used in the job.

5.0 INSTALLATION

- 5.1 Reinforcing steel bars stored at job shall be placed in racks or blocked up at least 18" above ground and kept dry by suitable cover.
- 5.2 Reinforcing steel bars shall be shop-bent as indicated on the fabrication drawings. Metal reinforcements shall not be bent or straightened in a manner that will injure or defect material. Reinforcement shall be cold bent to shapes



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shown on the drawings. The heating of reinforcement for bending will not be permitted. Bars with kinks or bends not shown on the drawings shall not be used.

Minimum pin bending diameter will be as follows:

<u>Bar Size</u>	<u>Minimum Pin Diameter (inch)</u>
#3	1.1253
#4	1.5
#5	1.875
#6	2.25
#7	2.625
#8	3.0
#9	4.5
#10	5.0
#11	5.5
#14	8.75
#18	11.25

- 5.3 All reinforcement at the time concrete is placed, shall be clean new stock, free from defects, mill or rust scale, dirt, oil, dried concrete, or coatings that will reduce bond.
- 5.4 No heating, welding, or tack welding of reinforcing steel will be permitted.
- 5.5 Bars of single length shall be used in all cases, except where the length required is greater than stock length or where the Owner gives permission for shorter lengths. Necessary splices shown on the drawings shall be lapped sufficiently to develop the strength of the bars by bond. Splices shall not be made in beams,



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girders, and slabs at points of maximum bending moment nor shall adjacent bars be spliced at the same point, but staggered.

Wherever field conditions make it necessary to splice principal reinforcement otherwise than as shown on the drawings, the Owner shall decide character of a splice on basis of allowable bond stress and stress in reinforcement at splice.

The minimum lap splice shall be 12 inches.

<u>Bar Size</u>	<u>Minimum Lab Splice (inches)</u>	
	<u>Top Bars*</u>	<u>Other Bars</u>
#3	13	12
#4	17	12
#5	21	15
#6	27	20
#7	37	27
#8	49	35
#9	62	44
#10	78	56
#11	96	69

* Top bars are defined as horizontal bars so placed that more than 12 inches to concrete is cast below the bar.

- 5.6 Reinforcement shall be accurately placed and secured against displacement by firmly wiring at all intersections and splices with not less than No. 18 U.S. Standard Gauge annealed wire, or by use of acceptable clipping devices.



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5.7 Reinforcing in footings and slabs on earth shall be supported at proper level with pre-cast concrete blocks at no greater than 24" O.C.

5.8 Reinforcing other than that mentioned in Paragraph 5.7 shall be securely positioned at required distances from forms by means of metal spacers and chairs, or other accessories spaced in accordance with recommendation of the Concrete Reinforcing Steel Institute.

5.9 Unless otherwise indicated on drawings, steel reinforcement shall have a minimum protection of concrete as follows:

Minimum Cover (inches)

- | | | |
|-----|--|-----|
| (a) | Concrete cast against and permanently exposed to earth | 3 |
| (b) | Concrete exposed to earth or weather: | |
| | #6 through #18 bars | 2 |
| | #5 bar & smaller, welded wire fabric | 1 ½ |
| (c) | Concrete not exposed to weather or in contact with ground: | |
| | Slab, walls, joists: | |
| | #14 and #18 bars | 1 ½ |
| | #11 and smaller | ¾ |
| | Beams, columns, Primary reinforcement, | |
| | ties, stirrups, spirals | 1 ½ |

In all cases, thickness of concrete over reinforcement shall not be less than diameter of bars.

5.10 Exposed bars intended for bonding with future work shall be protected from corrosion by concrete or other adequate covering.



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- 5.11 No reinforcing bars shall be forced or driven into concrete after the concrete has attained its initial set.
- 5.12 Corner bars shall be required at all corner intersections, unless noted otherwise on the drawings. These bars shall be #4 with a length of 2'-6" placed at 45° to the corner.



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DIVISION 5 - METALS

SECTION 5A - STRUCTURAL METAL

1.0 SCOPE OF THE WORK

1.1 The work included under this section shall consist of furnishing all labor, tools, equipment, materials, services, and supervision necessary to fabricate, deliver, and erect complete, all structural steel indicated on the drawings as described in this Specification. Anchor bolts for structural steel shall be furnished and installed by the Contractor performing the concrete work as described in these specifications.

1.2 The work includes, but is not limited to, the following:

1.2.1 Fabrication, erection, galvanizing and testing of all structural metal.

1.2.2 The structural metal includes, but is not limited to the following:

- a Beams
- b. Base Plates
- c. Sole Plates
- d. Anchor Bolts
- e. All connections and their component parts for the above
- f. Grouting of Base Plates

2.0 APPLICABLE SPECIFICATION

2.1 The Contractor shall follow the practices and standards described in the latest edition of the following specifications, which are made a part of this Specification.

2.1.1 American Institute of Steel Construction (AISC):



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- a. Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
- b. Code of Standard Practice for Steel Buildings and Bridges
- c. Specification for Structural Joints Using ASTM A325 Bolts or A490 Bolts.

2.1.2 American Iron and Steel Institute: Specification for the Design of Cold-Formed Steel Structural Members

2.1.3 American National Standards Institute (ANSI):

B18.22.1 Plain Washers

B46.1 Surface Texture (Surface Roughness, Waviness, and Lay)

2.1.4 The American Society for Testing and Materials (ASTM):

ASTM A6 General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use.

ASTM A36 Standard Specification for Structural Steel.

ASTM A307 Standard Specification for Low-Carbon Steel Externally & Internally Threaded Standard Fasteners

ASTM A325 Standard Specification for High-Strength Bolts for Structural Steel Joints, includes suitable nuts and plain hardened washers.

2.1.5 American Welding Society (AWS): D.1.1. – Structural Welding Code

2.1.6 All applicable local and state codes and regulations.

3.0 SUBMITTALS

3.1 Certificates of Compliance

3.1.1 Certificates of compliance shall be furnished for structural steel and for welder qualifications. Certified copies of mill test reports shall be furnished for structural steel. Certification that each welder is qualified in accordance with AWS Code D.1.1 shall be provided.

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3.1.2 Test reports for high-strength bolts, nuts and washers, including chemical analysis, tensile strength tests, and hardness tests.

3.1.3 Specifications for primer paint, including manufacturer's data on chemical composition, adhesion of stray fireproofing, and dry film thickness per applied coat.

3.1.4 Specifications for non-shrink grout.

3.2 Shop Drawings

3.2.1 Shop drawings shall show all shop and erection details, including, but not limited to, cuts copes, cambers, connections, holes, bolts, and welds in structural steel. All welds, both shop and field shall be indicated by standard welding symbols in the AWS Code for Welding in Building Construction. Shop drawings shall not be complete without specific notations about painting, cleaning, grade of steel and type of welding electrodes. Shop drawings shall be checked and initialed as checked by the Contractor prior to submitting to Owner for review.

3.2.2 Material shall not be fabricated or delivered to the site before reviewed shop drawings have been returned to the Contractor.

4.0 QUALITY ASSURANCE

4.1 The materials and workmanship to be furnished under this specification shall be subject to inspection in the mill, shop, and field by the Owner.

4.2 Inspection and acceptance, or failure to inspect, shall in no way relieve the Contractor or the mill and shops from their responsibility to furnish materials and workmanship in accordance with contract requirements. When materials and/or workmanship do not conform to the specification requirements, the Owner reserves the right to reject such material and/or workmanship at any time before final acceptance of the structure.



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- 4.3 The Contractor shall guarantee free access to the fabrication shop and the construction site for the purpose of inspecting the steel work or field connections. The Owner shall be allowed to observe the performance of the erection crew while the work is in progress, and ladders or temporary scaffolding shall be made available upon the request of the Owner for the purpose of inspecting any connections, which are difficult to reach.
- 4.4 Inspection of welding shall be in accordance with the AISC Specification for Buildings and high-strength steel shall be marked in accordance with the AISC Specification for Buildings.
- 4.5 The Owner shall be notified well in advance of start of shop work in order to schedule inspections if desired.
- 4.6 Joint welding procedures shall be prequalified or test in accordance with AWS qualification procedures.
- 4.7 Testing and Inspection Agency
 - 4.7.1 The Owner will engage an independent testing and inspection agency to perform testing, to inspect and evaluate connections, and prepare test reports.
 - 4.7.2 Deficiencies in the structural steel work identified by the testing and inspection agency will be corrected at no additional expense to the Owner. Subsequent tests to confirm the adequacy of corrected work will be at the Contractor's expense.

5.0 MATERIALS

All materials shall be new and shall conform to the respective specifications and other requirements listed below:

- 5.1 Structural steel shapes and plates shall conform to ASTM A572 Grade 50.
- 5.2 Hot-formed steel tubing shall conform to ASTM A501.
- 5.3 Cold-formed steel tubing shall conform to ASTM A500, Grade B.



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- 5.4 Steel pipe shall conform to ASTM A53, Type E or S, Grade B.
- 5.5 Steel Castings shall conform to ASTM A27, Grade 65-35, medium strength carbon steel.
- 5.6 Unfinished threaded fasteners shall conform to ASTM A307, Grade A, regular low carbon steel bolts and nuts. Provide either hexagonal or square heads and butts, except use only hexagonal units for exposed connections.
- 5.7 High strength threaded fasteners shall conform to ASTM A325. Heavy hexagonal structural bolts, heavy hexagonal nuts, and plain hardened washers, shall be quenched and tempered medium-carbon steel.
- 5.8 Plain washers, other than those in contact with high-strength bolts shall conform to ANSI B18.22.1, Type B.
- 5.9 Welding Electrodes for manual shielded metal-arc welding shall conform to the #70XX series of the "Specification for Mild Steel Covered Arc-Welding Electrodes", AWS A5.1 or the "Specification for Low-Alloy Steel Covered Arc-Welding Electrodes".
- 5.10 Non-shrink grout will be prepackaged material requiring only the addition of water and complying with CRD-C 621. It shall be natural aggregate (non-metallic) type, and high strength (minimum 10,000 psi at 28-day cure).

6.0 DELIVERY AND STORAGE

- 6.1 Deliver all material to the job site properly piece-marked for identification and corresponding to the markings indicated on the shop drawings.
- 6.2 Structural material, either plain or fabricated, shall be stored above the ground upon platforms, skids, or other supports. Material shall be kept free from dirt, grease, and other foreign matter and shall be protected from corrosion. Material shall be adequately supported and protected to avoid bending, twisting, or otherwise damaging the member.



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7.0 FABRICATION

- 7.1 All structural steel shall be in accordance with the lines, dimensions, grades, details and notes shown on the drawings and as specified herein.
- 7.2 Substitutions of sections or modifications of details, or both, and the reasons therefore, shall be submitted with the shop drawings for approval. Approved substitutions, modifications, and necessary changes in related portions or the work shall be coordinated by the Contractor and shall be accomplished at no additional cost to the Owner.
- 7.3 Structural steel sections shall be continuous in length. No splicing, welding, or joining pieces of short lengths shall be permitted without written approval of the Owner.
- 7.4 The Contractor shall be responsible for all errors of detailing, fabrication, and for the correct fitting of the structural members.
- 7.5 Fabrication shall be in accordance with Section 1.23 of the AISC Specifications for Buildings. Said Section 1.23 consists of the following headings:
 - 1.23.1 Straightening Material
 - 1.23.2 Oxygen Cutting
 - 1.23.3 Planing of Edges
 - 1.23.4 Riveted and Bolted Construction holes
 - 1.23.5 Riveted and High Strength Bolted Construction – Assembling
 - 1.23.6 Welded Construction
 - 1.23.7 Finishing
 - 1.23.8 Tolerances
- 7.6 Generally, camber requirements shall be in accordance with Section 1.19 of the AISC Specification for Buildings. Special camber requirements, if any, are shown on the drawings.



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- 7.7 In general, connections shall be shop welded and field bolted. All welded connections shall be made with E-70 electrodes. All bolted connections shall be made with $\frac{3}{4}$ " diameter A325 H.S. bolts, unless otherwise noted on the design drawings.
- 7.8 Welds shall be made only by welders who have qualified by tests as prescribed in the "Code for Welding in Building Construction" of the American Welding Society, to perform the type of work required.
- 7.9 The design of connections for any part of the structure not indicated on the design drawings shall be completed by the Contractor. Unless otherwise shown, all beam connections shall be a standard frame or seated connections as shown in Part 4 of the AISC Manual of Steel Construction. Unless greater reactions are indicated on the design drawings, connections shall develop the full "T" distance of the beam web. End connections for bracing shall develop the loads shown on the design drawings or one-half the strength of the member in tension, whichever is greater.

8.0 CONNECTIONS

- 8.1 Where structural joints are made using high-strength bolts, hardened washers and nuts tightened to a high tension, the materials, methods of installation and tension control, type of wrenches to be used and inspection methods shall conform to specifications for "Structural Joints using ASTM A325 Bolts" as approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation, latest edition.
- 8.2 The contact surfaces, when assembled with bearing type bolts, shall be painted and all connections shall be free of scale, except tight mill scale, and shall also be free of burrs, oil, pits, and other defects, which would prevent solid seating of the parts.
- 8.3 The contact surfaces within friction type joints shall be free of oil, paint lacquer, or galvanizing. High-strength steel bolted connections, of the friction type, will be called for on the drawings when required.



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- 8.4 Primary field connections shall be bolted, using $\frac{3}{4}$ " dia. ASTM A325-X galvanized bolts, bearing type connection with threads excluded from shear plane, with one heavy hexagon structural nut and one galvanized plain, hardened washer, (U.N.O.).
- 8.5 Beam connections shall be furnished in accordance with Part 4 of the AISC Manual of Steel Construction, eighth edition, (U.N.O.). All material in the connection shall be sized to accommodate the shear values shown for ASTM A325 bolts, using values for bearing type bolts with threads excluded from shear plane.
- 8.6 Before erection of structural steel commences, the proposed method of tightening the high-strength steel bolts shall be submitted to the Owner for approval. Recommended method for tightening of all structural bolts shall be by the turn-of-nut method as specified in the AISC Steel Construction Manual under "Specification for Structural Joints Using ASTM A325 or A490 bolts".
- 8.7 Minimum field connections shall be two bolts at all diagonal angle bracing members, U.N.O. At all wide flange and channel members, the number of connectors shall be that which will develop the full "T" distance.
- 8.8 Open holes shall be $\frac{13}{16}$ " dia., (U.N.O.). All holes, both shop and field, shall be drilled, cut or punched, not burned.
- 8.9 Shop connections shall be welded or high strength bolted connections may be substituted if approved by the engineer. For manual ARC, welding electrodes shall conform to AWS A5.1 or A5.5, E70XX series.
- 8.10 All connections shall be sized to develop the load or number of bolts indicated on the drawings.
- 8.11 Erection bolts, clip angles and temporary fastening required for erection shall be furnished by the steel fabricator.
- 8.12 Minimum clip angle thickness shall be $\frac{3}{8}$ " (U.N.O.).



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- 8.13 Bracing members meeting at a point shall have their gravity axes meeting at one point if practical; if not, provisions shall be made for bending stresses due to eccentricity.
- 8.14 Gusset plates shall be 3/8" thick, minimum (U.N.O.)
- 8.15 All cut, sheared, sawed or burned edges and corners of all structural members (beams, columns, clip angles, etc.) shall have the edges ground smooth so that a round corner exists.
- 8.16 All welds shall be uniform in size and shall be in accordance with the AISC Specification for Architecturally Exposed Structural Steel. Welds that do not represent a reasonable smooth surface will be ground.
- 8.17 No pinholes, slag, or burrs shall be left on welds or steel.
- 8.18 Copes on beams shall be rounded and not squared. Identification of steel by piece-mark shall be by external tag and not by welding on steel.
- 8.19 All holes shall be flush with face of steel.

9.0 COLUMN BASES AND BEARING PLATES

9.1 Base plates or bearing plates shall be provided under columns, beams, girders, and any other steel members resting on concrete or masonry work. Base and bearing plates may be attached or loose as shown on the drawings. Loose base plates, leveling plates, and bearing plates shall be delivered to the job site along with detailed setting plans for placing and grouting by others.

- 9.2 Column bases shall be finished in accordance with Section 1.21.3 of the AISC Specification for Building.
- 9.3 Columns shall be milled or saw-cut to provide full bearing.
- 9.4 Base and cap plates shall be straight and true.



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10.0 GALVANIZING

Galvanizing, shall be in conformance with ASTM A123 zinc (hot galvanized) coatings on products fabricated from rolled, pressed, and forged steel shapes, plates bars, and strips.

11.0 PAINTING (Where Designated)

11.1 Surface Preparation

11.1.1 Surfaces of all steel shall be thoroughly cleaned prior to painting, removing rust, loose mill scale, dirt, oil, and grease in accordance with the Steel Structure Painting Council Surface Preparation Specification.

11.1.2 Clean Steel in accordance with SSPC procedures as follows: SSPC-SP-10, Near-White Blast Cleaning.

11.2 One or more shop coats of paint shall be applied to all steel surfaces within eight hours of final cleaning. On encased steel in concrete or mortar the initial 2" of embedded steel shall be painted.

11.3 Unless instructed otherwise, all paint coats shall be applied in the shop with any touch-up paint applied after installation of steel is complete.

11.4 Steel that receives a yellow topcoat shall always have all paint coats applied in the shop with touch-up in the field after complete installation of steel.

11.5 Paint System

11.5.1 All structural steel shall receive a shop coat of building manufacturer's standard shop painting system. Application equipment and process shall be as recommended by manufacturer.

11.5.2 Color of the final coat shall be as approved by Owner. Preceding coats shall vary slightly in shade of color.

11.6 An inspection of surface preparation and dry film thickness of shop prime coat may be made prior to acceptance of steel. Steel members found to be deficient in these requirements will be brought to acceptable condition prior to acceptance.



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11.7 All painting, shop and field touch-up, shall be done by a qualified painter.

11.8 Do not paint the following surfaces:

11.8.1 Machined or milled surfaces, unless noted otherwise.

11.8.2 Surfaces adjacent to field welds.

11.8.3 Faying surfaces of bolted connections.

11.8.4 Other surfaces when specifically noted on drawings or schedules.

11.8.5 Areas of friction type connections.

11.9 All connection bolts and nuts and all anchor bolt connections shall be cleaned, primed with the red touch-up primer paint, and a topcoat of paint applied after final torqueing of connections is completed.

12.0 SHOP QUALITY CONTROL

12.1 Testing and Inspection

12.1.1 General: Provide access to the testing and inspection agency so that specified testing and inspection can be safely accomplished.

12.1.2 Shop bolted connections: Comply with testing and verification procedures in AISC Specification for Structural Joints, except test not less than 100 percent of bolts in each bolted connection.

12.1.3 Shop welded connections: Inspect and test shop-fabricated welds as follows:

a. Perform visual inspection of all welds.

b. Inspect 100 percent of full penetration welds, using test method as follows:

1. Ultrasonic Testing (ASTM E164).

c. Inspect 100 percent of fillet welds, using test method as follows:



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1. Magnetic Particle Inspection (ASTM) E709).

13.0 ERECTION

13.1 The work shall be erected square, straight, and plumb and accurately fitted. Adequate temporary bracing shall be provided to insure stability during the construction period.

13.2 Erection of the structural steel shall be in accordance with Section 1.25 of the AISC Specification for Buildings. Said Section 1.25 consists of the following headings, amended herewith as noted:

1.25.1 Bracing

1.25.2 Adequacy of Temporary Connections

1.25.3 Alignment

1.25.4 Field Welding

1.25.5 Field Painting (Touch-up only)

13.3 Errors or perforations resulting from handling and transportation or improper fabrication that prevents the proper assembly and fitting of the steel shall be reported to the Owner and approval of the method of correction shall be obtained. Approved corrections shall be made at no additional cost to the Owner.

13.4 Before commencing work, the Contractor shall check all governing measurements at the building and the levels of all footings on which the work is to be erected and shall notify the Owner of any discrepancies.

13.5 The Erector shall maintain a complete up-to-date set of erection drawings at the job site and shall keep a daily record by piece number of all material delivered to the job site and all material erected.

13.6 For holes that are improperly aligned, corrections shall be by machine drilling new holes. No burning of holes will be allowed.



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- 13.7 Connection joints shall be cleaned of all dirt and dust before assembly.
- 13.8 Lifting of structural members shall be done in such a manner as to preclude damage to paint.
- 13.9 All base plates will be grouted by Contractor. A qualified person, experienced in the application of the "5-Star Grout", as manufactured by U.S. GROUT CORPORATION, shall apply grout.



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SECTION 5B – MISCELLANEOUS METALS

1.0 SCOPE OF THE WORK

1.1 The work included under this section shall consist of furnishing all labor, tools, equipment, materials, services and supervision necessary to fabricate, deliver and erect complete miscellaneous metal items including, but not necessarily limited to, the following:

1.1.1 All miscellaneous items.

1.2 The following miscellaneous items are specified under this section but are to be furnished and installed by the Contractor performing the concrete work as provided by these specifications.

1.2.1 Inserts and anchors

1.2.2 Anchor bolts

1.2.3 Any other miscellaneous items embedded in concrete.

2.0 APPLICABLE SPECIFICATIONS

2.1 The Contractor shall follow the practices and standard described in the latest edition of the following specifications, which are made a part of this Specification.

2.2 American Institute of Steel Construction (AISC): Manual of Steel Construction.

2.3 American National Standards Institute, Inc. (ANSI): A14.3 Safety Requirement for Fixed Ladders.

2.4 American Welding Society (AWS):

B3.0 Qualification Procedure.

D1.1 Structural Welding Code.

2.5 Occupational Safety and Health Standards (OSHA).



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3.0 SHOP DRAWINGS

Shop drawings, along with catalog cuts, templates, and erection and installation details, as appropriate, for all miscellaneous metal items shall be submitted for approval in triplicate to the Owner. Submittals shall be complete in detail; shall indicate thickness, type, grade, class of metal, and dimensions; and shall show construction details, reinforcement, anchorage, and installation with relation to the building construction. All welds shall be indicated by standard welding symbols of the American Welding Society.

4.0 GALVANIZING

4.1 Unless noted otherwise, all items specified or noted on the drawings, shall be hot-dipped galvanized in accordance with ASTM A123. All damage due to cutting or field welding, shall be repaired with "Galvalloy", "Galvastick", or equal.

5.0 GENERAL

5.1 In addition to the items listed herein, all miscellaneous metal work required for proper completion of the project, except as specified under other sections, shall be provided in accordance with the drawings.

5.2 The Contractor shall coordinate the work under this section with that specified in other sections of these specifications in order that all necessary items are provided as required. Supplementary parts and materials necessary to complete each item, even though such work is not definitely shown or specified, shall be included. All miscellaneous bolts and anchors necessary for the completion of the work shall be furnished as part of this section of the specifications. Anchors not shown in detail on the drawings shall be such as to conform to the accepted practices of the trade and as approved by the Owner. All miscellaneous bolts and anchors, supporting members, braces framing members and connections necessary for completion of the miscellaneous metal work shall be provided as part of the work under this section of the specifications.



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- 5.3 Items specified to be galvanized, when practicable and not indicated otherwise, shall be hot-dipped processed after fabrication. Galvanizing shall be in accordance with ASTM A123, A386, or A525 as applicable.
- 5.4 Inserts of suitable and approved type shall be furnished and installed where necessary for the support of equipment, apparatus, or other work.
- 5.5 Miscellaneous metal work shall be well formed to shape and size, with sharp lines and angles. Shearing and punching shall produce clean, true lines and surfaces. Permanent connections shall be welded, bolted, or riveted. Exposed surfaces shall have a smooth finish and sharp, well-defined lines and arises. Work shall be evenly sprung to curves. Joints shall be milled to a close fit. The necessary rebates, lugs, and brackets shall be provided so that the work can be assembled in a neat and substantial manner. Holes for bolts and screws shall be drilled or punched. Poor matching of holes shall be cause for rejection. Fastenings shall be concealed where practicable. Exposed fastenings shall be compatible materials, shall generally match in color and finish, and shall harmonize with the material to which fastenings are applied. Thickness of metal and details of assembly supports shall give ample strength and stiffness. Joints exposed to the weather shall be formed to exclude water. Welding to or on structural steel shall be in accordance with the Structural Welding Code of the American Welding Society. Welding shall be continuous along entire area of contact, except where tack welding is permitted. Tack welding shall not be permitted on exposed surfaces. All exposed welds shall be ground smooth. Surfaces to be welded shall be properly prepared. Each deposited layer of weld material shall be thoroughly cleaned before additional weld material is applied. All welds shall have complete fusion with the base metal and shall be of uniform thickness free from cracks, oxides, slag inclusions and gas pockets. Corner joints shall be coped or mitered, well formed, and in true alignment. Work shall be accurately set to establish lines and elevations and securely fastened in place. Work shall be executed and finished in accordance with approved drawings, cuts, details and samples.

6.0 DISSIMILAR METALS

Contractor shall take every precaution to prevent the occurrence of electrolytic action between dissimilar metals on all exterior work and on interior work exposed to moisture or high humidity. Copper products shall not be used in connection with aluminum



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work, nor shall aluminum be used in locations subject to drainage of copper compounds on the bare aluminum. Surfaces of ferrous metals in contact with aluminum shall be painted one coat of Zinc-chromate primer and one coat of aluminum-pigmented bituminous paint. Aluminum in contact with masonry or concrete shall be back painted with two coats of aluminum-pigmented bituminous paint. Stainless steel shall not have direct contact with carbon steel or zinc.

7.0 SEALING

It is intended that all work under this section shall be weather tight in every respect as required for good workmanship. All joint filling and sealing to this end shall be done in accordance with the standard practice for this class of work.

8.0 SAMPLES

Samples shall be full size, shall be taken from manufacturer's stock, and shall be complete as required for installation in the structure. After approval, samples may be installed in the work, provided each sample is clearly identified and its location recorded. One sample of any item shall be submitted for approval upon request by the Owner.

9.0 CERTIFICATION

Welding to or on structural steel or miscellaneous items of structural steel such as lintels shall be performed by certified welders qualified in accordance with procedures covered in AWS B3.0 using procedures and materials and equipment of the type required for the work. Verification of certified welders will be required if requested by Owner.

10.0 ANCHORAGE

10.1 Anchorage shall be provided where necessary for fastening miscellaneous metal items securely in place. Anchorage not otherwise specified or indicated, shall include slotted inserts, expansion shield, and power-driven fasteners when approved for concrete; toggle bolts and through bolts for masonry; machine and carriage bolts for steel; through bolts, lag bolts, and screws for wood. Slotted inserts shall be of types required to engage with the anchors and shall be approved by the Owner.

10.2 Anchor bolts shall have two heavy hex nuts and one plain-hardened flat washer, and shall all be ASTM A36 carbon steel.

11.0 MATERIALS

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- 11.1 Structural steel members shall conform to the requirements of ASTM A572, Grade 50, unless otherwise specified.
- 11.2 Bolts and anchor bolts shall conform to the requirements of ASTM A36 or ASTM A325, unless otherwise specified.
- 11.3 All items specified or indicated to be galvanized shall be hot-dipped galvanized in accordance with ASTM A123.

11.4 Anchors and Bolts

Anchors and bolts, in addition to those indicated, shall be provided where necessary for securing the work in place. Sizes, types, and spacings of anchors and bolts not indicated or specified otherwise shall be as necessary for their purposes. Anchors and bolts in contact with ferrous metal shall be of the same or approved metals compatible with the materials, which they adjoin except anchors into concrete, shall be stainless steel.

METAL STAIRS

- 1.0 Metal stairs complete with structural or formed channel stringers, grating threads, landings, columns, handrails, and necessary bolts and other fastenings shall be constructed in accordance with the metal stair manual of the National Association of Architectural Metal Manufacturers and shall conform to the following requirements:
 - 1.1 Structural steel shall conform to ASTM A36.
 - 1.2 Gratings for treads shall be of removable $1\frac{1}{4}" \times \frac{3}{16}"$ galvanized banded standard size with abrasive nosing full width of tread.
 - 1.3 Safety nosings shall be of galvanized steel or painted surface of diamond plated type. Nosing shall be 3" wide and be full width of tread.
 - 1.4 Steel grating shall be supported with minimum $\frac{1}{4}"$ end plates bolted to stringers. Stringers shall be continued around landings as shown, and shall have an angle welded on to support the steel landings. Exposed ends shall be closed.
 - 1.5 Treads shall be capable of sustaining a superimposed load of 100 pounds per square foot.



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1.6 Structural steel for framing of landings shall be furnished as part of the stair work.

2.0 INSTALLATION

Anchor bolts, grating fasteners, washers, and all parts or devices necessary for proper installation shall be furnished and installed. Lock washers shall be used under nuts.

3.0 ANCHORS AND BOLTS

Anchors and bolts, in addition to those indicated, shall be provided where necessary for securing the work in place. Sizes, types, and spacing of anchors and bolts not indicated or specified otherwise shall be as necessary for their purposes. Anchors and bolts in contact with ferrous metal shall be of the same or approved metals compatible with the materials which they adjoin except anchors into concrete shall be stainless steel.

4.0 INSERTS AND SLEEVES

Inserts of suitable and approved types shall be provided where required for the support or anchorage of equipment and finish construction. Inserts shall be gray or malleable iron castings or of galvanized steel unless indicated or specified otherwise. Sleeves required for the passage of pipes through concrete or masonry construction shall be standard cast

iron wall sleeves except that where steel pipe sleeves are indicated, they shall be standard weight zinc coated steel pipe.

5.0 SAFETY CHAINS

Safety chains shall be of ¼" ASTM A304 stainless steel metal, fixed at one end in a swiveled ring and arranged for padlocking to similar ring at the opposite end. The rings shall be welded to the jambs at the openings. Rings shall be mounted 3'-6" above the floor, and the chain shall be sufficient length to allow no more than a 2" drop in the chain at the center.

PIPE AND TUBE RAILINGS (HANDRAILS)

1.0 Steel railings shall, unless otherwise indicated, be standard-weight Schedule 40 steel pipe conforming to ASTM A53. Pipe shall be 1½" size.



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2.0 Fabrication: Joints of post, rail, and corners shall be by one of the following methods:

- 2.1 Flush type rail fittings of commercial standard, welded and ground smooth with railing splice locks secured with $\frac{3}{8}$ " hexagonal recessed-head setscrews.
- 2.2 Welded joints made by fitting post to top rail and intermediate rail to post, elbow corners, groove welding joints, and grinding smooth. Rail splices shall be butted and reinforced by a tight-fitting interior sleeve not less than 6" long.
- 2.3 Railings may be bent at corners in lieu of elbows provided bends are made in suitable jigs and that the pipe is not crushed.
- 2.4 See Structural Standard Detail Sheet for dimensional details.

3.0 Installation

- 3.1 In Concrete. Rails shall be installed by means of steel pipe sleeve inserts set and anchored in the concrete as indicated. Posts shall be inserted into the steel pipe sleeves, leveled, plumbed, and aligned. The annular space between pipe posts and pipe sleeve inserts shall be filled solid with molten lead or sulfur or a quick-setting hydraulic cement except where railings are indicated to be removable. Anchorage joint shall be covered with pipe collar pinned to post. Ends of rails shall be secured by means of standard steel pipe flange anchored to concrete walls by expansion shields and bolts.
- 3.2 In Masonry. Rails shall be installed by means of standard steel pipe flange secured to masonry with toggle bolts. Rail ends shall be anchored with a standard steel pipe flange through-bolted at the wall into a back plate.
- 3.3 In Steel. Rails shall be installed by means of base plates bolted or welded to stringers or structural framework.

4.0 Ladders

Ladders shall be steel fixed-rail type conforming to ANSI A14.3. Ladders and accessories shall be ASTM A36. Rungs shall be solid-section rods, fitted into punched holes in rails, welded, and ground smooth. All splices and connections shall have a



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smooth transition with original members without projections that are sharp or more extensive than required for joint strength. Rails shall be fitted with brackets at the spacing indicated for anchorage to structure. See Structural Standard Detail Sheet.

5.0 Ladder Cages

Ladder cages shall be ASTM A36 and shall be provided as indicated. Bar hoops shall be welded to vertical cage bars. All splices and connections shall have a smooth transition with original members without projections that are sharp or more extensive than required for joint strength. See Structural Standard Detail Sheet.

GRATINGS-BAR GRATINGS AND FLOOR PLATES

- 1.0 Unless otherwise noted, grating shall be galvanized standard rectangular pattern, welded steel grating, with 1" x $\frac{3}{16}$ " bearing bars W/L spacing, and fastened to structural steel with galvanized clamps. The grating clips shall be manufactured by IKG Borden or equal specifically for the W/L spacing grating. The clips shall be installed in the manner and quantity as recommended by IKG Borden.
- 2.0 No penetration of steel will be allowed by grating galvanized clamp connectors.
- 3.0 No tack welding of grating will be allowed.
- 4.0 Each piece of grating shall be banded on all sides with galvanized flat bar of the same depth as the grating and $\frac{3}{16}$ " thickness.
- 5.0 Care shall be taken not to cut grating after galvanizing has been applied. If field modification of the grating is required, then the grating shall be tool cleaned as required by SSPC SP 1/2/3 after cutting. After surface preparation has been completed, "Spray-Galv." (Anchor Brand), as manufactured by Dynaflux Co., Cartersville, Ga., shall be applied as required per manufacturer's recommendations. Minimum dry film thickness to be 2.5 mils achieved in minimum of two applications.
- 6.0 If modification of in-place grating is required, and the modification falls on a structural member, then grating shall be removed for modification, modified as required, and replaced back into position. If removal of the grating is not possible, then torch cutting will be permitted with the following stipulations: the angle of the cutting torch shall be as close to parallel to the structural member below to avoid blistering or blackening of

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the paint below. After grating modification is complete, the grating shall be repaired in accordance with these specifications. The structural member below shall be touched-up as required.

- 7.0 All openings in grating greater than 6" diameter or 6" square shall be banded with continuous 3/16" flat bar and shall extend 4" above top of grating. Location of all openings through gratings shall be coordinated with the respective trade requiring the opening, prior to fabrication.

8.0 Floor Loadings

Live	=	100 psf
Dead	=	10 psf
Susp.	=	<u>20 psf</u>
Total		130 psf

9.0 Deflections

- 9.1 Less than 1/8" under floor load (130 psf). The Contractor shall provide additional secondary structural members as grating supports for all spans greater than 48" center to center. The detailer shall include the additional members in the shop drawings for review and approval by the Engineer.
- 9.2 Gratings, where indicated, shall be removable or hinged and shall be arranged in sizes to be readily lifted. Frames to receive the gratings shall be fabricated of structural shapes by welding with exposed welds ground smooth. Both the frames and the gratings shall finish flush with the adjacent floors.
- 9.3 Grating shall be fabricated in panels of sizes suitable for delivery and installation, and shall be secured in place by bolted galvanized clips as approved or indicated on the design drawings.
- 9.4 All grating shall receive a hot-dip galvanized coating after fabrication.
- 9.5 Floor plate shall be commercial grade carbon steel with skid resistant raised pattern. The plate shall have a nominal thickness of 1/4" and shall be reinforced with angles as shown on the drawings.



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- 9.6 Floor plate shall be hot dipped galvanized after fabrication with angle stiffeners and flat bar bearing block.

DIVISION 6 - NOT USED



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DIVISION 7 - THERMAL AND MOISTURE PROTECTION

INSULATION

1. DESCRIPTION OF WORK

1.1. Applications of insulation specified in this section include the following:

- 1.1.1. Batt-type insulation
- 1.1.2. Spray-applied insulation
- 1.1.3. Vinyl Backed Insulation

1.2. Quality Assurance:

1.2.1. Thermal Resistivity: Where thermal resistivity properties of insulation materials are designated by R-Values they represent the rate of heat flow through a homogenous material exactly 1" thick, measured by test method included in referenced material standard or otherwise indicated. They are expressed by the temperature difference in degrees F between the two exposed faces required to cause one BTU to flow through one square foot per hour at mean temperatures indicated.

1.3. Submittals:

1.3.1. Product Data: Submit manufacturer's product literature and installation instructions for each type of insulation and vapor retarder material required.

1.4. Delivery, Storage and Handling:

1.4.1. Protect insulations from physical damage and from becoming wet or soiled. Comply with manufacturer's recommendations for handling, storage and protection during installation

2. PRODUCTS

2.1. Batt-Type Insulation

- 2.1.1. Unfaced Glass Fiber
- 2.1.2. Fire resistance characteristics per ASTM E84
- 2.1.3. Manufacturer's standard length and width
- 2.1.4. Size: 4" or 6" nom.; Developed thermal resistance is as shown on the drawing
- 2.1.5. Acceptable manufacturer's: John Manville, Owens-Corning, or approved equal.

2.2. Spray-applied insulation



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- 2.2.1. Foam Insulation, applied by spraying and adhering to substrates.
- 2.2.2. Open Cell content per ASTM D6226, Thermal performance per ASTM C518.
- 2.2.3. Fire resistance characteristics per ASTM E84
- 2.2.4. Developed thermal resistance is as shown on the drawing
- 2.2.5. Installation by licensed installer with 5 year minimum experience.
- 2.2.6. Acceptable manufacturer's: John Manville (JM Corbond OC SPF) or approved equal.

2.3. Vinyl Backed Insulation

- 2.3.1. Vinyl faced glass fiber
- 2.3.2. Fire resistance characteristics per ASTM E84
- 2.3.3. Manufacturer's standard length and width
- 2.3.4. Developed thermal resistance is as shown on the drawing
- 2.3.5. Acceptable manufacturer's: John Manville, Owens-Corning, or approved equal.

2.4. Vapor barriers under slabs-on grade: 15 mil polyethylene film with laboratory tested vapor transmission rating of 0.2 perms.

2.5. Miscellaneous Materials:

- 2.5.1. Adhesive for bonding insulation to be as recommended by insulation manufacturer, and complying with the requirements for fire performance characteristics.
- 2.5.2. Mechanical anchors to be the type and size recommended by the insulation manufacturer for type of application and condition of substrate.
- 2.5.3. Mastic Sealer to be type recommended by insulation manufacturer for bonding edge joints between units and filling voids in work.

3. EXECUTION

3.1. Inspection and Preparation:

- 3.1.1. Require installer to examine substrates and conditions under which insulation work is to be performed. A satisfactory substrate is one that complies with requirements of the section in which substrate and related work is specified. Obtain installer's written report listing conditions detrimental to performance of work in this section. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.



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3.1.2. Clean substrates of substances harmful to insulations or vapor retarders, including removal of projections which might puncture vapor retarders.

3.2. Installation General:

3.2.1. Comply with manufacturer's instruction for particular conditions of installation in each case. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with work.

3.2.2. Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections which interfere with placement.

3.3. Installation of batt insulation:

3.3.1. Apply insulation units by method complying with manufacturer's recommendations.

3.4. Installation of spray-applied insulation:

3.4.1. Installation per manufacturer's instruction by a licensed installer with 5 years minimum experience.

3.5. Installation of vapor retarders:

3.5.1. Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those which have been stuffed with loose fiber-type insulation.

3.5.2. Seal overlapping joints in vapor retarders with adhesives per vapor retarder manufacturer's directions. Seal butt joints and fastener penetrations with tape of type recommended by vapor retarder manufacturer.

3.5.3. Repair any tears or punctures in vapor retarders immediately before concealment by other work. Cover with tape or another layer of vapor retarder.

3.6. Protection:

3.6.1. Protect installed insulation and vapor retarders from harmful weather exposures and from possible physical abuses, where possible by no delayed installation of concealing work or, where that is not possible, by temporary covering or enclosure.

FLUID-APPLIED AIR BARRIER

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1. General

1.1. Summary

1.1.1. Supply labor, materials, and equipment to complete the work as specified herein to bridge and seal the following air leakage pathways and gaps:

- 1.1.1.1. Openings and penetrations of window, door, and louver frames
- 1.1.1.2. Piping, conduit, duct and similar penetrations
- 1.1.1.3. All other air leakage pathways in the building envelope

1.1.2. Supply materials and installation methods of the primary vapor permeable air barrier membrane system and accessories.

1.1.3. Materials and installation methods of through-wall flashing membranes

1.2. References

1.2.1. ASTM E 2357: Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies

1.2.2. ASTM E 2178: Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Buildings Materials

1.2.3. ASTM E 283: Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

1.2.4. ASTM E 1677: Specification for Air Retarder (AR) Material of System for Low-Rise Framed Building Walls

1.2.5. ASTM E 330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Door

1.2.6. ASTM E 331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference

1.2.7. ASTM E 96: Water Vapor Transmission of Materials

1.2.8. AMMA 2400: Standard Practice for Installation of Windows, Doors and Skylights

1.3. Performance Requirements

1.3.1. Air barrier shall be capable of performing as a continuous vapor-permeable air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air barrier membrane assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, and transition at perimeter conditions with deterioration.



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1.4. Submittals

- 1.4.1. Submit documentation certifying the air leakage rates of the air barrier membrane assembly, including primary membrane, primer and sealants have been tested to meet ASTM E 2357.

1.5. Quality Assurance

- 1.5.1. Perform the work in accordance with manufacturer's written instructions and this specification
- 1.5.2. Maintain one copy of manufacturer's written instructions on site
- 1.5.3. Components used shall be sourced from one manufacture, including primary membrane, transition and flashing membranes, air barrier sealants, primers, mastics, and adhesives.
- 1.5.4. Obtain air barrier materials from a single manufacturer regularly engaged in manufacturing the product
- 1.5.5. Provide products which comply with all federal, state and local regulations controlling use of volatile organic compounds (VOCs)

1.6. Delivery, Storage, and Handling

- 1.6.1. Refer to current product MSDS for proper storage and handling
- 1.6.2. Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product
- 1.6.3. Store materials in original packaging. Protect materials from direct sunlight until ready for use
- 1.6.4. Store air barrier membranes, adhesives and primers at temperatures of 40 degrees F and rising
- 1.6.5. Keep solvent away from open flame or excessive heat

1.7. Coordination

- 1.7.1. Ensure continuity of the air barrier throughout the scope of this section

1.8. Project Conditions

- 1.8.1. Apply air barrier within the range of ambient and substrate temperatures recommended by air barrier manufacturers. Protect substrates from environmental conditions that affect performance of air barrier. Do not apply air barrier to a damp or wet substrate during rain, fog, or mist



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1.9. Warranty

1.9.1. Provide manufacturer's standard 10-year materials warranty.

2. Products

2.1. Materials

2.1.1. Air barrier materials and assemblies for the building envelope shall have a air Permeance not exceeding 0.004 cfm/ft² under a pressure differential of 1.57 psf when tested in accordance with ASTM E 2178.

2.1.2. Components and accessories shall be obtained as a single source from the manufacturer to ensure total system compatibility and integrity

2.1.3. Subject to compliance with requirements, manufacturers offering products that may be incorporated include:

2.1.3.1. Tyvek Brand, Dupont Corp

2.1.3.2. Henry Brand, Carlisle Company

2.1.3.3. Approved Equal

3. Execution

3.1. Examination

3.1.1. Examine areas and conditions for compliance with requirements and other conditions affecting performance

3.1.2. All surfaces shall be sound, dry, clean and free of oil, grease, dirt, or other contaminants

3.2. Surface Preparation

3.2.1. Ensure all preparatory work is complete prior to applying air barrier membrane

3.2.2. Clean, prepare, treat, and seal substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air barrier application

3.3. Installation of Air Barrier System

3.3.1. The following areas in the building envelope shall be wrapped, sealed, caulked, gasketed, or taped in an approved manner to minimize air leakage

3.3.1.1. Joints around fenestration, door frames, and windows

3.3.1.2. Junctions between walls and floors, between walls at building corners, and between walls and roofs or ceilings

3.3.1.3. Penetrations through the air barrier in building envelope roofs, walls, and floors

3.3.1.4. Building assemblies used as ducts or plenums



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3.3.1.5. Joints, seams, connections between planes, and other changes in air barrier materials

SHEET METAL FLASHING AND TRIM

- 1.0 Vent Flashing. Vent pipes shall be flashed and made watertight at the roof with sheet lead weighing not less than 4 lbs./sq. ft. Flashing shall extend not less than 8" from the pipes in all directions, shall be extended to the tops of the vent piles, and shall be turned down into the pipes. Extreme care shall be taken to prevent rupturing flashing when turning it into pipe. The flashing shall be made to lay flat against inside of vent pipe to prevent stoppage of vent pipe.
- 2.0 Flashing at Curbs for Machinery, Ventilators, or Other Penetrations of Roof. Curbs shall be flashed and made watertight at the roof with 16 oz. copper.
- 3.0 Metal Counterflashing. Shall be 16 oz. copper.

JOINT SEALANTS

All caulking in exterior walls at window and door openings, etc., shall be Sikaflex 1-A. Caulking shall be backed with Ethafoam backer rod, 3/8" thick.

WATERPROOFING

- 1.0 Membrane Waterproofing. On below-grade walls and under-grade slabs, lay waterproof membrane composed of two plies of 15 lb. felt, each ply to be lapped 6" and each ply to be mopped completely with hot asphalt.

DOORS

SCOPE OF THE WORK

The work included under this section shall consist of furnishing all labor, tools, equipment, materials, and supervision necessary to complete installation of all doors, frames, and hardware specified herein and indicated on the drawings.



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DOOR HARDWARE

- 1.0 Each door and frame shall be connected by three hinges. Hinges shall not bind or squeak and shall provide smooth operation.
- 2.0 Door knobs shall be centered approximately 3'-5 ³/₁₆" above finished floor.
- 3.0 Weatherstripping shall be ³/₁₆" polyurethane.
- 4.0 All hardware shall be stainless steel.
- 5.0 Locksets, passage, and strikes are to be furnished as per Owner's master keying system.

STEEL DOORS AND FRAMES

- 1.0 Hollow metal door frame shall be minimum 16 gauge steel with a standard frame profile 5³/₄" by 2" for jambs and heads. Frame shall be factory-assembled, with mitered head-corners, integral stops welded and ground smooth. Frame shall be reinforced, drilled, and tapped for hinges, strikes, closures, and brackets. Frame shall be accurately mortised for hardware. Three rubber mutes shall be furnished on the strike jamb of the frame. Jamb anchors are to be suitable for wall conditions. Frame shall be bonderized and painted one prime coat of rust-inhibitive paint standard with the manufacturer.
- 2.0 Hollow metal door shall be 1³/₄" thick of size indicated on the drawings. Door panels shall be minimum 16 gauge steel with polystyrene core. The hinge edge channel shall be minimum 14 gauge and the lock edge shall be minimum 14 gauge. Door shall be mortised and reinforced for hinges, die cut, and reinforced for hardware and closures. Door shall be rigid and neat in appearance, free from warp or buckle. Door shall have factory applied prime coat, baked on.

DIVISION 8 - NOT USED

DIVISION 9 - NOT USED

DIVISION 10 - NOT USED

DIVISION 11 - NOT USED

DIVISION 12 - NOT USED



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DIVISION 13 - METAL BUILDING

1.0 SCOPE OF WORK

- 1.1 This division covers the requirements of the metal building system supplier/erector. Metal building system will be completely pre-engineered and supplied by the contractor with complete shop drawings, reactions, calculations, and anchor bolt design and layout. The metal building manufacturers will provide reactions to the engineer for foundation modifications as required. The drawings will bear the stamp of a registered structural engineer in the State of Alabama.

Erector shall have an established tract record, and shall have been in business for at least ten consecutive years.

Erector shall have certified welders, and must be fully insured and bondable.

Erector shall provide an affidavit of compliance that erection is accomplished in accordance with MBMA metal building manufacturer association and supplier standards.

All steel sections and welded plate members shall be designed in accordance with AISC standards.

- 1.2. The building will have a gabled roof with a slope of 1" rise for each 12" of horizontal run. The rigid frames will be clear span with tapered rafters and tapered columns constructed of welded-plate "H" sections. The end wall columns and rafters will be constructed of either hot-rolled structural or welded-plate "H" sections. Light gauge end wall columns and/or rafters shall not be allowed.
- 1.3. Bay spacing will be 25' unless otherwise approved by the Engineer. Horizontal loads not resisted by main frame action shall be resisted by cables, rods, structural brace members and/or portal frames in the sidewalls, end walls and roof. Bracing shall not interfere with any door or crane way openings. Cable or rod bracing will not be permitted in the open area of the building. Cable or rod bracing will not be permitted for crane bracing.

2.0 REFERENCES

ISC - Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design, 1989.



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AISI - Specification for the Design of Cold-Formed Steel Structural Members 1996 Edition with 1999 Addendum.

ASTM A307 - Specification for Carbon Steel Bolts and Studs, 60 KSI Minimum Tensile Strength, 2000.

ASTM A325 - Specification for Structural Bolts, Steel, Heat Treated, 120/105 KSI Minimum Tensile Strength, 2000.

ASTM A792 - Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process, 1999.

AWS D1.1 - Structural Welding Code - Steel , 2000.

MBMA Metal Building Systems Manual, 2002.

SSPC - SP-2 - Specification for Hand Tool Cleaning, 1995

CMAA - Cranes Manufacturers Association of America - Specification No. 70 Revised 2000.

3.0 DESIGN REQUIREMENTS

3.1 The building shall be designed by the manufacturer as a complete system. All components of the system shall be supplied or specified by the same manufacturer.

3.2 Design load application shall be in accordance with the International Building Code as adopted in the local building regulations.

3.3 The dead load shall be the weight of the metal building system as determined by the system manufacturer.

3.4 The collateral load shall be 5 psf or as shown on the drawings. The collateral load shall not be applied to the roof panels.

3.5 The building system shall be capable of supporting a minimum uniform live load of 20 psf, reducible to the extent allowed by the International Building Code.

3.6 The design wind speed for the metal building system shall be 161mph.



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3.7 Deflections shall be limited as follows:

Primary Framing: L/240 for live load.

H/240 wind load.

Secondary Framing: L/240 for roof dead load + roof live load.

3.8 The building shall be designed for all load combinations of specific loads as dictated by the International Building Code and ASCE requirements.

3.9 Gutters and downspouts shall be designed to handle rainstorms exceeded only once in 10 years, with adequate provision for thermal expansion and contraction. Gutters and downspouts shall be designed, fabricated and erected to withstand a 161 MPH wind.

4.0 SUBMITTALS

Approval by the Engineer is required for the design drawings and they shall bear the professional seal and signature of a licensed professional engineer registered in the State of Alabama. The building design shall conform to the requirements shown on the bid drawings and in this specification. The manufacturer shall be required to submit anchor bolt placement plan and column reactions in advance of the erection drawings.

5.0 QUALITY ASSURANCE

5.1 Structural steel members shall be designed and fabricated in accordance with AISC-Specification for Structural Steel Buildings.

5.2 Framing members shall be cleaned of loose rust, loose mill scale and other foreign matter and coated with the building manufacturer's standard primer.

6.0 QUALIFICATIONS

6.1 The company manufacturing the metal building system shall have a minimum of 10 years experience in the design and manufacture of steel building systems.

6.2 The erector shall have at least 10 years specialized experience in the erection of metal building systems. The erector shall have experienced employees and have the proper equipment to undertake a project of this size.



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7.0 WARRANTY

- 7.1 The metal building system shall be warranted against material and workmanship deficiencies for a period of 10 years.
- 7.2 The panel manufacturer's 20-year warranty shall be provided for the roof and wall panels. The roof panels, wall panels and trim shall be Galvalume or color with the color to be selected by the OWNER from manufacturer's standard colors.

8.0 ROOF SYSTEM

- 8.1 The contractor shall furnish and install a standing seam roof system for the building and canopies. The roof panels shall be minimum 24 gage-Galvalume rib panels. The colors of the trim, gutters, downspouts and miscellaneous items will be chosen by the Owner.
- 8.2 Insulation, if required shall be 3" fiberglass blanket type, faced with reinforced white vinyl.
- 8.3 Roof panel to secondary fasteners shall be self-drilling #12 x 1-1/4" SS (stainless steel) screws with a weather sealing washer.
- 8.4 Roof side lap fasteners shall be #12 x 3/4" SS pierce-point screws with a weather sealing washer.
- 8.5 Lap sealant shall be manufacturer's standard type.

9.0 WALL SYSTEM

- 9.1 The exterior wall covering shall be 26 gage "PBR" profile panels with a minimum yield stress of 80,000 psi. The base steel shall be coated with high-strength Galvalume produced to ASTM A792. The exterior surface will be precoated with a siliconized polyester finish to be selected from the list of the manufacturer's standard colors.
- 9.2 Wall insulation shall be, if required, 3" fiberglass blanket type, faced with reinforced white vinyl.
- 9.3 Wall panel to secondary fasteners shall be self-drilling #12 x 1-1/4" SS screws with a weather sealing washer, colored to match wall panels.



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- 9.4 Side lap fasteners shall be #12 x 3/4" SS pierce-point screws with a weather sealing washer, colored to match wall panels.

10.0 TRIM

Flashings, rake trim, eave trim, corner trim, window trim, door trim, caps and similar metal accessories shall be of the same material and finish as adjacent material, with the color to be selected BY THE OWNER from manufacturer's standard colors.

11.0 METAL DOORS AND FRAMES

Doors and frames shall be designed by the manufacturer to meet the wind load criteria as specified, maximum wind speed 161 MPH.

12.0 ERECTION

12.1 GENERAL

Verify that the site conditions are in accordance with the provided site drawings. Verify that foundation is of the correct dimensions and properly squared. Verify that the placed anchor bolts are properly sized and in the correct positions. Report any unsatisfactory conditions to the Engineer and do not proceed until the unsatisfactory conditions have been corrected.

12.2 FRAMING

12.2.1 Erect framing in accordance with MBMA Metal Building Systems Manual, Common Industry Practices.

12.2.2 Erect the building frames true and level with vertical members plumb and bracing properly installed. Maintain the structural stability of frame during erection.

12.2.3 Any holes requiring enlargement to admit bolts must be reamed. Burned holes for bolted connections are not permitted without written approval by the building manufacturer.

12.2.4 The erector shall furnish temporary guys and bracing where needed for squaring, plumbing, and securing the structural framing against loads acting on the exposed framing during the erection operation. Bracing furnished by the manufacturer for the metal building system cannot be



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assumed to be adequate during erection and are not to be used to pull frames into plumb condition. The temporary guys and braces are the property of the erector, and the erector shall remove them immediately upon completion of erection.

12.2.5 The erector shall not field cut or modify any structural members without the prior approval of the metal building manufacturer.

12.2.6 After erection, the erector is required to clean and prime any welds, abrasions, and surfaces needing touch-up. The primer color is to match the primer used by the building manufacturer.

12.3 WALL AND ROOFING SYSTEMS

12.3.1 Install all wall and roofing systems and insulation in accordance with manufacturer's instructions and details.

12.3.2 Exercise care when cutting prefinished material to ensure that cuttings do not remain on finish surface.

12.3.3 Fasten cladding system to structural supports, using the proper fasteners, aligned level and plumb.

12.3.4 Set purlins and girts according the manufacturer's drawings and bolt to appropriate clips or pre-drilled holes as designed by the building manufacturer.

12.3.5 Place roof panels at a right angle to the purlins and girts. Attach and plumb wall panels as shown on drawings. Maintain consistent coverage for entire length of the roof and each wall. Predrill the panels when possible. Panel end laps shall be a minimum of 6" on the roof. No laps will be permitted on the walls. Place end laps over purlins. Apply butyl roof panel side and end lap sealant between panel ends and side laps to provide watertight installation.

12.4 GUTTER, DOWNSPOUT, FLASHINGS AND TRIM

12.4.1 Install gutters and downspouts, flashings and trim in strict accordance with manufacturer's drawings, using proper sheet metal procedures.

(rev 3/31/11)



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12.4.2 Install downspouts to catch basins and storm drain piping.

12.5 TOLERANCES

All work shall be performed by experienced workmen in a workmanlike manner to published tolerances.

DIVISION 14 - NOT USED

DIVISION 15 - MECHANICAL

SEE DRAWINGS AND OTHER SHEETS FOR NOTES/SPECS/DETAILS FOR THESE SECTIONS

DIVISION 16 - ELECTRICAL

SEE DRAWINGS AND OTHER SHEETS FOR NOTES/SPECS/DETAILS FOR THESE SECTIONS