MDOT Use Only
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01 -

SM No. CSTP0003011931

PROPOSAL AND CONTRACT DOCUMENTS

FOR THE CONSTRUCTION OF

01
Construction of a Pedestrian Crossing Bridge over US 90 near Caillavet Street in Biloxi, known as Federal Aid Project Nos. STP-0003-01(193) / 107192301 & 302 in Harrison County.

Project Completion: 12/14/2018

(PROJECT OF DIVISION INTEREST)

NOTICE

BIDDERS MUST PURCHASE A BID PROPOSAL FROM MDOT CONTRACT ADMINISTRATION DIVISION TO BID THIS PROJECT.

Electronic addendum updates will be posted on www.gomdot.com

SECTION 900

OF THE CURRENT 2017 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION

JACKSON, MISSISSIPPI

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
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PROJECT: STP-0003-01(193)/107192301 - Harrison
STP-0003-01(193)/107192302 - Harrison

(REVISIONS TO THE ABOVE WILL BE INDICATED ON THE SECOND SHEET OF SECTION 905 AS ADDENDA)

09/27/2017 09:54 AM

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 901 - ADVERTISEMENT

Electronic bids will be received by the Mississippi Transportation Commission at 10:00 o'clock A.M., Tuesday, October 24, 2017, from the Bid Express Service and shortly thereafter publicly read on the Sixth Floor for:

Construction of a Pedestrian Crossing Bridge over US 90 near Caillavet Street in Biloxi, known as Federal Aid Project Nos. STP-0003-01(193) / 107192301 & 302 in Harrison County.

The attention of bidders is directed to the Contract Provisions governing selection and employment of labor. Minimum wage rates have been predetermined by the Secretary of Labor and are subject to Public Law 87-581, Work Hours Act of 1962, as set forth in the Contract Provisions.

The Mississippi Department of Transportation hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, age, disability, religion or national origin in consideration for an award.

The award of this contract will be contingent upon the Contractor satisfying the DBE requirements.

Bid proposals must be purchased online at <https://shopmdot.ms.gov>. Specimen proposals may be viewed and downloaded online at no cost at <http://mdot.ms.gov> or purchased online. Proposals are available at a cost of Ten Dollars ($10.00) per proposal plus a small convenience fee. Cash or checks will not be accepted as payment.

Plans must be purchased online at <https://shopmdot.ms.gov>. Costs of plans will be on a per sheet basis plus a small convenience fee. If you have any questions, you can contact the MDOT Plans Print Shop at (601) 359-7460, or e-mail at plans@mdot.state.ms.us. Plans will be shipped upon receipt of payment. Cash or checks will not be accepted as payment.

Bid bond, signed or countersigned by a Mississippi Agent or Qualified Nonresident Agent, with Power of Attorney attached, a Cashier's check or Certified Check for five (5%) percent of bid, payable to STATE OF MISSISSIPPI, must accompany each proposal.

The attention of bidders is directed to the provisions of Subsection 102.07 pertaining to irregular proposals and rejection of bids.

MELINDA L. MCGRATH
EXECUTIVE DIRECTOR

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1 **CODE: (IS)**

DATE: 03/01/2017

SUBJECT: Governing Specifications

The current (2017) Edition of the Standard Specifications for Road and Bridge Construction adopted by the Mississippi Transportation Commission is made a part hereof fully and completely as if it were attached hereto, except where superseded by special provisions, or amended by revisions of the Specifications contained within this proposal. Copies of the specification book may be purchased from the MDOT Construction Division, or online at shopmdot/default.aspx?StoreIndex=1.

A reference in any contract document to controlling requirements in another portion of the contract documents shall be understood to apply equally to any revision or amendment thereof included in the contract.

In the event the plans or proposal contain references to the 2004 Edition of the Standard Specifications for Road and Bridge Construction, it is to be understood that such references shall mean the comparable provisions of the 2017 Edition of the Standard Specifications.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2 **CODE: (IS)**

DATE: 03/01/2017

SUBJECT: Status of Right-of-Way

Although it is desirable to have acquired all rights-of-way and completed all railroad agreements, utility adjustments and work to be performed by others prior to receiving bids, sometimes it is not considered to be in the public interest to wait until each and every such clearance has been obtained. The bidder is hereby advised of possible unacquired rights-of-way, relocates, railroad agreements and utilities adjustments which have not been completed.

The status of right-of-way acquisition, utility adjustments, encroachments, potentially contaminated sites, railroad facilities, improvements, and asbestos contamination are set forth in the following attachments.

In the event right of entry is not available to ALL parcels of right-of-way and/or all work that is to be accomplished by others on the date set forth in the contract for the Notice to Proceed is not complete, the Department will issue a restricted Notice to Proceed.

STATUS OF RIGHT-OF-WAY
STP-0003-01(193)
107192-301000 & 302000
Harrison County

All rights of way and legal rights of entry have been acquired **except:**

None.

ASBESTOS CONTAMINATION STATUS OF BUILDINGS
TO BE REMOVED BY THE CONTRACTOR
STP-0003-01(193)
107192 - 301000 & 302000
Harrison County
September 14, 2017

Reference is made to notices to bidders entitled "Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP)" and "Removal of Obstructions".

The following pertinent information is furnished concerning asbestos containing materials (ACMs), if any, found in buildings to be removed by the Contractor.

There is no Right of Way required for this project. There are no buildings to be removed by the contractor.

STATUS OF POTENTIALLY CONTAMINATED SITES
STP-0003-01(193)
107192-301000 & 302000
Harrison County
September 14, 2017

THERE IS NO RIGHT OF WAY REQUIRED FOR THIS PROJECT. NO INITIAL SITE ASSESSMENT WILL BE PERFORMED. IF CONTAMINATION ON EXISTING RIGHT OF WAY IS DISCOVERED, IT WILL BE HANDLED BY THE DEPARTMENT.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

Inter-Departmental Memorandum

TO:	Ann Russell Right of Way Division	**DATE:**	September 14, 2017
FROM:	Keith Steele District Preconstruction Engineer	**SUBJECT OR PROJECT NO:**	STP-0003-01(193) 107192/301 & 302000
INFORMATION COPY TO:	File Trudi Loflin (84-01)	**COUNTY:**	Harrison

ENCROACHMENT CERTIFICATION

This is to certify that the above referenced project has been inspected and there are no encroachments.

STATUS OF UTILITIES
PROJECT NO. STP-0003-01(193) – 107192/301 & 302000
HARRISON COUNTY

All work associated with this project is to be done within existing rights-of-way. No conflict with contractor's operations is anticipated.

Forty-eight hours prior commencing any excavation operations the contractor is advised to call MS One-Call at 1 800-227-6477.

ROW STATUS REPORT OF AFFECTED RAILROAD FACILITIES

PROJECT EXTERNAL NUMBER: STP-0003-01(193)
PROJECT FMS NUMBER: 107192/301 & 302000
TERMINI: US 90 Pedestrian Crossing in Biloxi
COUNTY: Harrison

DATE: September 14, 2017

There are no railroad facilities affected by the above referenced project.

Improvements to be included in Notice to Bidders to be removed by the Construction Contractor
FMS Construction Project No: 107192-301000 & 302000
External ROW No: STP-0003-01(193)

Parcel No:
Station No:
Property Owner:
Description/Pictures:

NA

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO NOTICE TO BIDDERS NO. 7

DATE: 01/17/2017

The goal is 2 percent for the Disadvantaged Business Enterprise. The low bidder is required to submit Form OCR-481 for all DBEs. Bidders are advised to check the bid tabulation link for this project on the MDOT website at:

http://sp.gomdot.com/Contract%20Administration/BidSystems/Pages/letting%20calendar.aspx

Bid tabulations are usually posted by 3:00 pm on Letting Day.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 7 **CODE: (IS)**

DATE: 03/01/2017

SUBJECT: Disadvantaged Business Enterprises In Federal-Aid Highway Construction

This contract is subject to the "Moving Ahead for Progress in the 21st Century Act (MAP-21)" and applicable requirements of "Part 26, Title 49, Code of Federal Regulations". Portions of the Act are set forth in this Notice as applicable to compliance by the Contractor and all of the Act, and the MDOT DBE Program, is incorporated by reference herein.

The Department has developed a Disadvantaged Business Enterprise Program that is applicable to this contract and is made a part thereof by reference.

Copies of the program may be obtained from:

Office of Civil Rights
Mississippi Department of Transportation
P. O. Box 1850
Jackson, Mississippi 39215-1850

POLICY

It is the policy of the Mississippi Department of Transportation to provide a level playing field, to foster equal opportunity in all federally assisted contracts, to improve the flexibility of the DBE Program, to reduce the burdens on small businesses, and to achieve that amount of participation that would be obtained in a non-discriminatory market place. In doing so, it is the policy of MDOT that there will be no discrimination in the award and performance of federally assisted contracts on the basis of race, color, sex, age, religion, national origin, or any handicap.

ASSURANCES THAT CONTRACTORS MUST TAKE

MDOT will require that each contract which MDOT signs with a sub-recipient or a Contractor, and each subcontract the Prime Contractor signs with a Subcontractor, includes the following assurances:

"The Contractor, sub-recipient or Subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR 26 in the award and administration of federally assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as MDOT deems appropriate."

DEFINITIONS

For purposes of this provision the following definitions will apply:

"Disadvantaged Business" means a small business concern: (a) which is at least 51 percent owned by one or more socially and economically disadvantaged individual(s) or in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more socially and economically disadvantaged individual(s); and (b) whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individual(s) who own it. It is important to note that the business owners themselves must control the operations of the business. Absentee ownership or title ownership by an individual who does not take an active role in controlling the business is not consistent with eligibility as a DBE under CFR 49 Part 26.71.

CONTRACTOR'S OBLIGATION

The Contractor and all Subcontractors shall take all necessary and reasonable steps to ensure that DBE firms can compete for and participate in the performance of a portion of the work in this contract and shall not discriminate on the basis of race, color, national origin, religion or sex. Failure on the part of the Contractor to carry out the DBE requirements of this contract constitutes a breach of contract and after proper notification the Department may terminate the contract or take other appropriate action as determined by the Department.

When a contract requires a zero percent (0%) DBE goal, the Contractor still has the responsibility to take all necessary and reasonable steps to ensure that DBE firms can compete for and participate in the performance of the work in the contract. In this case, all work performed by a certified DBE firm is considered to be a "race neutral" measure and the Department will receive DBE credit towards the overall State goals when the DBE firm is paid for their work. If the Prime Contractor is a certified DBE firm, the Department can receive DBE credit only for the work performed by the Prime Contractor's work force or any work subcontracted to another DBE firm. Work performance by a non-DBE Subcontractor is not eligible for DBE credit.

CONTRACT GOAL

The goal for participation by DBEs is established for this contract in the attached Supplement. The Contractor shall exercise all necessary and reasonable steps to ensure that participation is equal to or exceeds the contract goal.

If the percentage of the contract that is proposed for DBEs is 1% or greater, the Contractor shall agree to meet or exceed the contract goal on the last bid sheet of the proposal.

The apparent lowest responsive bidder shall submit to the Office of Civil Rights Form OCR-481, signed by the Prime Contractor and the DBE Subcontractors, no later than the 3rd business day after opening of the bids.

Form OCR-481 is available on the MDOT website at GoMDOT.com, then Divisions, Civil Rights, Forms, DBE, MDOT Projects, or by calling 601-359-7466.

The OCR-481 Form must contain the following information:

The name and address of each certified DBE Contractor / Supplier;

The Reference Number, percent of work and the dollar amount of each item. If a portion of an item is subcontracted, a breakdown of that item including quantities and unit price must be attached, detailing what part of the item the DBE firm is to perform and who will perform the remainder of the item.

If the DBE Commitment shown on the last bid sheet of the proposal, does not equal or exceed the contract goal, the bidder must submit, to MDOT Contract Administration Division prior to bid opening, information to satisfy the Department that adequate good faith efforts have been made to meet the contract goal.

Failure of the lowest bidder to furnish acceptable proof of good faith efforts, submitted to MDOT Contract Administration Division prior to bid opening, shall be just cause for rejection of the proposal. Award may then be made to the next lowest responsive bidder or the work may be re-advertised.

The following factors are illustrative of matters the Department will consider in judging whether or not the bidder has made adequate good faith effort to satisfy the contract goal.

(1) Whether the bidder attended the pre-bid meeting that was scheduled by the Department to inform DBEs of subcontracting opportunities;

(2) Whether the bidder advertised in general circulation, trade association, and minority-focus media concerning the subcontracting opportunities;

(3) Whether the bidder provided written notice to a reasonable number of specific DBEs that their interest in the contract is being solicited;

(4) Whether the bidder followed up initial solicitations of interest by contacting DBEs to determine with certainty whether they were interested;

(5) Whether the bidder selected portions of the work to be performed by DBEs in order to increase the likelihood of meeting the contract goal;

(6) Whether the bidder provided interested DBEs with adequate information about the plans, specifications and requirements of the contract;

(7) Whether the bidder negotiated in good faith with interested DBEs and did not reject them as unqualified without sound reasons based on a thorough investigation of their capabilities; and

(8) Whether the bidder made efforts to assist interested DBEs in obtaining any required bonding or insurance.

(9) Whether the bidder has written notification to certified DBE Contractors soliciting subcontracting for items of work in the contract.

(10) Whether the bidder has a statement of why an agreement was not reached.

The bidder's execution of the signature portion of the proposal shall constitute execution of the following assurance:

> The bidder hereby gives assurance pursuant to the applicable requirements of "Moving Ahead for Progress in the 21st Century Act (MAP-21)" and applicable requirements of "Part 26, Title 49, Code of Federal Regulations" that the bidder has made a good faith effort to meet the contract goal for DBE participation for which this proposal is submitted.

DIRECTORY

A list of "Certified DBE Contractors" which have been certified as such by the Mississippi Department of Transportation and other Unified Certification Partners (UPC) can be found on the Mississippi Department of Transportation website at www.gomdot.com. The list is in the top left corner of the current Letting Calendar under Contracts & Letting. The DBE firm must be certified at the time the project is let and approved by MDOT to count towards meeting the DBE goal.

REPLACEMENT

If a DBE Subcontractor cannot perform satisfactorily, and this causes the OCR-481 commitment to fall below the contract goal, the Contractor shall take all necessary reasonable steps to replace the DBE with another certified DBE Subcontractor or submit information to satisfy the Mississippi Department of Transportation that adequate good faith efforts have been made to replace the DBE. The replacement DBE must be a DBE who was on the Department's list of "Certified DBE Contractors" when the job was let, and who is still active. All DBE replacements must be approved by the Department.

Under no circumstances shall the Prime or any Subcontractor perform the DBE's work (as shown on the OCR-481) without prior written approval from the Department. See "Sanctions" at the end of this document for penalties for performing DBE's work.

When a Contractor proposes to substitute/replace/terminate a DBE that was originally named on the OCR-481, the Contractor must obtain a release, in writing, from the named DBE explaining why the DBE Subcontractor cannot perform the work. A copy of the original DBE's release must be attached to the Contractor's written request to substitute/replace/terminate along with appropriate Subcontract Forms for the substitute/replacement/terminated Subcontractor, all of which must be submitted to the DBE Coordinator and approved, in advance, by MDOT.

GOOD FAITH EFFORTS

To demonstrate good faith efforts to replace any DBE that is unable to perform successfully, the Contractor must document steps taken to subcontract with another certified DBE Contractor. Such documentation shall include no less than the following:

(1) Proof of written notification to certified DBE Contractors by certified mail that their interest is solicited in subcontracting the work defaulted by the previous DBE or in subcontracting other items of work in the contract.

(2) If the Prime Contractor is a certified DBE firm, only the value of the work actually performed by the DBE Prime can be counted towards the project goal, along with any work subcontracted to a certified DBE firm.

(3) If the Contractor is not a DBE, the work subcontracted to a certified DBE Contractor will be counted toward the goal.

(4) The Contractor may count toward the goal a portion of the total dollar value of a contract with a joint venture eligible under the standards of this provision equal to the percentage of the DBE partner in the joint venture.

(5) Expenditures to DBEs that perform a commercially useful function may be counted toward the goal. A business is considered to perform a commercially useful function when it is responsible for the execution of a distinct element of the work and carries out its responsibilities by actually performing, managing, and supervising the work involved.

(6) The Contractor may count 100% of the expenditures for materials and supplies obtained from certified DBE suppliers and manufacturers that produce goods from raw materials or substantially alters them for resale provided the suppliers and manufacturers assume the actual and contractual responsibility for the provision of the materials and supplies. The Contractor may count sixty percent (60%) of the expenditures to suppliers that are not manufacturers, provided the supplier performs a commercially useful function in the supply process. Within 30 days after receipt of the materials, the Contractor shall furnish to the DBE Coordinator invoices from the certified supplier to verify the DBE goal.

(7) Any work that a certified DBE firm subcontracts or sub-subcontracts to a non-DBE firm will not count towards the DBE goal.

(8) Only the dollars actually paid to the DBE firm may be counted towards the DBE goal.

Failure of the Contractor to demonstrate good faith efforts to replace a DBE Subcontractor that cannot perform as intended with another DBE Subcontractor, when required, shall be a breach of contract and may be just cause to be disqualified from further bidding for a period of up to 12 months after notification by certified mail.

PRE-BID MEETING

A pre-bid meeting will be held in Amphitheater 1 & 2 of the Hilton Jackson located at I-55 and County Line Road, Jackson, Mississippi at 2:00 P.M. on the day preceding the date of the bid opening.

This meeting is to inform DBE firms of subcontracting and material supply opportunities. Attendance at this meeting is considered of prime importance in demonstrating good faith effort to meet the contract goal.

PARTICIPATION / DBE CREDIT

Participation shall be counted toward meeting the goal in this contract as follows:

(1) If the Prime Contractor is a certified DBE firm, only the value of the work actually performed by the DBE Prime can be counted towards the project goal, along with any work subcontracted to a certified DBE firm.

(2) If the Contractor is not a DBE, the work subcontracted to a certified DBE Contractor will be counted toward the goal.

(3) The Contractor may count toward the goal a portion of the total dollar value of a contract with a joint venture eligible under the standards of this provision equal to the percentage of the DBE partner in the joint venture.

(4) Expenditures to DBEs that perform a commercially useful function may be counted toward the goal. A business is considered to perform a commercially useful function when it is responsible for the execution of a distinct element of the work and carries out its responsibilities by actually performing, managing, and supervising the work involved.

(5) The Contractor may count 100% of the expenditures for materials and supplies obtained from certified DBE suppliers and manufacturers that produce goods from raw materials or substantially alters them for resale provided the suppliers and manufacturers assume the actual and contractual responsibility for the provision of the materials and supplies. The Contractor may count sixty percent (60%) of the expenditures to suppliers that are not manufacturers, provided the supplier performs a commercially useful function in the supply process. Within 30 days after receipt of the materials, the Contractor shall furnish to the DBE Coordinator invoices from the certified supplier to verify the DBE goal.

(6) Any work that a certified DBE firm subcontracts or sub-subcontracts to a non-DBE firm will not count towards the DBE goal.

(7) Only the dollars actually paid to the DBE firm may be counted towards the DBE goal. The participation of a DBE Firm cannot be counted towards the Prime Contractor's DBE goal until the amount being counted towards the goal has been paid to the DBE.

AWARD

Award of this contract to the low bidder will be contingent upon the following conditions:

(1) Concurrence from Federal Highway Administration, when applicable.

(2) Bidder must submit to the Office of Civil Rights for approval, Form OCR-481 (DBE Commitment) no later than the 3rd business day after opening of the bids to satisfy the Department and that adequate good faith efforts have been made to meet the contract goal. For answers to questions regarding Form OCR-481, contact the MDOT Office of Civil Rights at (601) 359-7466.

(3) Bidder must include OCR-485 information with their bid proposal listing all firms that submitted quotes for material supplies or items to be subcontracted. OCR-485 information

must be included with the bid proposal. If the OCR-485 information is not included as part of bid proposal, your bid will be deemed irregular.

Prior to the start of any work, the bidder must notify the Project Engineer, in writing, of the name of the designated "DBE Liaison Officer" for this project. This notification must be posted on the bulletin board at the project site.

DEFAULT

If the contract goal established by MDOT in this proposal is 1% or greater, it must be met to fulfill the terms of the contract. The Contractor may list DBE Subcontractors and items that exceed MDOT's contract goal, but should unforeseen problems arise that would prevent a DBE from completing its total commitment percentage, the Contractor will meet the terms of the contract as long as it meets or exceeds MDOT's Contract Goal. For additional information, refer to "Replacement" section of this Notice.

DBE REPORTS

(1) OCR-481: Refer to "CONTRACT GOAL" section of this Notice to Bidders for information regarding this form.

(2) OCR-482: OCR-482: At the conclusion of the project, before the final estimate is paid and the project is closed out, the Prime Contractor will submit to the Project Engineer for verification of quantities and further handling Form OCR-482 whereby the Contractor certifies to the amounts of payments made to all Contractors / Suppliers over the life of the contract. The Project Engineer shall submit the completed Form OCR-482 to the DBE Coordinator (Office of Civil Rights). Final acceptance of the project is dependent upon Contract Administration Division's receipt of completed Form OCR-482 which they will receive from the Office of Civil Rights.

(3) OCR-483: The Project Engineer/Inspector will complete Form OCR-483, the Commercially Useful Function (CUF) Performance Report, in accordance with MDOT S.O.P. No. OCR-03-09-01-483. Evaluations reported on this form are used to determine whether or not the DBE firm is performing a CUF. The Prime Contractor should take corrective action when the report contains any negative evaluations. DBE credit may be disallowed and/or other sanctions imposed if it is determined the DBE firm is not performing a CUF. This form should also be completed and returned to the DBE Coordinator (Office of Civil Rights).

(4) OCR-484: Each month, the Prime Contractor will submit to the Project Engineer OCR-484 that certifies payments to all Subcontractors and shows all firms even if the Prime Contractor has paid no monies to the firm during that estimate period (negative report). The Project Engineer will attach the form to the monthly estimate before forwarding to the Contract Administration Division for further processing. Failure of the Contractor to submit the OCR-484 will result in the estimate not being processed and paid.

(5) OCR-485: ALL BIDDERS must submit signed form with bid proposal of all firms that submitted quotes for material supplies or items to be subcontracted. If the OCR-485 information is not included as part of bid proposal, the bid will be deemed irregular.

(6) OCR-487: Only used by Prime Contractors that are certified DBE firms. This form is used in determining the exact percentage of DBE credit for the specified project. It should be returned to MDOT with the OCR-481 form, or can also be returned with the Permission to Subcontract Forms (CAD-720, CAD-725 and CAD-521).

DBE Forms, can be obtained from the Office of Civil Rights Division, MDOT Administration Building, 401 North West Street, Jackson, MS, or at www.gomdot.com under Divisions, Civil Rights, and Forms.

SANCTIONS

The Department has the option to enforce any of the following penalties for failure of the Prime Contractor to fulfill the DBE goal as stated on the OCR-481 form or any violations of the DBE program guidelines:

(1) Disallow credit towards the DBE goal

(2) Withhold progress estimate payments

(3) Deduct from the final estimate or recover an amount equal to the unmet portion of the DBE goal which may include additional monetary penalties as outlined below based on the number of offenses and the severity of the violation as determined by MDOT.

1st Offense	10% of unmet portion of goal	or	$5,000 lump sum payment	or	Both
2nd Offense	20% of unmet portion of goal	or	$10,000 lump sum payment	or	Both
3rd Offense	40% of unmet portion of goal	or	$20,000 lump sum payment	or	$20,000 lump sum payment and debarment

(4) Debar the Contractor involved from bidding on MDOT federally funded projects.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 8 **CODE: (SP)**

DATE: 07/19/2017

SUBJECT: Errata and Modifications to the 2017 Standard Specifications

Page	Subsection	Change
16	102.06	In the seventh full paragraph, change "Engineer" to "Director."
33	105.05.1	In the sixth sentence, change "Contract Administration Engineer" to "Contract Administration Director."
34	105.05.2.1	In subparagraph 2, change "SWPPP, ECP" to "SWPPP and the ECP"
35	105.05.2.2	In subparagraphs 2, add " and" to the end of the sentence. In subparagraph 3, remove ", and" and add ".".
90	109.04.2	In the last paragraph of subparagraph (a), place a period "." at the end of the sentence.
93	109.04.2	In the last paragraph of subparagraph (g), place a period "." at the end of the sentence. Also, in the first paragraph of subparagraph (h), place a period "." at the end of the sentence.
98	109.11	In the third sentence, change "Engineer" to "Director."
219	308.04	In the last sentence of the last paragraph, change "Contractor's decision" to "Engineer's decision."
300	405.02.5.9	In the first sentence of the second paragraph, change "Hot Mix Asphalt" to "Asphalt Mixtures."
502	630.01.1	In the first paragraph, change "AASHTO" to "AASHTO's LRFD".
532	642.02.6.6.2	Change the subsection number from "642.02.6.6.2" to "632.02.6.6.2"
532	642.02.6.6.2	Change "Section 661" to "Section 907-661."
532	632.02.6.6.4	Change "Subsection 663.02.2" to "Subsection 907-663.02.2."
554	634.05	In the description for 634-A, change "___' Pole" to "___' Shaft."

688	630.03.2	Change the subsection number from "630.03.2" to "680.03.2."
725	702.08.3	In the second sentence of the first paragraph, change "hot-mix" to "asphalt."
954	804.02.13.1.6	In the definition for "M" in the % Reduction formulas, change "paragraph 7.3" to "paragraph 5.3."

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 9 **CODE: (IS)**

DATE: 03/01/2017

SUBJECT: Federal Bridge Formula

Bidders are hereby advised that the latest revision of Federal Highway Administration Publication No. FHWA-HOP-06-105, **BRIDGE FORMULA WEIGHTS**, dated August 2006, is made a part of this contract when applicable.

Prior to the preconstruction conference, the Contractor shall advise the Engineer, in writing, what materials, if any, will be delivered to the jobsite via Interstate route(s).

Copies of the **BRIDGE FORMULA WEIGHTS** publication may be obtained by contacting:

Federal Highway Administration
400 7th Street, SW
Washington, DC 20590
(202) 366-2212

or

http://www.ops.fhwa.dot.gov/Freight/publications/brdg_frm_wghts/bridge_formula_all_rev.pdf

An on line **BRIDGE FORMULA WEIGHTS CALCULATOR** is available at

http://ops.fhwa.dot.gov/freight/sw/brdgcalc/calc_page.htm

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 10 **CODE: (IS)**

DATE: 03/01/2017

SUBJECT: DUNS Requirement for Federal Funded Projects

Bidders are advised that the Prime Contractor must maintain current registrations in the System for Award Management (http://www.sam.gov) at all times during this project. A Dun and Bradstreet Data Universal Numbering System (DUNS) Number (http://www.dnb.com) is one of the requirements for registration in the System for Award Management.

Bidders are also advised that prior to the award of this contract, they MUST be registered in the System for Award Management.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 12 **CODE: (IS)**

DATE: 03/01/2017

SUBJECT: MASH Compliant Devices

Bidders are hereby advised that the Standard Specifications may require certain traffic control and permanent safety hardware devices to meet the requirements of the Manual for Assessing Safety Hardware (MASH). However, devices meeting the requirements of NCHRP Report 350 will be allowed until the mandatory effective date for MASH compliance. The following table shows the effective dates for MASH compliant devices.

Device	Effective Date for MASH Compliance
W-beam barriers, cast-in-place concrete barriers	December 31, 2017
W-beam terminals	June 30, 2018
Cable barriers, cable barrier terminals, crash cushions	December 31, 2018
Bridge rails, transitions, all other longitudinal barriers including portable barriers installed permanently, all other terminals, sign supports, all other breakaway hardware	December 31, 2019

Temporary work zone devices, including portable barriers manufactured after December 31, 2019, must have been successfully tested to the 2016 Edition of MASH. Such devices manufactured on or before this date and successfully tested to NCHRP Report 350 or the 2009 Edition of MASH may continue to be used throughout their normal service lives.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 296 **CODE: (SP)**

DATE: 07/25/2017

SUBJECT: Reduced Speed Limit Signs

Bidders are advised that when the plans or contract documents require the speed limit on a project to be reduced, the Contractor shall begin work within 48 hours of installing the reduced speed limit signs. Should the Contractor not start work or have no plans to start work within 48 hours of installing the signs, the reduced speed limit signs shall be covered and existing speed limit signs uncovered.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 370 **CODE: (SP)**

DATE: 8/30/2017

SUBJECT: Contract Time

PROJECT: STP-0003-01(193) / 107192301 & 302 – Harrison County

The calendar date for completion of work to be performed by the Contractor for this project shall be **December 14, 2018** which date or extended date as provided in Subsection 108.06 shall be the end of contract time. It is anticipated that the Notice of Award will be issued no later than **November 14, 2017** and the effective date of the Notice to Proceed / Beginning of Contract Time will be **March 15, 2018**.

Should the Contractor request a Notice to Proceed earlier than **March 15, 2018** and it is agreeable with the Department for an early Notice to Proceed, the requested date will become the new Notice to Proceed date.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 371

DATE: 9/13/2017

SUBJECT: Specialty Items

PROJECT: STP-0003-01(193)/107192301 & STP-0003-01(193)/107192302 - HARRISON

Pursuant to the provisions of Section 108, the following work items are hereby designated as "Specialty Items" for this contract. Bidders are reminded that these items must be subcontracted in order to be considered as specialty items.

CATEGORY: CONCRETE

Line No	Pay Item	Description
0150	503-C010	Saw Cut, Full Depth

CATEGORY: CURBING, SIDEWALKS, GUTTERS

Line No	Pay Item	Description
0180	609-B001	Concrete Curb, Doweled
0190	609-D013	Combination Concrete Curb and Gutter Type 3B

CATEGORY: EROSION CONTROL

Line No	Pay Item	Description
0100	216-B001	Solid Sodding, Bermuda
0110	219-A001	Watering
0120	234-A001	Temporary Silt Fence
0130	234-D001	Inlet Siltation Guard
0140	237-A002	Wattles, 20"

CATEGORY: PAVEMENT STRIPING AND MARKING

Line No	Pay Item	Description
0300	626-H002	Thermoplastic Double Drop Legend, White

CATEGORY: SURVEY AND STAKING

Line No	Pay Item	Description
0360	699-A001	Roadway Construction Stakes

CATEGORY: TRAFFIC CONTROL - PERMANENT

Line No	Pay Item	Description
0310	635-A076	Traffic Signal Head, Type 6
0320	637-A002	Pullbox Enclosure, Type 2
0330	645-B001	Accessible Pedestrian Detection Assembly
0340	647-A001	Removal of Existing Traffic Signal Equipment
0350	653-A002	Traffic Sign, Type III

CATEGORY: TRAFFIC CONTROL - TEMPORARY

Line No	Pay Item	Description
0220	619-D1001	Standard Roadside Construction Signs, Less than 10 Square Feet
0230	619-D2001	Standard Roadside Construction Signs, 10 Square Feet or More
0240	619-E3001	Changeable Message Sign
0250	619-F1006	Portable Median Barrier, Less Than or Equal to 45 MPH
0260	619-F2002	Remove and Reset Portable Median Barrier
0270	619-G4005	Barricades, Type III, Single Faced
0280	619-G7001	Warning Lights, Type "B"

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 372 **CODE: (SP)**

DATE: 8/29/2017

SUBJECT: Pay Item Correction

PROJECT: STP-0003-01(193) / 107192301 & 302 – Harrison County

Bidders are hereby advised that the following pay items have been revised from what is shown on plan Summary of Quantities, but are correctly shown on the bid items:

- 907-619-E3001 Changeable Message Sign ---3 Each
  Changed to 619-E3001

- 635-A046 Traffic Signal Head, Type 6 LED ---6 Each
  Changed to 653-A076 **Traffic Signal Head, Type 6**

- 653-A001 Traffic Sign, Encapsulated Lens ---14 Square Feet
  Changed to 653-A002 **Traffic Sign, Type 3**

General Decision Number: MS170237 01/06/2017 MS237

Superseded General Decision Number: MS20160237

State: Mississippi

Construction Type: Highway

County: Harrison County in Mississippi.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.20 for calendar year 2017 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2017. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/06/2017

SUMS2010-056 08/04/2014

	Rates	Fringes
CARPENTER (Form Work Only)	$ 14.43	0.00
CEMENT MASON/CONCRETE FINISHER	$ 15.25	0.00
ELECTRICIAN	$ 25.57	6.79
HIGHWAY/PARKING LOT STRIPING: Truck Driver (Line Striping Truck)	$ 14.75	0.00
INSTALLER - SIGN	$ 13.41	0.00
INSTALLER: Guardrail	$ 11.78	0.00
IRONWORKER, REINFORCING	$ 17.33	0.00
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor	$ 12.27	0.00
LABORER: Common or General	$ 11.00	0.00
LABORER: Flagger	$ 11.16	0.00
LABORER: Grade Checker	$ 15.63	0.00

LABORER: Landscape.....$ 12.00 0.00

LABORER: Luteman.....$ 12.88 0.00

LABORER: Mason Tender - Cement/Concrete.....$ 13.14 0.00

LABORER: Pipelayer.....$ 15.00 0.00

LABORER: Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper.....$ 13.19 0.00

OPERATOR: Asphalt Spreader.....$ 14.83 0.00

OPERATOR: Backhoe/Excavator/Trackhoe.....$ 15.62 0.00

OPERATOR: Bobcat/Skid Steer/Skid Loader.....$ 11.86 0.00

OPERATOR: Broom/Sweeper.....$ 14.25 0.00

OPERATOR: Bulldozer.....$ 15.47 0.00

OPERATOR: Concrete Saw.....$ 14.96 3.27

OPERATOR: Crane.....$ 15.89 0.00

OPERATOR: Distributor.....$ 13.87 0.00

OPERATOR: Grader/Blade.....$ 16.44 0.00

OPERATOR: Loader.....$ 14.38 0.00

OPERATOR: Mechanic.....$ 19.33 0.00

OPERATOR: Milling Machine.....$ 15.44 0.00

OPERATOR: Oiler.....$ 12.22 0.00

OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....$ 15.81 0.00

OPERATOR: Roller (All Types)....$ 14.23 0.00

OPERATOR: Scraper.....$ 14.00 0.00

OPERATOR: Tractor.....$ 12.29 0.00

TRUCK DRIVER: Flatbed Truck.....$ 14.72 0.00

TRUCK DRIVER: Lowboy Truck.....$ 11.00 0.00

TRUCK DRIVER: Mechanic.....$ 12.31 0.00

TRUCK DRIVER: Water Truck.....$ 17.08 0.00

TRUCK DRIVER: Dump Truck (All

Types).....$ 14.32 0.00

TRUCK DRIVER: Semi/Trailer
Truck.....$ 14.36 0.00

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

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the

most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

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

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

On survey related matters, initial contact, including requests

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

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

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

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

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

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

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

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

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

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END OF GENERAL DECISION

SUPPLEMENT TO FORM FHWA-1273

DATE: **01/06/2016**

SUBJECT: **Final Certificate and Contract Provisions for Subcontracts**

All subcontracts shall be in writing and contain all pertinent provisions and requirements of the prime contract.

Each "Request for Permission to Subcontract" (Mississippi Department of Transportation Form CAD-720) shall include a copy of subcontract upon request for review by the Mississippi Department of Transportation. The federal contract provisions may be omitted from the subcontract copy submitted for review provided the Contractor certifies that the provisions will be physically incorporated into the agreement furnished to the Subcontractor.

In lieu of submitting a copy of the subcontract for review, the Contractor may certify that the subcontract agreement is in writing and that it contains all the requirements and pertinent provisions of the prime contract.

Each Subcontractor will be required to provide a copy of the subcontract agreement for contract compliance reviews, along with physical evidence (copy of FHWA-1273) that requirements and pertinent provisions have been provided for review and adherence.

The Contractor is hereby advised of the requirements set forth in the following Attachment (Title 46 - Shipping) as it pertains to the implementation of Cargo Preference Act (CPA) requirements in the Federal-aid Highway Program.

By signing this contract, the Contractor agrees to conform to the requirements of the CPA.

Attachment

Title 46- Shipping

Volume: 8
Date: 2014-10-01
Original Date: 2014-10-01
Title: Section 381.7 - Federal Grant, Guaranty, Loan and Advance at Funds Agreements.
Context: Title 46- Shipping. CHAPTER II- MARITIME ADMINISTRATION, DEPARTMENT OF TRANSPORTATION. SUBCHAPTER J - MISCELLANEOUS. PART 381 - CARGO PREFERENCE-U.S.-FLAG VESSELS.

§ 381.7 Federal Grant, Guaranty, Loan and Advance of Funds Agreements.

In order to insure a fair and reasonable participation by privately owned United States-flag commercial vessels in transporting cargoes which are subject to the Cargo Preference Act of 1954 and which are generated by U.S. Government Grant, Guaranty, Loan and/or Advance of Funds Programs, the head of each affected department or agency shall require appropriate clauses to be inserted in those Grant. Guaranty$_1$ Loan and/or Advance of Funds Agreements and all third party contracts executed between the borrower/grantee and other parties, where the possibility exists for ocean transportation of items procured, contracted for or otherwise obtained by or on behalf of the grantee, borrower, or any of their contractors or subcontractors. The clauses required by this part shall provide that at least 50 percent of the freight revenue and tonnage of cargo generated by the U.S. Government Grant, Guaranty, Loan or Advance of Funds be transported on privately owned United States-flag commercial vessels. These clauses shall also require that all parties provide to the Maritime Administration the necessary shipment information as set forth in § 381.3. A copy of the appropriate clauses required by this part shall be submitted by each affected agency or department to the Secretary, Maritime Administration, for approval no later than 30 days after the effective date of this part. The following are suggested acceptable clauses with respect to the use of United States-flag vessels to be incorporated in the Grant, Guaranty, Loan and/or Advance of Funds Agreements as well as contracts and subcontracts resulting therefrom:

(a) *Agreement Clauses.* "Use of United States-flag vessels:

"(1) Pursuant to Pub. L 664 (43 U.S.C. 1241(b)) at least 50 percent of any equipment, materials or commodities procured, contracted for or otherwise obtained with funds granted, guaranteed, loaned, or advanced by the U.S. Government under this agreement, and which may be transported by ocean vessel, shall be transported on privately owned United States-flag commercial vessels, if available.

"(2) Within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (a)(1) of this section shall be furnished to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590."

(b) *Contractor and Subcontractor Clauses.* "Use of United States-flag vessels: The contractor agrees --

"(1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

"(2) To furnish within 20 days following the date of loading for shipments originating within the United

States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

"(3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract."

(Reorganization Plans No.21 of 1950(64 Stat. 1273) and No. 7 of 1961 (75 Stat. 840) as amended by Pub. L 91.469 (84 Stat 1036) and Department of Commerce Organization Order 10-8 (38 FR 19707, July 23, 1973)) (42 FR 57126, Nov. 1, 1977]

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise

the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the

department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

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

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goal for female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work, is 6.9%.

Until further notice	Goals for minority participation for each trade (percent)
SHSA Cities:	
Pascagoula - Moss Point	16.9
Biloxi - Gulfport	19.2
Jackson	30.3
SMSA Counties:	
Desoto	32.3
Hancock, Harrison, Stone	19.2
Hinds, Rankin	30.3
Jackson	16.9
Non-SMSA Counties:	
George, Greene	26.4
Alcorn, Benton, Bolivar, Calhoun, Carroll, Chickasaw, Clay, Coahoma, Grenada, Itawamba, Lafayette, Lee, Leflore, Marshall, Monroe, Montgomery, Panola, Pontotoc, Prentiss, Quitman, Sunflower, Tallahatchie, Tate, Tippah, Tishomingo, Tunica, Union, Washington, Webster, Yalobusha	26.5
Attala, Choctaw, Claiborne, Clarke, Copiah, Covington, Franklin, Holmes, Humphreys, Issaquena, Jasper, Jefferson, Jefferson Davis, Jones Kemper, Lauderdale, Lawrence, Leake, Lincoln, Lowndes, Madison, Neshoba, Newton, Noxubee, Oktibbeha, Scott, Sharkey, Simpson, Smith, Warren, Wayne, Winston, Yazoo	32.0
Forrest, Lamar, Marion, Pearl River, Perry, Pike, Walthall	27.7
Adams, Amite, Wilkinson	30.4

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in CFR Part 60-4 shall be based on its implementation of the Equal Opportunity clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4.2(d). Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor, employer identification number of the subcontractor, estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is to the county and city (if any), stated in the advertisement.

5. The notification required in Paragraph 3 shall be addressed to the following:

Contract Compliance Officer
Mississippi Department of Transportation
P.O. Box 1850
Jackson, Mississippi 39215-1850

(06/28/2012)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-103-2 **CODE: (SP)**

DATE: 06/22/2017

SUBJECT: Award and Execution of Contract

Section 103, Award and Execution of Contract, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-103.01--Consideration of Proposal. Delete the second and third paragraphs of Subsection 103.01 on page 19, and substitute the following.

907-103.01.1--For Projects Constructed Without Federal Funds. Resident Contractors actually domiciled in Mississippi are to be granted preference over nonresidents in awarding of Contracts financed 100% with State funds.

In consideration of proposals that are equal to or in excess of $50,000 and financed 100% with State funds, a nonresident bidder domiciled in a state having laws granting preference to local Contractors will be considered for such contracts on the same basis as the nonresident bidder's state awards contracts to Mississippi Contractors bidding under similar circumstances. When a nonresident Contractor submits a bid equal to or in excess of $50,000 on a contract financed 100% with State funds, a copy of the current laws from the state of domicile and an explanation thereof pertaining to treatment of nonresident Contractors shall be attached. If no preferential treatment is provided for Contractors in the state of domicile and contracts are awarded to the lowest responsible bidder, a statement to this effect shall be attached. Should the attachment not accompany the bid when submitted, the Contractor shall have 10 days following the opening of the bids to furnish the required information to the Contract Administration Director for attachment to the bid. Failure to provide the attachment within 10 days will result in the nonresident Contractor’s bid being rejected and not considered for award. As used herein, the term "resident Contractor" includes a nonresident person, firm or corporation that has been qualified to do business in this State and has maintained a permanent full-time office in the State of Mississippi for two years prior to the submission of the bid, and the subsidiaries and affiliates of such a person, firm or corporation.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-821-3

DATE: 08/30/201

SUBJECT: Elevator-Stair Towers for Prefabricated Pedestrian Bridge

PROJECT: STP-0003-01(193) / 107192301 -- Harrison County

After Subsection 907-821.01.3 on page 2, add the following:

907-821.01.4--Elevator-Stair Towers for Prefabricated Pedestrian Bridge. Elevator-stair towers for prefabricated pedestrian bridge shall be constructed in accordance with the following.

DESCRIPTION: This Work shall consist of all construction work necessary in constructing a North Elevator-Stair Tower and South Elevator-Stair Tower for a prefabricated pedestrian bridge at Biloxi, Harrison County, Mississippi, Project No. STP-0003-01(193) / 107192301 in accordance with these Specifications and conforming to the Drawings.

It is the intention of these Specifications to provide the necessary items and instruction for a complete building including all code compliance. Omission of items or instruction necessary or considered standard good practice for the proper installation and construction of the building shall not relieve the Contractor of furnishing and installing such items and conforming to the building codes having jurisdiction.

DOCUMENT NUMBER	DOCUMENT TITLE	NO. OF PAGES
	DIVISION 00 PROCUREMENT AND CONTRACTING REQUIREMENTS (NOT USED)	
SECTION NUMBER	**SPECIFICATION SECTION TITLE**	**NO. OF PAGES**
	DIVISION 01- GENERAL REQUIREMENTS (NOT USED)	
	DIVISION 02- EXISTING CONDITIONS (NOT USED)	
	DIVISION 03- CONCRETE	
	SEE DIVISION 800 - BRIDGES AND STRUCTURES IN THE MISSISSIPPI STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2017, FOR DRILLED SHAFT, CAST-IN-PLACE AND PRECAST CONCRETE CONSTRUCTION REOUIREMENTS	
	DIVISION 04-MASONRY	
04 05 13	MASONRY ANCHORAGE AND REINFORCING	2
04 09 13	MASONRY MORTARING	3
04 22 00	CONCRETE UNIT MASONRY	3
	DIVISION 05- METALS	

05 12 00	STRUCTURAL STEEL FRAMING	6
05 40 00	COLD-FORMED METAL FRAMING	7
05 50 00	METAL FABRICATIONS	6
05 51 33	METAL LADDERS	3
05 51 34	LADDER SAFETY POST	3
	DIVISION 06 – WOOD AND PLASTIC (NOT USED)	
	DIVISION 07 - THERMAL AND MOISTURE PROTECTION	
07 26 00	VAPOR RETARDERS	2
07 54 00	THERMOPLASTIC MEMBRANE ROOFING	7
07 72 33	ROOF HATCHES	3
07 84 00	FIRESTOPPING	3
07 92 00	JOINT SEALANTS	7
	DIVISION 08 – OPENINGS	
08 11 13	HOLLOW METAL DOORS AND FRAMES	10
08 44 13	ALUMINUM CURTAIN WALL	6
08 71 00	DOOR HARDWARE	8
08 80 00	GLAZING	7
	DIVISION 09 - FINISHES	
09 05 15	COLOR DESIGN	2
09 29 00	GYPSUM BOARD	5
09 91 00	PAINTING	11
09 94 15	SPECIAL WALL COATINGS	5
	DIVISION 10 – 13 (NOT USED)	
	DIVISION 14 - CONVEYING SYSTEMS	
14 21 00	ELECTRIC TRACTION ELEVATOR	12
	DIVISIONS 15 – 22 (NOT USED)	
	DIVISION 23 HEATING, VENTILATING, AND AIR-CONDITIONING	
23 74 00	PACKAGED OUTDOOR HVAC EQUIPMENT	4
	DIVISIONS 24 – 25 (NOT USED)	

	DIVISION 26 - ELECTRICAL	
26 05 10	GENERAL REQUIREMENTS	7
26 05 20	CODES AND STANDARDS	2
26 05 23	CONTROL-VOLTAGE ELECTRICAL POWER CABLES	3
26 05 26	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS	2
26 05 29	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS	1
26 05 30	BASIC MATERIALS AND METHODS	2
26 05 33	RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS	8
26 05 40	UTILITY SERVICE	1
26 05 50	EQUIPMENT WIRING SYSTEMS	1
26 05 53	IDENTIFICATION FOR ELECTRICAL SYSTEMS	1
26 06 20	SCHEDULES FOR LOW-VOLTAGE ELECTRICAL DISTRIBUTION	1
26 22 00	LOW-VOLTAGE TRANSFORMERS	2
26 24 00	SWITCHBOARDS AND PANELBOARDS	2
26 27 16	ELECTRICAL CABINETS AND ENCLOSURES	2
26 27 26	WIRING DEVICES	3
26 51 00	INTERIOR LIGHTING	1
26 56 00	EXTERIOR LIGHTING	2
	DIVISIONS 29 – 30 (NOT USED)	
	DIVISION 31 EARTHWORK	
	SEE ROADWAY DRAWINGS	
	DIVISION 32 EXTERIOR IMPROVEMENTS	
	SEE PEDESTRIAN BRIDGE REQUIREMENTS ON DRAWINGS	
	DIVISION 33-49 (NOT USED)	

SECTION 04 05 13 MASONRY ANCHORAGE AND REINFORCING

PART 1 - GENERAL

1.01 Description

A. Scope:
1. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish all masonry accessories Work.
2. The types of masonry accessories required includes, but is not necessarily limited to, the following:
a. Continuous horizontal wire reinforcing and ties.

B. Related Sections:
1. Section 04 09 13 - Masonry Mortaring.
2. Section 04 22 00 - Concrete Unit Masonry.

1.02 Quality Assurance

A. Requirements of Regulatory Agencies: Provide accessories complying with the requirements established by governing authorities.

B. Reference Standards: Comply with applicable provisions and recommendations of the following, except where otherwise shown or specified.
1. ASTM A 82, Cold-Drawn Steel wire for Concrete Reinforcement.
2. ASTM A 116, Zinc-coated (Galvanized) Iron or Steel Farm-Field and Railroad Right-of-Way Wire Fencing.
3. ASTM A 153, Zinc-Coating (Hot Dip) on Iron and Steel Hardware.
4. ASTM A 615, Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

1.03 Submittals

Shop Drawings:

A. Submit for approval to ENGINEER copies of manufacturer's specifications and installation instructions for each masonry accessory required.

B. Include data substantiating that materials comply with specified requirements.

1.04 Produce Delivery, Storage and Handling

A. Delivery of Materials: Deliver accessories in original packages, plainly marked with identification of materials and manufacturer.

B. Storage of Materials: Store and cover materials to prevent corrosion and deterioration.

PART 2 - PRODUCTS

2.01 Materials

A. Continuous Wire Reinforcing and Ties for Masonry: Welded wire units prefabricated in straight lengths of not less than 10 feet, with matching corner "L" units. Fabricate from cold-drawn steel wire complying with ASTM A 82, with deformed continuous 9 gage side rods and plain 9 gage cross rods, with unit width of 1-1/2 to 2 inches less than thickness of wall or partition. All reinforcing shall be hot dipped galvanized after fabrication with 1.5 ounces per square foot of zinc coating complying with ASTM A 153, Class B-2 unless otherwise specified.

1. For all single-wythe masonry walls, use units fabricated as follows:
   a. Truss-type fabricated with two side rods and continuous diagonal cross-rods spaced not more than 16 inches on centers.
   b. Product and Manufacturer: Provide one of the following:
      (1) Single-wythe Wall Truss by Dur-O-Wal Incorporated.
      (2) Blok-Truss AA600 by AA Wire Products Company.
      (3) Or equal.
2. For all multiple-wythe masonry walls, use units fabricated as follows:
   a. Truss-type with three rods and continuous diagonal cross-rods spaced not more than 16 inches on centers.
   b. Product and Manufacturer:
      (1) Composite Wall Truss by Wire-Bond.
      (2) Cavity Wall Truss by Wire-Bond.
      (3) Or equal.

PART 3 - EXECUTION

3.01 Installation

Refer to Section 04 22 00 - Concrete Unit Masonry.

END OF SECTION

SECTION 04 09 13 MORTAR AND MASONRY

PART 1 - GENERAL

1.01 Description

Scope:

A. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish all mortar Work.

B. This Section specifies the mortar for masonry materials specified in Section 04 22 00 - Concrete Unit Masonry.

1.02 Quality Assurance

A. Source Quality Control:
1. Do not change source or brands of mortar materials during the course of the Work.
2. Where question of compliance to the requirements of this Section arise the mortar properties specification shall take precedence over the mortar proportion specifications.
3. Two air-entraining materials shall not be combined in mortar.

B. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
1. ASTM C 5, Quicklime for Structural Purposes.
2. ASTM C 91, Masonry Cement.
3. ASTM C 136, Sieve or Screen Analysis of Fine and Coarse Aggregates.
4. ASTM C 144, Aggregate for Masonry Mortar.
5. ASTM C 150, Portland Cement.
6. ASTM C 207, Hydrated Lime for Masonry Purposes.
7. ASTM C 270, Mortar for Unit Masonry.
8. UL, Design Numbers U901 through U908.

1.03 Submittals

Shop Drawings: Submit for approval, copies of manufacturer's specifications and instructions for each manufactured product.

1.04 Product Delivery, Storage and Handling

A. Delivery of Materials: Manufactured materials, such as cement and lime, shall be delivered and stored in their original containers, plainly marked with identification of materials and manufacturer.

B. Storage of Materials:
1. Store mortar materials off the ground in a dry location and under a properly constructed shelter using tarpaulins, felt paper, or polyethylene sheets.
2. Protect liquid admixtures from freezing.

PART 2 - PRODUCTS

2.01 Materials

A. Portland Cement: Provide the following for portland cement-lime mortars:

1. ASTM C 150, Type I.
2. Use ASTM C 150, Type III, high early strength, for laying masonry when outside temperature is less than 50□F.
3. Provide nonstaining portland cement of natural color.
4. Product and Manufacturer: Provide one of the following:
   a. Speed Portland Cement and Hi-Speed Portland Cement by Louisville Cement Company.
   b. Atlas Type I and Atlas Type III Portland Cement by Lehigh Portland Cement Company.
   c. Or equal.

B. Masonry Cement: Provide the following for masonry cement mortars:
1. ASTM C 91, Type S; proportioned as specified to comply with ASTM C 270.
2. Maximum Air Content, ASTM C 91: 18 percent.
3. Product and Manufacturer: Provide one of the following:
   a. Brixment Type S by Louisville Cement Company.
   b. Atlas Masonry Cement Type S by Lehigh Portland Cement Company.
   c. Or equal.

C. Hydrated Lime: ASTM C 207, Type S, or lime putty ASTM C 5.

D. Sand Aggregates: ASTM C 144.

E. Water: Free from injurious amounts of oils, acids, alkalis, or organic matter, and clean, fresh and potable.

F. Mortar Color: As selected by ENGINEER.

2.02 Mortar Mixes

A. General:
1. Anti-Freeze Admixture or Agents: Not permitted.
2. Calcium Chloride: Not permitted.

B. Mortar for Unit Masonry: Comply with ASTM C 270, Table 2. Do not substitute ASTM C91 masonry cement for ASTM C 150 portland cement without an approved Shop Drawing review by ENGINEER. Property Specification:
1. Average Compressive Strength, ASTM C 270: 1800 pounds per square inch.
2. Minimum Water Retention, ASTM C 270: 75 percent.
3. Maximum Air Content, ASTM C 270: 12 percent for portland cement-lime mortars and 18 percent for masonry cement mortars.

PART 3 - EXECUTION

3.01 Preparation

A. Measurement of Materials:
1. Cement and Hydrated Lime: Batched by the bag.
2. Sand: Batched by volume in suitably calibrated containers, provided proper allowance is made for bulking and consolidation and for weight per cubic foot, of contained moisture.

3. Proportion of volumetric Mixtures: One 94-pound sack of portland cement and one 50-pound sack of hydrated lime constitute nominal one cubic foot.
4. Shovel measurement: Not permitted.

B. Mortar Mixing:
1. Type of Mixer: Machine mix in approved mixer in which the quantity of water is accurately and uniformly controlled.
2. While mixer is in operation add approximately 3/4 the required water, 1/2 the sand, all the cement, then add remainder of sand.
3. Allow batch to mix briefly then add water in small quantities until satisfactory workability is obtained.
4. Mix for not less than five minutes after all materials have been added.
5. Hydrated Lime for Mortar Requiring Lime Content: Use dry-mix method. Turn over together the materials for each batch until the even color of the mixed, dry materials indicates that cementitious material has been thoroughly distributed throughout the mass, then add water to obtain required plasticity.
6. Lime putty if approved for use shall be prepared in accordance with ASTM C 5.
7. The mixer drum shall be completely emptied before recharging the next batch.
8. Limit batch size to avoid retempering. Retempering of mortar shall not be permitted.

3.02 Installation

Refer to Section 04 22 00 – Concrete Unit Masonry.

** END OF SECTION **

SECTION 04 22 00 CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.01 Description

A. Contractor shall furnish and install the following:
1. Concrete masonry units.

B. Related Sections: Section 04 05 13 - Masonry Mortaring.

1.02 Environmental Requirements

Maintain materials and surrounding air temperature to minimum 50°F prior to, during, and 48 hours after completion of masonry work.

1.03 Submittals

Test panels with project brick and color mortar required for ENGINEER'S approval.

PART 2 - PRODUCTS

2.01 Concrete Masonry Units

A. Concrete masonry units shall be in accordance with the requirements specified herein and the current issues of the following applicable specifications and standards:
1. Hollow Load-Bearing Units: ASTM C 90.
2. Solid Load-Bearing Units: ASTM C 145.
3. Concrete Building Brick: ASTM C 55.
4. Hollow Nonload-Bearing Units: ASTM C 129.
5. Calcium Silicate (Sand-Lime) Face Brick: ASTM C 73.
6. Prefaced Concrete Masonry Units: Federal Specification SS-C-621B.

B. Units specified by weight classification shall have oven-dry concrete weight densities, verified by test reports, as follows:
Light Weight: Less than 105 pcf.
Medium Weight: 105 to less than 125 pcf.
Normal Weight: 125 pcf or more.

C. Aggregates used in the manufacturing of concrete masonry units shall consist of one or more of the following: Expanded clay, shale, or slate lightweight aggregates meeting requirements of ASTM C 331, and sand gravel, or crushed stone normal weight aggregates meeting all but the grading requirements of ASTM C 33.

D. Units which will be exposed to view of painted shall have a uniform appearance and must be approved by the ENGINEER based on a representative sample of at least three units.

E. Lightweight aggregate units shall be normal modular size for 3/8 inch mortar joint. Thickness shall be as indicated on the drawings.

F. Concrete masonry units shall be held on yard storage for a minimum of 28 days before delivery to the job site and maximum moisture content shall be 30% of total absorption.

PART 3 - EXECUTION

3.01 Preparation

A. Verify items provided by other Sections of work are properly sized and located. Take special care to coordinate masonry work with requirements of Division 15 of specifications.

B. Establish lines, levels, and coursing. Protect from disturbance.

C. Provide temporary bracing during erection of masonry work. Maintain in place until building structure provides permanent bracing.

3.02 Coursing

A. Place masonry to lines levels indicated.

B. Maintain masonry courses to uniform width. Make vertical and horizontal joints equal and of uniform thickness.

C. Lay brick masonry units in running bond, unless drawings indicate different technique. Course one block unit and one mortar joint to equal 8 inches. Form weathered mortar joints. Lay concrete masonry units in running bond; form tooled concave joints.

D. Review control joint locations and configurations with ENGINEER prior to initiating the work. Control joint locations are indicated on the drawings.

3.03 Placing and Bonding

A. Lay masonry in full bed of mortar, properly jointed with other work. Buttering corners of joints, and deep or excessive furrowing of mortar joints are not permitted.

B. Fully bond intersections and external and internal corners.

C. Do not shift or tap masonry units after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.

D. Remove excess mortar.

E. Perform jobsite cutting with proper tools to provide straight unchipped edges. Take care to prevent breaking masonry unit corners or edges.

F. Provide 1/4" diameter weeps along bottom edge of all Face Brick Veneer Walls at 32-inches o.c.

3.04 Tolerances

A. Variation from Unit to Adjacent Unit: 1/32 inch maximum.

B. Variation from Plane of Wall: 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.

C. Variation from Plumb: 1/4 inch per story noncumulative.

D. Variation from Level Coursing: 1/8 inch in 3 feet; 1/4 inch in 10 feet.

E. Variation of Joint Thickness: 1/8 inch in 3 feet.

F. Maximum Variation from Cross Sectional Thickness of Walls: Plus or minus 1/4 inch.

3.05 Reinforcement and Anchorage

A. Install joint reinforcement at 16 inches o.c.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend 16 inches minimum each side of opening.

C. Place joint reinforcement continuous in first joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches. Extend 16 inches minimum each side of opening.

E. Place reinforcing bars supported and secured against displacement. Maintain position within 1/2 inch of true dimension.

3.06 Cutting and Fitting

A. Cut and fit for pipes, conduit and sleeves. Cooperate with other sections of work to provide correct size, shape, and location. Take special care to coordinate work of this section with requirements of Division 15 of these specifications.

B. Obtain approval prior to cutting or fitting any area not indicated or where appearance or strength of masonry work may be impaired.

3.07 Cleaning

A. Clean soiled surfaces with a non-acidic solution which will not harm masonry of adjacent materials. Consult masonry manufacturer for acceptable cleaners.

B. Use non-metallic tools in cleaning operations.

3.08 Protection

A. Provide protection without damaging completed work.

B. At day's end, cover unfinished walls to prevent moisture infiltration.

END OF SECTION

SECTION 05 12 00 STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes structural steel framing members, support members, with required bracing, welds, fasteners, base plates, bearing plates, grout, anchor bolts and other related items necessary to complete Project indicated by Contract Documents unless specifically excluded.

B. Related Sections:

1. Section 09 05 15 "Color Design".
2. Section 09 90 00 "Painting and Coating"

1.02 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.03 PERFORMANCE REQUIREMENTS

A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand loads indicated and comply with other information and restrictions indicated.

1. Select and complete connections using schematic details indicated and AISC 360.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication of structural-steel components. Shop drawings shall conform to requirements of current AISC Specifications.

1. Indicate sizes, spacing, connections, and location of structural members.
2. Indicate net weld lengths and welded connections with AWS welding symbols.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer and fabricator.

B. Welding certificates.

C. Mill test reports for structural steel, including chemical and physical properties.

D. Source quality-control reports.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.

B. Installer Qualifications: A qualified installer with a minimum of five (5) years experience.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

D. Comply with applicable provisions of the following specifications and documents:

1. AISC 303.
2. AISC 360.
3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

PART 2 - PRODUCTS

2.01 STRUCTURAL-STEEL MATERIALS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. W-Shapes: ASTM A 992/A 992M

C. Channels, Angles, M or, S-Shapes: ASTM A 572/A 572M, Grade 50.

D. Plate and Bar: ASTM A 572/A 572M, Grade 50.

E. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.

F. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.

G. Welding Electrodes: Comply with AWS requirements.

2.02 BOLTS, CONNECTORS, AND ANCHORS

A. General: All bolts not indicated otherwise on the Drawings are 3/4 inch. All connections not noted otherwise on the Drawings shall be framed connections.

B. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.

C. Unheaded Anchor Rods: ASTM F 1554, Grade 55, weldable.

1. Configuration: Hooked.
2. Finish: Plain

D. Headed Anchor Rods: ASTM F 1554, Grade 55, weldable, straight.

1. Finish: Plain

E. Threaded Rods: ASTM A 36/A 36M

1. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C

F. Clevises and Turnbuckles: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1035.

2.03 PRIMER

A. Primer: Shop coat paint, ICI Devflex 4020, Rustoleum 769, Tnemec 99, Southern Coatings 476, or approved equal. Shop coat shall be compatible with finish coats specified in Section 09 90 00 Painting and Coating.

2.04 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

1. Grout shall have a 14-day compressive strength of 6000 psi when mixed to its flowable state.

2.05 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.

1. Fabrication shall not proceed until MDOT Architect's approval is obtained.

2.06 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.07 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
2. Surfaces to be field welded.
3. Surfaces to be high-strength bolted with slip-critical connections.
4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
5. Galvanized surfaces.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:

1. SSPC-SP 3, "Power Tool Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2.08 SOURCE QUALITY CONTROL

A. Testing Agency: Engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports required by AHJ and ICC Building Code.

1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Bolted Connections: Shop-bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

1. Liquid Penetrant Inspection: ASTM E 165.
2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
3. Ultrasonic Inspection: ASTM E 164.
4. Radiographic Inspection: ASTM E 94.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

B. Base, Bearing and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.03 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 for type of bolt and type of joint specified.

1. Joint Type: Snug tightened

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

3.04 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

B. Bolted Connections: Bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325."

C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.

1. In addition to visual inspection, field welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

a. Liquid Penetrant Inspection: ASTM E 165.
b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
c. Ultrasonic Inspection: ASTM E 164.
d. Radiographic Inspection: ASTM E 94.

D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

END OF SECTION

SECTION 05 40 00 COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Provide all labor, materials and equipment necessary to complete the furnishing and installation of all cold-formed metal framing as shown, detailed and otherwise required, including light gage framing and exterior non-load bearing wall framing.

B. Related Sections: Steel studs for interior non-structural walls are specified in Section. 09 29 00 Gypsum Board.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of cold-formed steel framing product and accessory.

B. Shop Drawings:

1. Include layout, spacing, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
3. Drawings shall bear a certification stating that the system is designed to meet all governing codes and the loading requirements stated in paragraph 1.04. The Drawings shall be prepared and stamped by a registered professional engineer licensed in the State of Mississippi.

1.03 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Welding certificates.

C. Product test reports.

1.04 QUALITY ASSURANCE

A. Product Tests: Mill certificates or data from a qualified independent testing agency.

B. Systems designed and manufactured by Dale/Incor Industries ClarkDietrich products establish a minimum of quality required. Framing system shall meet or exceed all the requirements of the Standard Building Code, latest 2012 edition. Structural design of the system shall be the responsibility of the manufacturer.

1. The out-of-plane deflection for brick veneer walls shall not exceed the light gage framing members span length divided by 600 (L/600).

C. Welding Qualifications: Quality procedures and personnel according to AWS D1.1, "Structural Welding Code - Steel," and AWS D1.3, "Structural Welding Code - Sheet Steel."

D. AISC Specifications: Comply with AISI's Specification for the Design of Cold-Formed Steel Structural Members" for calculating structural characteristics of cold formed metal framing. Comply with CCFSS Technical Bulletin: AISI Specification Provisions for Screw Connections.

E. Installer qualifications: An experienced installer who has successfully completed cold-formed metal framing similar in material, design and extent to the indicated for this project.

1.05 DELIVERY, STORAGE AND HANDLING

A. Protect cold formed metal framing from corrosion, deformation or other damage during deliver, storage and handling.

B. Store cold-formed metal framing protected with a weatherproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AllSteel & Gypsum Products, Inc., Ft. Lauderdale, FL. Tel. (954) 587-1900.
2. ClarkDietrich,Columbus,West Chester, OH. Tel. (800) 873-2604 (513) 870-1100.
3. MarinoWARE, South Plainfield, NJ. Tel. (800) 627-4661.
4. Nuconsteel; a Nucor Company, Denton, TX. Tel. (940) 891-3090.
5. Southeastern Stud & Components, Inc., Montgomery, AL. Tel. (877) 473-7883.
6. Steel Construction Systems, Orlando, FL. Tel. (800) 548-8499.
7. Super Stud Building Products, Inc., Hattiesburg, MS. Tel. (601) 584-7550.
8. Steel Structural Systems, Louisville, KY. Tel. (877) 369-4252.

2.02 PERFORMANCE REQUIREMENTS

A. AISI Specifications and Standards: Unless more stringent requirements are indicated, comply with AISI S100 and AISI S200.

B. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.03 MATERIALS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:

1. Grade: As required by structural performance.
2. Coating:
   a. Interior Walls: G60 or A60 galvanized.
   b. Exterior walls: G90 galvanized.

C. Steel Sheet for Vertical Deflection Clips: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:

1. Grade: As required by structural performance.
2. Coating: G90 galvanized.

D. All stud and framing members shall be of the type and size as shown on the Drawings.

1. Provide 3 5/8 inch studs at elevator control room at gage as indicated by manufacturer's calculations, unless shown or specified otherwise.
2. All runner and end tracks, bridging and non-load bearing studs shall be of the type and size required.
3. 11, 12, 14 and 16 gage track and bridging shall be formed from steel that corresponds to the requirements of the following Standards with a minimum yield of 33,000 psi: Galvanized Material - ASTM A446-72, grade A.
4. All 16 gage steel studs and accessories shall be formed from steel that corresponds to the requirements of the following Standards with a minimum yield of 33,000 psi: Galvanized Material - ASTM A446-72, grade A.

2.04 FABRICATION

A. Framing Components: Framing components may be prefabricated into panels prior to erection. Prefabricated panels shall be square with components attached by welding to prevent racking. Handling and lifting of panels shall be done in a manner as to not cause distortion in any member.

1. Framing components shall be cut squarely for attachment to perpendicular members, or as required for an angular fit against abutting members. Members shall be held positively in place until properly fastened.

B. Axial Loaded Bearing Studs: Install in a manner which will assure that stud ends are positioned against the inside track web prior to stud and track attachment.

2.05 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.

B. Anchor Bolts: ASTM F 1554, Grade 36 or Grade 55, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C

C. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E 488 conducted by a qualified testing agency.

D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.

E. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.

1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

2.06 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20 or MIL-P-21035B.

B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107/C 1107M, with fluid consistency and 30-minute working time.

C. Shims: Load bearing, high-density multimonomer plastic, and nonleaching; or of cold-formed steel of same grade and coating as framing members supported by shims.

D. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

PART 3 - EXECUTION

3.01 PREPARATION

A. Install load bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch to ensure a uniform bearing surface on supporting concrete or masonry construction.

B. Install sealer gaskets at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.02 INSTALLATION, GENERAL

A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed steel framing according to AISI S200 and to manufacturer's written instructions unless more stringent requirements are indicated.

C. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.

D. Install framing members in one-piece lengths.

E. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

F. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.

G. Install insulation, specified in Section 07 21 00 "Thermal Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

H. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

I. Install all studs at 16 inches on center maximum spacing.

J. Erection Tolerances: Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.03 ERECTING FOR WINDLOAD MEMBERS

A. Tracks shall be securely anchored to the supporting structure in a manner which will transfer imposed load.

B. Studs shall be plumbed, aligned and securely attached to each side of the flange or web of the top and bottom tracks.

C. At track butt joints, abutting pieces of track shall be securely anchored to common structural element, or they shall be butt welded or spliced together.

D. Splices in wind loaded only studs shall be avoided if possible. When necessary, splice sections shall be of same or heavier size, a minimum of l8" long and attached in a manner to maintain original strength.

E. Jack studs shall be installed below window sills, above window and door headers, at free standing stair rails, and elsewhere to furnish structural support and shall be securely attached to supporting members.

F. Wall stud bridging shall be installed in accordance with manufacturer's recommendations.

G. Provisions for structure vertical movement shall be provided where required using the vertical slide clip or other means in accordance with manufacturer's recommendations.

H. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.04 ERECTING FOR AXIAL LOAD BEARING MEMBERS

A. Tracks shall be securely anchored to the supporting structure to properly transfer imposed loads.

B. Complete, uniform and level bearing support shall be provided for the bottom track at each bearing stud location. If not provided, install full size shims below bottom track at stud locations as needed or set bottom track in high strength grout.

C. At intersection or abutting track joints, abutting pieces of track shall be securely anchored to a common structural element, or they shall be spliced together.

D. Splices in axial loaded studs are not permitted.

E. Framed wall openings shall include a properly designed header and multiple (or heavier) studs at each edge of the opening, to compensate for those removed.

F. Diagonal bracing shall be installed at locations required to be "shear walls" for frame stability and to resist wind lateral loads. Bracing shall be securely anchored for uplift and horizontal shear. Additional stud(s) shall be positioned to resist the vertical component.

G. Bridging for wall framing shall be installed in accordance with manufacturer's recommendations.

H. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.05 FIELD QUALITY CONTROL

A. Testing: Engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Remove and replace work where test results indicate that it does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.06 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 05 50 00 METAL FABRICATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. All miscellaneous metal work. The Work includes, but is not limited to, steel guardrails, pit ladder, pipe sleeves for downspouts, sump pit bar grating and miscellaneous framing and supports.

B. Related Sections:

1. Section 09 05 15 – Color Design.
2. Section 09 90 00 - Painting and Coating: Painting for all ferrous metal exposed to view and not covered by masonry or concrete.

1.02 ACTION SUBMITTALS

A. Product Data: For the following:

1. Paint products.
2. Grout.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.

1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

PART 2 - PRODUCTS

2.01 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces without blemishes. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Structural shapes shall be standard sections conforming to the American Society for Testing Materials Specification A-36. Punch and drill as necessary for work of others. Provide all bearing plates and all anchors, bolts, and etc. The Work shall be true and free of twists, bends and open joints between component parts. Materials shall be thoroughly straightened in the shop before laid off or worked in any way, care being used to avoid injury to the material.

C. Expansion bolts shall be equal to Phillips Red Head or "cinch" bolts as manufactured by the National Lead Company. Hilti Fasteners, Rawlplug Company and Wej-it Corporation are acceptable manufacturers. Use toggle type bolts or similar for all anchorage into hollow construction.

D. Bolt or weld connections: Provide necessary lugs and brackets for anchorage. Welding shall be in accordance with current "Code of Fusion, Welding and Gas Cutting in Building Construction, Part A - Structural Steel" issued by the American Welding Society, both for fabrication and erection. All welders shall have certification, as a result of tests prescribed by the American Welding Society.

E. Detail metal Work for ample size, strength and stiffness and as indicated. Countersink and provide reinforcement where necessary; drill or punch holes for bolts and screws. At the proper time furnish the necessary templates, patterns and items of miscellaneous metal, such as sleeves, inserts and similar items to be built into adjoining Work.

F. Fabricate metal Work with sharp lines and angles, with smooth true surfaces and clean edges. Form exposed joints to exclude water. Furnish certificates from manufacturers stating that materials comply with the specification requirements.

G. Provide as necessary holes of proper number and spacing for the attachment of Work of other trades. Do not use cutting torch in field without permission of the Project Engineer.

H. Anchor bolts, washers, nuts and clamps shall be furnished where indicated on the Drawings and where necessary for properly securing Work in place. All Bolts and anchors used on the exterior of the building or built into exterior walls shall be cadmium plated. Miscellaneous angles and plates not indicated or specified otherwise shall not be less than 1/4 inch thick.

I. Shop paint and field touch up shall be ICI Devflex 4020, Rustoleum 769, Tnemec 99, Southern Coatings 476, or approved equal. Shop coat shall be compatible with finish coats specified in Section 09 90 00 – Paints and Coatings

2.02 FASTENERS

A. General: Fastenings shall be invisible where possible. Where exposed, screws, bolts, and the like shall be vandal-proof. All welded exposed joints on steel manufactured items; etc. shall be ground smooth and filled to receive paint

B. Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls.

1. Provide stainless-steel fasteners for fastening aluminum.
2. Provide stainless-steel fasteners for fastening stainless steel.
3. Provide stainless-steel fasteners for fastening nickel silver.

4. Provide bronze fasteners for fastening bronze.

C. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.

D. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
2. Material for Exterior Locations and Where Stainless Steel is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.03 METAL GUARDRAILING

A. Structural Performance: Metal guard railing, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:
   a. Uniform load of 50 lbf/ ft. applied in any direction.
   b. Concentrated load of 200 lbf applied in any direction.
   c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:
   a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
   b. Infill load and other loads need not be assumed to act concurrently.

B. Fabricate guard railing from 2-inch square hollow steel tubing, ASTM A 500, Grade B, ½" solid square steel picket bars, ASTM A36, 1 ½-inch round tube steel handrails, Schedule 40 and ½" thick steel base plates, ASTM A36. Shop prime after fabrication. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32-inch, unless otherwise shown.

C. Welded Connections: Cope intersections of rails and posts, weld joints and grind smooth. Butt weld end-to-end joints of railings or use welding connectors, at fabricator's option. At connections to steel supports, weld post directly to steel supports, unless otherwise indicated.

D. Anchorage: Use type of bracket with pre-drilled hole for exposed bolt anchorage. For stud partitions and framing use lag bolts set into wood backing between studs and framing members. Coordinate with stud installations for accurate location of backing members.

E. Expansion: Provide expansion joints at locations indicated, or if not indicated, at intervals not to exceed 40 feet. Provide slip joint with internal sleeve extending 2 inches beyond joint on either side; fasten internal sleeve securely to one side; locate joint within 6 inches of posts.

2.04 LOOSE LINTELS

A. Provide loose galvanized steel lintels for openings and recesses in masonry walls and partitions. Weld adjoining members together to form a single unit where indicated. Provide a minimum of 8 inches bearing at each side of openings.

2.05 MISCELLANEOUS FRAMING AND SUPPORTS

A. Provide miscellaneous steel framing and supports which are not a part of structural steel framework, as required to complete Work.

B. Fabricate miscellaneous units to sizes, shapes, and profiles indicated, or, if not indicated, of required dimensions to receive adjacent other work to be retained by framing. Except as otherwise indicated, fabricate from structural steel shapes, plates and steel bars of welded construction using mitered joints for field connection. Cut, drill and tap units to receive hardware and similar items.

C. Galvanize exterior miscellaneous frames and supports.

2.06 MISCELLANEOUS MATERIALS

A. Metal Primers: Where materials come in contact with dissimilar materials which may cause harmful reaction, where exposed to moisture, or such as aluminum to cement mortar or concrete, the surface shall be protected by zinc chromate primer, bituminous paint or other approved paint.

B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

D. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

E. Concrete: Comply with requirements in MISSISSIPPI STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION for normal-weight, air-entrained, concrete with a minimum 28-day compressive strength of 3500 psi.

2.07 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.

C. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended.

D. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Locate joints where least conspicuous.

E. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

F. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors not less than 24 inches on center.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.02 INSTALLING BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.03 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

SECTION 05 51 33 METAL LADDERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Aluminum access ladder with platform and railings as indicated on the Drawings including indications of sizes and locations.

B. Related Section: Section 05 50 00 – Metal Fabrications for fasteners and installation requirements used to attach ladders to structure.

1.02 REFERENCES

A. AA - Aluminum Association.

B. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

C. ASTM B 221 – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars.

D. OSHA 1910.27-Fixed Ladders.

1.03 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's specifications; certified test data, where applicable; and installation instructions for required products, including finishes.

B. Shop Drawings: Submit Shop Drawings for the fabrication and erection of Ladder units and accessories. Include plans, elevations and details of sections and connections to adjoining Work. Indicate materials, finishes, fasteners, joinery and other information to determine compliance with specified requirements. Provide reaction loads for each hanger and bracket.

1.04 QUALITY ASSURANCE

A. Manufacturer's Qualifications: A firm experienced in producing aluminum metal ladders similar to those indicated for this Project and with Professional engineering competent in design and structural analysis to fabricate ladders, platforms and railings in compliance with industry standards and local codes.

B. Installer's Qualifications: Competent and experienced firm capable of selecting fasteners and installing ladders to attain operational and structural performance.

C. Product Qualifications: Product design shall comply with OSHA 1910.27 minimum standards for ladders.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials and products in labeled protective packages. Store and handle in strict compliance with manufacturers' instructions and recommendations.

1.06 WARRANTY

A. Manufacturer shall guarantee materials and workmanship against defects for a period of 5 years after Final Completion. Within the warranty period, the manufacturer shall, at its option, repair or replace with new defective products.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Drawings and Specifications are based on products manufactured by O'Keefe's, Inc., 100 N Hill Drive, Suite 12, Brisbane, CA 94005. Tel. (888) 653-3333.

B. Equivalent products by the following manufacturers are acceptable:

1. ACL Industries, Inc., Manchester, NH. (603) 668-1276.
2. Precision Ladders, LLC, Morristown, TN. Tel. (800) 225-7814.

C. Substitutions shall fully comply with specified requirements and Section 01 25 00- Substitution Procedures and 01 60 00 - Product Requirements.

2.02 APPLICATION / SCOPE

A. Fixed access wall ladder with platform and guard rail, around platform and top of ladder as shown.

2.03 FINISHES

A. Mill finish aluminum as extruded.

2.04 MATERIALS

A. Aluminum Sheet: ASTM B 209, Alloy 5005-H34 with temper as required for forming or as otherwise recommended by metal producer to provide required finish.

B. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.

2.05 FABRICATION

A. Rungs: Not less than 1-1/4 inches in section and 18-3/8 inches long, formed from tubular aluminum extrusions. Squared and deeply serrated on all sides. Rungs shall withstand a 1,500 pound load without deformation or failure.

B. Channel Side Rails: Not less than 1/8 inch wall thickness by 3 inches wide.

C. Heavy Duty Tubular Side Rails: Assembled from two interlocking aluminum extrusions not less than 1/8 inch wall thickness by 3 inches wide. Construction shall be self-locking stainless steel fasteners, full penetration TIG welds and clean, smooth and burr-free surfaces.

D. Landing Platform: 1-1/2 inches or greater diameter, tubular aluminum guardrails and decks of serrated aluminum treads. Railing shall be not less than 3'-6" above the landing.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Coordinate anchorages. Provide setting drawings, templates, and anchorage structural loads for fastener resistance.

B. Do not begin installation until supporting structure is complete.

3.02 INSTALLATION

A. Install in accordance with manufacturer's written instructions and in proper relationship with adjacent construction.

3.03 PROTECTION

A. Protect installed products until Final Completion.

B. Touch-up, repair or replace damaged products before Final completion.

END OF SECTION

SECTION 05 51 34 LADDER SAFETY POST

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide factory-fabricated ladder safety posts.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product data.

B. Shop Drawings: Submit shop drawings including profiles, accessories, location, adjacent construction interface, and dimensions.

C. Warranty: Submit executed copy of manufacturer's standard warranty.

1.03 QUALITY ASSURANCE

A. Manufacturer: A minimum of 5 years experience manufacturing similar products.

B. Installer: A minimum of 2 years experience installing similar products.

C. Manufacturer's Quality System: Registered to ISO 9001:2008 Quality Standards including in house engineering for product design activities.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver products in manufacturer's original packaging. Store materials in a dry, protected, well-vented area. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.

1.05 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard warranty. Materials shall be free of defects in material and workmanship for a period of five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Drawings and Specifications are based on products manufactured by O'Keefe's, Inc., 100 N Hill Drive, Suite 12, Brisbane, CA 94005. Tel. (888) 653-3333.

B. Equivalent products by the following manufacturers are acceptable:

1. ACL Industries, Inc., Manchester, NH. (603) 668-1276.
2. Precision Ladders, LLC, Morristown, TN. Tel. (800) 225-7814.

2.02 LADDER SAFETY POST

A. Furnish and install where indicated on plans ladder safety post Model [insert LU-1, LU-2, LU-3, or LU-4]. The ladder safety post shall be pre-assembled from the manufacturer.

B. Performance characteristics:
1. Tubular post shall lock automatically when fully extended.
2. Safety post shall have controlled upward and downward movement.
3. Release lever shall disengage the post to allow it to be returned to its lowered position.
4. Post shall have adjustable mounting brackets to fit ladder rung spacing up to 14" (356mm) on center and clamp brackets to accommodate ladder rungs up to 1-3/4" (44mm) in diameter.

C. Post: Shall be manufactured of high strength square tubing. A pull up loop shall be provided at the upper end of the post to facilitate raising the post.

D. Material of construction: Shall be [insert: steel (Model LU-1, LU-2); or Type 304 stainless steel (Model LU-3); or aluminum (Model LU-4)].

E. Balancing spring: A stainless steel spring balancing mechanism shall be provided to provide smooth, easy, controlled operation when raising and lowering the safety post. [For installation in highly corrosive atmospheres, Model LU-3 incorporates a special alloy spring mechanism].

F. Hardware: All mounting hardware shall be Type 316 stainless steel.

G. Finishes: Factory finish shall be [insert: yellow powder coat steel (Model LU-1); or hot dip galvanized steel (Model LU-2); or mill finish stainless steel (Model LU-3); or mill finish aluminum (LU-4)].

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and openings for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install products in strict accordance with manufacturer's instructions and approved submittals. Locate units level, plumb, and in proper alignment with adjacent work.
   1. Test units for proper function and adjust until proper operation is achieved.
   2. Repair finishes damaged during installation.
   3. Restore finishes so no evidence remains of corrective work.
   4.

3.03 ADJUSTING AND CLEANING

A. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.

END OF SECTION

SECTION 07 26 00 VAPOR RETARDERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Vapor retarder under concrete floor slab.
2. Concrete curing paper on top of freshly poured concrete floor slab.
3. Floor protection paper used for positive protection of finished floors.

1.02 ACTION SUBMITTALS

A. Product Data: Manufacturer's technical product data, installation instructions and recommendations for products specified.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Drawings and specifications are based on products manufactured by Fortifiber Corporation, 300 Industrial Drive, Fernley, NV 89408. Tel. (800) 773-4777.

B. Equivalent products by the following manufacturers are acceptable:
1. Grace Construction Products, Cambridge, Ma. Tel: (800) 444-6459.
2. Griffolyn ® Division, Reef Industries, Inc., Houston, TX. Tel: (800) 231-6074.
3. Stego Industries LLC, San Juan Capistrano, CA. Tel: (877) 464-7834.

C. Substitutions shall fully comply with specified requirements, Section 01 25 00-Substitution Procedures and Section 01 60 00-Product Requirements.

2.02 VAPOR RETARDER

A. Membrane shall be a 15 mil polyolefin film meeting ASTM E-1745-97 Class A Test Method, equal to Fortifiber Corporation, Moistop® Ultra™ 15, including Moistop® tape and sealants with the following characteristics:
1. Moisture Vapor Permeance: ASTM E-154, Section 7 (E-96, Method A) = .01 Perms.
2. Puncture Resistance: ASTM D-1709, Method B = 4,900 Grams. Mo

2.03 CONCRETE CURING PAPER

A. Laminated tri directional glass fiber reinforced long fibered kraft curing papers with double coating of high-melting-point asphalt, meeting ASTM C-171 Test Method, equal to "Orange Label Sisalkraft®".

2.04 FLOOR PROTECTION PAPER

A. Non-staining reinforced floor protection paper consisting of two heavy kraft sheets and glass reinforcing fibers laminated with a non-staining adhesive, meeting ASTM D 828 and ASTM D 781 Test Methods, equal to "Seekure®".

PART 3 - EXECUTION

3.01 PREPARATION

A. Ensure items that pass through building paper / membrane are properly and rigidly installed, substrate is free of projections and irregularities that may be detrimental to proper installation of building paper / membrane.

3.02 INSTALLATION

A. Vapor Retarder:
1. Unroll underslab vapor retarder over thoroughly compacted subgrade and turn down at inside perimeter of grade beams.
2. Seal joints watertight, with a pressure sensitive tape as recommended by manufacturer, allowing a minimum overlap of 6 inches.
3. Apply tape evenly over seams and rub out wrinkles formed during application.
4. Seal pipes and conduits passing through the membrane with Moistop boot and tape.
5. Inspect membrane thoroughly and repair all punctures immediately before placing concrete. Equipment, tools, and procedures that might puncture the membrane shall not be used while placing and finishing the concrete.
6. Comply with manufacturer's recommendations and installation procedures as outlined in ASTM E-1643.

B. Curing Paper:
1. Unroll concrete curing paper over the entire surface once the concrete has set sufficiently hard to permit application without marring the surface.
2. Lap joints 4 inches and seal with pressure sensitive tape.
3. Apply tape evenly over seams and rub out wrinkles formed during application.
4. Ensure that all tears or penetrations are repaired.

C. Floor Protection Paper:
1. Apply floor protection paper immediately after floor covering is installed.
2. Do not remove until final completion and acceptance by the Project Engineer.
3. Lay paper in widest practical width with 6-inch laps to provide complete coverage of flooring.
4. Seal joints with minimum 2 inch wide pressure sensitive tape.

3.03 CLEANING

A. Inspect vapor barrier membrane thoroughly and keep clean. Remove dirt, oils, mud, debris, etc. prior to placing concrete.

END OF SECTION

SECTION 07 54 00 THERMOPLASTIC MEMBRANE ROOFING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Fully adhered roofing system utilizing a polyester reinforced, hot air welded thermoplastic KEE (Ketone Ethylene Ester) single ply membrane with a polyester felt backing, related accessories, miscellaneous flashing and attaching devices as indicated and / or required for a complete waterproof single ply roofing system.

1.02 PERFORMANCE REQUIREMENTS

A. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

B. Energy Performance: Provide roofing system that is listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.

1.04 INFORMATIONAL SUBMITTALS

A. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of compliance with performance requirements.

B. Research/evaluation reports.

C. Field quality-control reports.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Executed Warranty.

1.06 QUALITY ASSURANCE

A. Manufacturer: Company specializing in single ply roofing Products with 10 years minimum experience.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product.

1. Company with 5 years minimum experience, who has completed work similar to that indicated for this project and with a record of successful in-service performance.
2. Submit identification of at least 3 projects of similar scope and complexity along with name, address, and telephone number of the Architect, Owner and General Contractor

C. Source Limitations: Obtain components including roof insulation, fasteners and accessories for membrane roofing system approved by membrane roofing manufacturer and included in warranty..

D. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

E. Preinstallation Roofing Conference: Conduct conference at Project site.

F. Manufacturer's Technical Representative: Upon completion, the roofing system shall be inspected by the manufacturer's Technical Representative to verify that the system has been installed according to specifications and details.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver materials with manufacturer's labels intact and legible.

B. Upon receipt of materials, examine the shipment for damage and completeness.

C. Store roofing insulation, membrane and all other moisture sensitive materials indoors, or on raised platforms covered with suitable waterproof protective covering. Sealants and adhesives shall be stored to maintain a minimum temperature of 45 degrees F.

1.08 WARRANTY

A. Special Warranty: Manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 20 years from Date of Completion as determined by MDOT.

PART 2 - PRODUCTS

2.01 KEE MEMBRANE ROOFING

A. KEE Elvaloy® Sheet Roofing: ASTM D 6754-02, fabric reinforced and fabric backed. Equal to 60 mil FiberTite-SM-FB "fleece back" adhered flexible sheet roofing system.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Cooley Engineered Membranes
   b. Carlisle Syntec Systems.
   c. Ecology Roof Systems.
   d. Seaman Corporation. (Basis-of-Design)
2. Thickness: ASTM D751, 60 mils, nominal.
3. Exposed Face Color: Standard Off-White.
4. Breaking Strength: ASTM D751; 350 lbs.
5. Factory Seam Strength: ASTM D751, > Fabric Break.
6. Elongation at Break: ASTM D751; 18 percent
7. Heat Aging: ASTM D3045; 90 percent by 90 percent.
8. Tear Strength: ASTM D751; 100 lbs.
9. Dynamic Puncture Resistance (J): ASTM D5635; > 25.
10. Tensile Strength: ASTM D882; 8500 psi.
11. Linear Dimensional Change: ASTM D1204; 0.63 percent.
12. Hydrostatic Resistance: ASTM D751; 800 psi.
13. Energy Star: Yes
14. Solar Reflectivity: ASTM E903; 79 percent.
15. Solar Reflective Index (SRI): ASTM E1980; 98.54
16. Solar Emissivity: ASTM 1371; 85 percent.
17. Underwriters Laboratories: UL Class A.
18. Factory Mutual: FM Class I-90.

2.02 AUXILIARY MEMBRANE ROOFING MATERIALS

A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   a. Plastic Foam Adhesives: 50 g/L.
   b. Gypsum Board and Panel Adhesives: 50 g/L.
   c. Multipurpose Construction Adhesives: 70 g/L.
   d. Single-Ply Roof Membrane Adhesives: 250 g/L.
   e. Other Adhesives: 250 g/L.
   f. Adhesive Primer for Plastic: 650 g/L.
   g. Single-Ply Roof Membrane Sealants: 450 g/L.
   h. Nonmembrane Roof Sealants: 300 g/L.
   i. Sealant Primers for Nonporous Substrates: 250 g/L.
   j. Sealant Primers for Porous Substrates: 775 g/L.

B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement (if applicable), thickness, and color as KEE sheet membrane.

C. Bonding Adhesive: Manufacturer's standard.

D. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

E. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.

F. Miscellaneous Accessories: Flex Membrane International, Inc.'s standard accessories shall be used to form a complete roofing system. Only those accessories that are supplied or otherwise approved by Flex are acceptable. Flex accessories include, but are not limited to, the following:

1. Fasteners
2. Plates
3. Termination Bars
4. Trim and Flashing
5. Flashing adhesive
6. Coated Metal
7. Pre-Formed Flashings – boots for pipe penetrations, inside & outside corners
8. Pipe banding
9. Sealants
10. Walkway Pads

2.03 SUBSTRATE BOARDS

A. Substrate Board (if required by roofing manufacturer): Equal to G-P Gypsum Corp. 1/4-inch-thick Dens-Deck Roof Board. Securely attach to roof deck per manufacturer's recommendations.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate board to roof deck.

2.04 ROOF INSULATION

A. General Tapered Roof Insulation Requirements:

1. Factory Mutual Class 1, I-90 Approved.
2. Meet applicable code requirements.
3. Approved by insulation manufacturer for use in fully adhered roofing installations of the nature specified herein.
4. Compatible with membrane and adhesive.
5. Board size and thickness shall be as listed in the most current Factory Mutual Approval Guide.

B. Approved Insulation Type: Polyisocyanurate meeting the requirements of ASTM C1289, Standard Specification for Faced Rigid Cellular Polyiscocyanurate Thermal Insulation Board. Tapered as indicated on Drawings.

C. Mechanical Attachment: Per manufacturer's recommendations using only fasteners and plates approved by roofing system manufacturer.

2.05 INSULATION ACCESSORIES

A. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

B. Insulation Adhesive: Insulation manufacturer's recommended cold-applied adhesive formulated to attach roof insulation to substrate or to another insulation layer.

2.06 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch thick, and acceptable to membrane roofing system manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect roof structure to verify deck is clean, dry and smooth with no excessive surface roughness, free of depressions, waves or projections.

B. Verify lightening protection system, roof openings, curbs, pipes, sleeves, ducts or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.

1. Adjust curb height to provide minimum 8 inches above finished roof surface.
2. Maintain lightening protection system.

C. Installer shall examine substrate and conditions under which Work is to be performed and must notify Contractor in writing of unsatisfactory conditions. Do not proceed with installation until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 SUBSTRATE BOARD

A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.

1. Fasten substrate board to deck to resist uplift pressure at corners, perimeter, and field of roof according to membrane roofing system manufacturers' written instructions.

3.03 INSTALLATION OF WOOD NAILERS AND BLOCKING

A. Install using methods recommended by manufacturer in accordance with local building code.

B. Nailers shall be anchored to resist a minimum force of 175 pounds per lineal foot in any direction.

1. Fastener spacing shall be a maximum of 3 feet on center.
2. Fasteners shall be installed within 6 inches of each end.
3. Spacing and fastener embedment shall conform to Factory Mutual Loss Prevention Data Sheet 1-49.

4. Stagger fasteners to provide stable anchorage.

C. Thickness shall be as required to match substrate or insulation height, with a maximum allowable variance of plus or minus 1/4 inch.

3.04 INSULATION INSTALLATION

A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Insulation shall be neatly cut to fit snugly around penetrations and projections.

D. Install tapered insulation under area of roofing to conform to slopes indicated.

E. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

F. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.

1. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.

3.05 ADHERED MEMBRANE ROOFING INSTALLATION

A. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.

B. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

C. Bonding Adhesive: Apply to locations and at rate recommended by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.

D. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.

E. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

F. Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

3.06 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.07 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.08 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

3.09 CLEANING AND PROTECTION

A. Cleaning: Clean exposed surfaces, removing substances that may cause corrosion of metal or deterioration of the membrane.

B. Protection: Installer shall advise Contractor of required procedures for surveillance and protection of flashings, sheet metal work, membrane and accessories during construction, to ensure that Work will be without damage or deterioration until acceptance by the Owner.

END OF SECTION

SECTION 07 72 33 ROOF HATCHES

PART 1 - GENERAL

1.01 Summary

A. Work Included: Provide factory-fabricated roof hatches for ladder access.

1.02 Submittals

A. Product Data: Submit manufacturer's product data.

B. Shop Drawings: Submit shop drawings including profiles, accessories, location, adjacent construction interface, and dimensions.

C. Warranty: Submit executed copy of manufacturer's standard warranty.

1.03 Quality Assurance

A. Manufacturer: A minimum of 5 years experience manufacturing similar products.

B. Installer: A minimum of 2 years experience installing similar products.

C. Manufacturer's Quality System: Registered to ISO 9001:2008 Quality Standards including in-house engineering for product design activities.

1.04 Delivery, Storage and Handling

A. Deliver products in manufacturer's original packaging. Store materials in a dry, protected, well-vented area. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.

1.05 Warranty

A. Manufacturer's Warranty: Provide manufacturer's standard warranty. Materials shall be free of defects in material and workmanship for a period of five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge.

PART 2 - PRODUCTS

2.01 Manufacturer

A. Basis-of-Design Manufacturer: Type E Roof Hatch by The Bilco Company, P.O. Box 1203, New Haven, CT 06505, 1-800-366-6530, Fax: 1-203-933-8478.

B. Equivalent products by the following manufacturers are acceptable:
1. Milcor Company, 5030 Corporate Exchange Blvd. SE, Grand Rapids, MI 49512, 800-624-8642
2. Babcock-Davis, 9300 73rd Ave N, Brooklyn Park, MN 55428, 888.412.3726.

2.02 Roof Hatch

A. Furnish and install where indicated on plans metal roof hatch Type E, size width: 36" (914mm) x length: 30" (914mm). Length denotes hinge side. The roof hatch shall be single leaf. The roof hatch shall be pre-assembled from the manufacturer.

B. Performance characteristics:
1. Cover shall be reinforced to support a minimum live load of 40 psf (195kg/m2) with a maximum deflection of 1/150th of the span or 20 psf (97 kg/m2) wind uplift.
2. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
3. Operation of the cover shall not be affected by temperature.
4. Entire hatch shall be weather tight with fully welded corner joints on cover and curb.

C. Cover: Shall be [select: 14 gauge (1.9mm) paint bond G-90 galvanized steel or 11 gauge (2.3mm) aluminum] with a 3" (76mm) beaded flange with formed reinforcing members. Cover shall have a heavy extruded EPDM rubber gasket that is bonded to the cover interior to assure a continuous seal when compressed to the top surface of the curb.

D. Cover insulation: Shall be fiberglass of 1" (25mm) thickness, fully covered and protected by a metal liner [select: 22 gauge (.8mm) paint bond G-90 galvanized steel or 18 gauge (1mm) aluminum].

E. Curb: Shall be 12" (305mm) in height and of [select: 14 gauge (1.9mm) paint bond G-90 galvanized steel or 11 gauge (2.3mm) aluminum]. The curb shall be formed with a 3-1/2" (89mm) flange with 7/16" (11.1mm) holes provided for securing to the roof deck. The curb shall be equipped with an integral metal capflashing of the same gauge and material as the curb, fully welded at the corners, that features the Bil-Clip® flashing system, including stamped tabs, 6" (153mm) on center, to be bent inward to hold single ply roofing membrane securely in place.

F. Curb insulation: Shall be rigid, high-density fiberboard of 1" (25mm) thickness on outside of curb.

G. Lifting mechanisms: Manufacturer shall provide compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe [for aluminum construction: welded to the curb assembly; for steel construction: through bolted to the curb assembly].

H. Hardware
1. Heavy pintle hinges shall be provided
2. Cover shall be equipped with a spring latch with interior and exterior turn handles
3. Roof hatch shall be equipped with interior and exterior padlock hasps.
4. The latch strike shall be a stamped component bolted to the curb assembly.
5. Cover shall automatically lock in the open position with a rigid hold open arm equipped with a 1" (25mm) diameter red vinyl grip handle to permit easy release for closing.
6. Compression spring tubes shall be an anti-corrosive composite material and all other hardware shall be zinc plated and chromate sealed. [For installation in highly corrosive environments or when prolonged exposure to

hot water or steam is anticipated, specify Type 316 stainless steel hardware].

7. Cover hardware shall be bolted into heavy gauge channel reinforcing welded to the underside of the cover and concealed within the insulation space.

I. Finishes: Factory finish shall be [select: alkyd based red oxide primed steel or mill finish aluminum].

PART 3 - EXECUTION

3.01 Examination

A. Examine substrates and openings for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 Installation

A. Install products in strict accordance with manufacturer's instructions and approved submittals. Locate units level, plumb, and in proper alignment with adjacent work.
1. Test units for proper function and adjust until proper operation is achieved.
2. Repair finishes damaged during installation.
3. Restore finishes so no evidence remains of corrective work.

3.03 Adjusting and Cleaning

A. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.

END OF SECTION

SECTION 07 84 00 FIRESTOPPING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Firestopping materials.
2. Firestop all penetrations and interruptions to fire rated assemblies, whether indicated on drawings or not.

B. Related Sections:
1. Section 09260 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.
2. Division 15 - Mechanical: Firestopping of mechanical work.
3. Division 26 - Electrical: Firestopping of electrical work.

1.02 REFERENCES

A. Comply with following:
1. ASTM C 612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
2. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
3. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C.
4. ASTM E 814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
5. FM P7825 - Approval Guide; Factory Mutual Research Corporation; current edition.
6. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.03 SUBMITTALS

A. Submit the following.
1. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
2. Product Data: Provide data on product characteristics, performance ratings, and limitations.
3. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
4. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs which provide the specified fire ratings when tested in accordance with methods indicated.
1. Listing in the current classification or certification books of UL, FM, or ITS (Warnock Hersey) will be considered as constituting an acceptable test report.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience and employing a knowledgeable product representative.

C. Installer Qualifications: Company familiar with and experienced in performing the work of this section.

1.05 REGULATORY REQUIREMENTS

A. Comply with:
1. Fire Safing and Smoke Barrier System: UL tested and approved for one hour fire separation between floors.
2. Fire Rated Penetration Sealant Systems: UL 1479 and ASTM E814 and listed in UL Building

Materials Directory with F and T ratings to equal rating of floor or wall assembly.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.

B. Keep away from heat, open flame, sparks, or other sources of ignition until curing is complete. Provide adequate ventilation in areas where solvent-cured materials are being installed.

1.07 SEQUENCING

A. Sequence installation of adjacent work to allow access for installers of firestopping.
1. Locate joints in ductwork to allow firestopping to be installed before the penetration is made inaccessible by continued installation of ductwork.

PART 2 PRODUCTS

2.01 FIRE SAFING AND SMOKE BARRIER SYSTEM

A. Manufacturers
1. Hilti
2. 3M Brand Fire Safing and Smoke Barrier Systems.
3. USG Fire Stop Systems. Product: Thermafiber Mineral Fire Structural Fireproofing.
4. Substitutions: See Section 01600-Product Requirements.

B. System: Slag-Wool-Fiber Board Safing Insulation and Smoke-Stop System:
1. Foil-Faced Slag-Wool-Fiber Board: Rigid board of 8 lb/cu ft (128 kg/cu m) nominal density; produced by combining slag-wool fibers with thermosetting resin binders to comply with ASTM C 612 for Type III; passing ASTM E 136 for combustion characteristics; and as follows:
a. Facing: Foil-scrim-polyethylene vapor retarder facing on 1 side.
b. Size: 24 inches (610 mm) wide by maximum length of 48 or 60 inches (1219 or 1529 mm), as produced by manufacturer in the plant nearest to Project.
c. Thickness: As required for fire rating and conditions.
d. Accessories: Provide USG Thermafiber Safing Clips of galvanized steel as required.
2. Sealant: USG Thermafiber Smoke Seal Compound.

2.02 FIRE RATED PENETRATION SEALANT SYSTEMS

A. Manufacturers
1. Specified Technologies, Inc.

2. Hilti
2. 3M Brand Fire Barrier Penetration Sealing Systems.
3. Substitutions: See Section 01600-Product Requirements.
4. Fire Ratings: Listed by UL, FM, and WH and tested in accordance with ASTM E 814 or ASTM E 119 having F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and that meets all other specified requirements.

2.03 MATERIALS

A. Intumescent Latex-Based Caulk: Compound which expands on exposure to surface heat gain; conforming to following:
1. Provide in locations scheduled for painting where listed for required fire rating.
2. 3M Fire Protection Products; Product CP 25WB.

B. Primers, Sleeves, Forms, and Accessories: Type required for tested assembly design.

C. Refer to Contract Drawings for Firestopping Details.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

B. By beginning work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to Owner.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.
1. Remove incompatible materials which may affect bond.

B. Install backing materials to maintain firestopping materials where required.

3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
1. Do not cover installed firestopping until inspected by authority having jurisdiction.

B. Partitions: Install firestopping both sides as required to comply with listed assembly.

C. Smoke Barrier: Seal opening and insulation joints with sealant.

3.04 CLEANING AND PROTECTION

A. Clean adjacent surfaces of firestopping materials.

B. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 07 92 00 JOINT SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes sealant at exterior joints in vertical surfaces and nontraffic horizontal surfaces; exterior joints in horizontal traffic surfaces; and interior joints in vertical and horizontal surfaces.

1.02 REFERENCES

A. ASTM: American Society of Testing and Materials
   1. ASTM C794: Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
   2. ASTM C834: Standard Specification for Latex Sealants
   3. ASTM C920: Standard Specification for Elastomeric Joint Sealants

1.03 SYSTEM PERFORMANCE

A. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

1.04 SUBMITTALS

A. Sealants in Exterior Wall Systems: Submit with wall system as coordinated package, clearly identifying where each material is proposed for use.

B. Submit the following.
   1. Product data from manufacturers for each joint sealer product required with color cards, including instructions for joint preparation and joint sealer application.
   2. Samples for Initial Selection Purposes: Manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available, for each product exposed to view.
   3. Samples for verification purposes of each type and color of joint sealer required. Install joint sealer samples in 1/2 inch wide joints formed between two 6 inch long strips of material matching the appearance of exposed surfaces adjacent to joint sealers.

C. Certificates from manufacturers of joint sealers attesting that their products comply with specification requirements and are suitable for the use indicated.

D. Qualification data complying with requirements specified in "Quality Assurance" article. Include list of completed projects with project name, addresses, names of architects and owners, plus other information specified.

E. Compatibility and adhesion test reports from elastomeric sealant manufacturer indicating that materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with joint sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.

F. Product test reports for each type of joint sealers indicated, evidencing compliance with requirements specified.

G. Preconstruction field test reports indicating which products and joint preparation methods demonstrated acceptable adhesion to joint substrates.

1.05 QUALITY ASSURANCE

A. Obtain elastomeric materials only from manufacturers who will, if required, send a qualified technical representative to project site, for the purpose of advising the installer of proper procedures and precautions for the use of the materials.

B. Installer Qualifications: Engage an installer who has successfully completed within the last 3 years at least 3 joint sealer applications similar in type and size to this project.

C. Field-Constructed Mock-Ups: Prior to installation of joint sealers, apply elastomeric sealants to the following selected building joints as indicated below for further verification of colors selected from sample submittals and to represent completed work for qualities of appearance, materials and application:
   1. Joints in field-constructed mock-ups of assemblies specified in other sections which are indicated to receive elastomeric joint sealants in this section.
   2. Retain mock-ups during construction as standard for judging completed construction.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials to project site in original unopened containers or bundles with labels containing information about manufacturer, product name and designation, color, expiration period for use, pot life, curing time and mixing instructions for multi-component materials.

B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.07 PROJECT CONDITIONS

A. Pre-Installation Meeting:
   1. Meet with installer, Project Engineer, sealant manufacturer's technical representative, and other trades involved in coordination with sealant work at the project site to review the procedures and time schedule proposed for installation of sealants and coordination with other work.
   2. Review each major sealant application required on the project.

B. Conditions of Other Work:
   1. Examine the joint surfaces, backing, and anchorage of units forming sealant rabbet, and the conditions under which the sealant work is to be performed. Correct conditions detrimental to the proper and timely completion of the work and performance of the sealants.
   2. Do not proceed with the sealant work until unsatisfactory conditions have been corrected.

C. Weather Conditions:
   1. Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation.
   2. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength.
   3. Wherever joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in the lower third of manufacturer's recommended installation temperature range, so that sealant will not be subjected to excessive elongation and bond stress at subsequent low temperatures.
   4. Coordinate time schedule to avoid delay of project.

1.08 WARRANTY

A. Extend period during which installer of work of this section is required to return to job to make corrections for four additional years beyond the one-year warranty period.

B. Repair or replace sealants which fail to perform as air-tight and water-tight joints; or fail in joint adhesion, cohesion or abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability; or appear to deteriorate in another manner not clearly specified by submitted manufacturer's data as an inherent quality of the material for the exposure indicated.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

A. Colors: For exposed materials, provide color as indicated, or if not indicated, as selected by the Port from manufacturer's standard colors. For concealed materials, provide the natural color which has the best overall performance characteristics.

B. Hardness: As recommended by manufacturer for application shown, unless otherwise indicated.

C. Modulus of Elasticity: Provide the lowest available modulus of elasticity which is consistent with exposure to weathering, indentation, vandalism, abrasion, support of loading, and other requirements.

D. Compatibility: Before purchase of each required material, confirm its compatibility with each other material it will be exposed to in the joint system.

E. Size and Shape: As shown or, if not shown, as recommended by the manufacturer for the type and condition of joint, and for the indicated joint performance or movement.

F. Grade of Sealant: For each application, provide the grade of sealant (non-sag, self-leveling, no-track, knife grade, preformed, etc.) as recommended by the manufacturer for the particular condition of installation (locations, joint shape, ambient temperature, and similar conditions), to achieve the best possible overall performance. Grades specified herein are for normal conditions for installation.

2.02 SEALANT AND CALKING MATERIALS

A. Sealant: Provide at joints in the exterior of the building.

B. Provide silicone rubber based, one-part, non-sag, elastomeric sealant, complying with ASTM C920 Type S, Grade NS, Class 40, uses NT, M, G, A and O; recommended by manufacturer (also tested for compatibility and materials warranted for 20 years by manufacturer) for exterior joint surfaces shown.

1. Acceptable Products and Manufacturers:
    a. Silicone Building Sealant 795 manufactured by Dow Corning Corp.
    b. Silglaze / Silpruf Construction Sealant manufactured by General Electric Co.
    c. Proglaze Construction Sealant manufactured by Tremco, Inc.
    d. Or equal.

C. At traffic-bearing surfaces where joint movement is anticipated, provide polyurethane-based, 2-part elastomeric sealant, complying with ASTM C920 Type M, Grade P (pourable, self-leveling) unless Grade NS (non-sag) is recommended by manufacturer for application shown, Class 25, Use T.
   1. Acceptable Products and Manufacturers:
      a. Sonolastic SL2 manufactured by Sonneborn.
      b. Vulkem 245 manufactured by Mameco International
      c. Sika 2C manufactured by Sika Chemical Corp.
      d. Chem-Calk 550 manufactured by Bostik. (can stain stone)
      e. Or equal.

D. Acrylic Latex Joint Sealants: Provide where calking is indicated at interior locations.
   1. Provide one-part, non-sag, mildew-resistant, sealant complying with ASTM C834, formulated to be paintable and recommended for exposed interior applications involving joint movement of not more than 7.5 percent from installed dimension.
   2. Acceptable Manufacturers and Products:
      a. Chem-Calk 600 manufactured by Bostik.
      b. Tremco Acrylic Latex Calk manufactured by Tremco.
      c. Sonolac manufactured by Sonneborn.
      d. Or equal.

2.03 MISCELLANEOUS MATERIALS

A. Joint Cleaner: Provide the type of joint cleaning compound recommended by the sealant or calking compound manufacturer, for the joint surfaces to be cleaned.

B. Joint Primer/Sealer: Provide the type of joint primer/sealer recommended by the sealant manufacturer, for the joint surfaces to be primed or sealed.

C. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by the sealant manufacturer, to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape wherever applicable.

D. Sealant Back-Up Rod: Compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer. Provide size and shape of rod which will control the joint depth for sealant placement, break bond of sealant at bottom of joint, from optimum shape of sealant bead on back side, and provide a highly compressible backing to minimize the possibility of sealant extrusion when joint is compressed.

PART 3 - EXECUTION

3.01 PREPARATION

A. Clean joint surfaces immediately before installation of sealant or calking compound. Remove dirt, insecure coatings, moisture and other substances which would interfere with bond of sealant or calking compound.

B. For elastomeric sealants, do not proceed with installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with water repellent or other treatment or coating unless a laboratory test for durability (adhesion), in compliance with ASTM C794 has successfully demonstrated that sealant bond is not impaired by coating or treatment. If laboratory test has not been performed, or shows bond interference, remove coating or treatment from joint surfaces before installing sealant.

C. Etch masonry and stonework joint surfaces to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Etch with 5 percent solution of muriatic acid; neutralize with dilute ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.

D. Roughen joint surfaces on vitreous coated and similar non-porous materials, where sealant manufacturer's data indicates lower bond strength than for porous surfaces. Rub with fine abrasive to produce a dull sheen.

3.02 INSTALLATION

A. Comply with sealant manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.

B. Prime or seal the joint surfaces wherever shown or recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.

C. Install sealant backup rod for elastomeric sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.

D. Clean joint surfaces as recommended by sealant manufacturer. Provide bond-breaker or separator between sealant and joint filler, wherever recommended by manufacturer and wherever sealant is not compatible with joint filler.

E. Install bond breaker tape where shown and where required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.

F. Employ only proven installation techniques which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides.

1. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces.
   a. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.

G. Install sealants to depths as shown or, if not shown, as recommended by sealant manufacturer but within the following general limitations, measured at center (thin) section of bead.
1. For normal moving joints sealed with elastomeric sealants, but not subject to traffic, fill joints to a depth equal to 50 percent of joint width, but neither more than 1/2 inch deep nor less than 1/4 inch deep.
2. For joints sealed with non-elastomeric sealants and calking compounds, fill joints to a depth in the range of 75 percent to 125 percent of joint width.

H. Spillage:
1. Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into voids of adjoining surfaces including exposed aggregate panels and similar rough textures. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either primer/sealer or the sealant/calking compound.
2. Remove excess and spillage of compounds promptly as work progresses. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.

I. Where exposed, install with surface profile within plus or minus 1/16 inch from dimension shown except over 8 feet above floor plus or minus 1/8 inch, with surface uniformly smooth and free of wrinkles.

3.03 CURE AND PROTECTION

A. Cure sealants and calking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability. Do not cure in a manner which would significantly alter material's modulus of elasticity or other characteristics.

B. Follow manufacturer's procedures required for curing and protection of sealants and calking compounds during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of completion.

3.04 TESTS FOR PERFORMANCE

A. After nominal cure of exterior joint sealants which are exposed to weather, test for water leaks. Flood joint exposure with water directed from a 3/4 inch garden hose held perpendicular to wall face, 2'-0" from joint, connected to a water system with 30 psi minimum static water pressure at the nozzle. Move stream of water along joint at an approximate rate of 20 feet per minute.

B. Test approximately 5 percent of total joint system in locations which are typical of every joint condition, and which can be inspected easily for leakage on opposite face. Conduct test in

presence of the Port who will determine actual percentage of joints to be tested and actual period of exposure to water from hose, based upon extent of observed leakage, or lack thereof. Repair sealant installation at leaks or, if leakage is excessive, replace sealant installation as directed.

C. Where nature of observed leakage indicates possibility of inadequate joint bond strength, the Port will direct that additional testing be performed at a time when joints have been fully cured, followed by natural exposure through both extreme temperatures, and returned to lowest range of temperature in which it is feasible to conduct testing. Repair or replace work as required. Perform testing at a reasonable time within 24 months of installation date, as directed.

END OF SECTION

SECTION 08 11 13 HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes hollow-metal work, including but not limited to, the following:
   1. Interior and exterior hollow metal doors and frames; rated.
   2. Preparation of metal doors and bucks to receive finish hardware, including reinforcements, drilling and tapping necessary.
   3. Factory prime painting of Work in this Section.

B. Related sections:
   1. Section 06 10 00 - Rough Carpentry.
   2. Section 08 71 00 - Door Hardware.
   3. Section 08 80 00 - Glazing.
   4. Section 09 05 15 - Color Design.
   5. Section 09 90 00 - Painting and Coatings.

1.02 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product, including schedule and manufacturer's technical product data / literature.

B. Shop Drawings: Include elevations, door edge details, frame profiles, metal thicknesses, preparations for hardware, glazing, anchor types and spacing, reinforcement, and other details.

C. Samples (not required for named products):
   1. Submit hollow metal frame, corner section of typical frame, of sufficient size to show corner joint, hinge reinforcement, dust cover boxes, anchors, and floor anchors.
   2. Submit hollow metal door section of typical door, of sufficient size to show edge, top and bottom construction, insulation, hinge reinforcement, face stiffening and glazing beads.

D. Schedule: Prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.

1.04 INFORMATIONAL SUBMITTALS

A. Product test reports.

1.05 QUALITY ASSURANCE

A. In addition to complying with all pertinent codes and regulations, manufacture labeled doors in accordance with specifications and procedures of Underwriters' Laboratories, Inc. In guarantee and shop drawings, comply with nomenclature established in

American National Standards Institute publication A123.1, latest edition, "Nomenclature for Steel Doors and Steel Door Frames".

B. Comply with IBC 2012 and AHJ for Hurricane impact loads.

C. Work is subject to applicable portions of the following standards:
1. ANSI A115 "Door and Frame Preparation for Door Locks and Flush Bolts", American National Standards Institute.
2. ANSI A123.1 "Nomenclature for Steel Doors and Steel Door Frames", American National Standards Institute.
3. NFPA 80 "Fire Doors and Windows", National Fire Protection Association.
4. NFPA 101 "Life Safety Code", National Fire Protection Association.

D. Hollow metal doors and frames shall comply with the specifications for Custom Hollow Metal Doors and Frames, National Assoc. of Architectural Metal Manufacturers (NAAMM) Standard CHM 1-74, and the Steel Door Institute, SDI 100-80.

1.06 PRODUCT IDENTIFICATION

A. Deliver doors and frames and other work of this section properly tagged and identified.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle all metal doors and frames in a manner to prevent damage and deterioration.

B. Provide packaging, separators, banding, spreaders, and individual wrappings as required to completely protect all metal doors and frames during transportation and storage.

C. Store doors upright, in a protected dry area, at least 4 inches off the ground and with at least 1/4 inch air space between individual pieces, protect all pre-finished and hardware surfaces.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Drawings and Specifications are based on products manufactured by Steelcraft Manufacturing Company, 9017 Blue Ash Road, Cincinnati, OH 45242 Tel. (513) 745-6400.

B. Equivalent products by the following manufacturers are acceptable:
1. Amweld Building Products, Inc., Garrettsville, OH. Tel. (330) 527-4385.
2. Ceco Door Products, Brentwood, TN. Tel. (615) 661-5030.
3. Curries Co., Mason City, IA. Tel. (641) 423-1334.
4. Republic Builders Products, McKenzie, TN. Tel. (901) 352-3383.

C. Substitutions shall fully comply with specified requirements and Section 01 25 00-Substitution Procedures and Section 01 60 00-Product Requirements.

2.02 REGULATORY REQUIREMENTS

A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
   1. Smoke- and Draft-Control Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.

B. Fire-Rated, Borrowed-Light Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

2.03 FABRICATION, GENERAL

A. Fabricate hollow metal units rigid, neat in appearance and free from defects, warp or buckle. Accurately form metal to required sizes and profiles. Weld exposed joints continuously, grind, dress, and make smooth, flush and invisible. Metallic filler to conceal manufacturing defects is not acceptable. Unless otherwise indicated, provide countersunk flat Philips or Jackson heads for exposed screws and bolts.

B. Prepare hollow metal units to receive finish hardware, including cutouts, reinforcing, drilling and tapping per final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 "Specifications for Door and Frame Preparation for Hardware".

C. Locate finish hardware in accordance with approved shop drawings.

2.04 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:
   1. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
   1. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
   2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
   3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.

4. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
5. Jamb Anchors: Provide number and spacing of anchors as follows:
    a. Masonry Type: Locate anchors not more than 16 inches from top and bottom of frame. Space anchors not more than 32 inches o.c., to match coursing, and as follows:
        1) Two anchors per jamb up to 60 inches high.
        2) Three anchors per jamb from 60 to 90 inches high.
        3) Four anchors per jamb from 90 to 120 inches high.
        4) Four anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
    b. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches on center and as follows:
        1) Three anchors per jamb up to 60 inches high.
        2) Four anchors per jamb from 60 to 90 inches high.
        3) Five anchors per jamb from 90 to 96 inches high.
        4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
    c. Compression Type: Not less than two anchors in each frame.
    d. Post installed Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches on center.
6. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers.
    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

D. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

E. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with mitered hairline joints.
1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
4. Provide loose stops and moldings on inside of hollow-metal work.
5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.05 FRAMES

A. Frames Types:

1. Exterior Openings: Frames shall be made of commercial grade 14 gage minimum cold rolled steel conforming to ASTM A366-68 with a zinc coating conforming to ASTM A653, with a coating designation of A60 or G60 and a minimum coating thickness of 0.60 oz. per sq. ft. minimum.
2. Interior Openings: Frames shall be commercial grade cold rolled steel conforming to ASTM A366-68 or commercial grade hot rolled and pickled steel conforming to ASTM A569-66T. Metal thickness shall be 16 gage for frames in openings 4 feet or less in width; 14 gage for frames in openings over 4 feet in width.

B. Design and Construction: Frames shall be custom made welded units with integral trim, of the sizes and shapes shown on approved shop drawings. Knocked-down frames WILL NOT be accepted. Finished work shall be strong, rigid, and neat in appearance, square, true and free of defects, warp or buckle. Molded members shall be clean cut, straight and of uniform profile throughout their lengths. Jamb depths, trim, profile and backbends shall be as shown on Drawings. Corner joints shall have contact edges closed tight, with trim faces mitered and continuously welded, and stops mitered. The use of gussets will not be permitted.
   1. Stops shall be 5/8 inch deep. Cut-off (sanitary or hospital type) stops, where scheduled, shall be capped at 45 degrees at heights shown on Drawings, and all jamb joints below cut-off stops shall be ground and filed smooth, making them imperceptible. Do not cut off stops on frames for soundproof, lightproof on lead-lined doors.
   2. When shipping limitations so dictate, frames for large openings shall be designed and fabricated for field splicing by others.
   3. Frames for multiple or special openings shall have mullion and / or rail members which are closed tubular shapes having no visible seams or joints. All joints between faces of abutting members shall be securely welded and finished smooth.
   4. Hardware reinforcements: Frames shall be mortised, reinforced, drilled and tapped at the factory for fully templated mortised hardware only, in accordance with approved hardware schedule and templates provided by the hardware supplier. Where surface-mounted hardware is to be applied, frames shall have reinforcing plates. Frames shall be reinforced for closers. Minimum thickness of hardware reinforcing plates shall be as follows:
      a. Hinge and pivot reinforcements - 7 gage, 1-1/4 inch by 10 inches minimum.
      b. Strike reinforcements - 12 gage.
      c. Flush bolt reinforcements - 12 gage.
      d. Closer reinforcements - 12 gage.
      e. Reinforcements for surface-mounted hardware - 12 gage.
   5. Floor anchors: Floor anchors shall be securely welded inside jambs for floor anchorage. Where required, provide adjustable floor anchors, providing not less than 2 inches height adjustment. Floor anchors shall be 14-gage minimum.

C. Finish: After fabrication, tool marks and surface imperfections shall be removed, and exposed faces of welded joints shall be dressed smooth. Frames shall be chemically treated to insure maximum paint adhesion and coated on accessible surfaces with rust-inhibitive primer complying with FS-TT-P-57 (Type II) or FS-TT-P-659 with 2.0 mils minimum thickness. Fully cure before shipment.

2.06 HOLLOW METAL DOORS

A. General: Doors shall be made of commercially quality, level, cold rolled steel conforming to ASTM A366-68 and free of scale, pitting or other surface defects.

B. Face Sheets:
1. Exterior Doors: Shall be 16-gage minimum with zinc coating conforming to ASTM A653, with a coating designation of A60 or G60 and a minimum coating thickness of 0.60 oz. per sq. ft. minimum.
2. Interior Doors: Shall be18 gage minimum.

C. Design and Construction: Doors shall be custom made, of the types and sizes shown on the approved shop drawings, and shall be fully welded seamless construction with no visible seams or joints on their faces or vertical edges. Door thickness shall be 1-3/4 inches unless otherwise noted. Doors shall be strong, rigid and neat in appearance, free from warp or buckle. Corner bends shall be true, straight and of minimum radius for the gage of metal used.

D. Face Sheet Stiffeners: Stiffen with continuous vertical formed steel sections spanning the full thickness of the interior space between door faces. These stiffeners shall be 22 gage minimum, spaced 6 inches apart and securely attached to face sheets by spot welds 5 inches on center. Spaces between stiffeners shall be sound-deadened insulated full height of door with an inorganic non-combustible batt-type material.

E. Welding: Join door faces at their vertical edges by a continuous weld extending full height of door. Welds shall be ground, filled and dressed smooth to make them invisible and provide a smooth flush surface.

F. Top and Bottom Edges: Edges of doors shall be closed with a continuous recessed 16 gage minimum steel channel, extending the full width of the door and spot welded to both faces. Exterior doors shall have additional flush closing channel at top edges and, where required for attachment of weather-stripping, a flush closure at bottom edges. Provide openings in bottom closure of exterior doors to permit escape of entrapped moisture.

G. Edge Profile: Shall be provided on both vertical edges of doors as follows:
1. Single-acting swing doors - beveled 1/8 inch in 2 inches.
2. Double-acting swing doors - rounded on 2-1/8 inch radius.

H. Hardware Reinforcements: Doors shall be mortised, reinforced, drilled and tapped at the factory for fully templated hardware only, in accord with the approved hardware schedule and templates provided by the hardware supplier. Where surface-mounted hardware (or hardware, the interrelation of which is to be adjusted upon installation - such as top and bottom pivots, floor closures, etc.) is to be applied, doors shall have reinforcing plates. Minimum gages for hardware reinforcing plates shall be as follows:
1. Hinge and pivot reinforcement - 7 gage.
2. Reinforcement for lock face, flush bolts, concealed holders, concealed or surface-mounted closers - 12 gage.
3. Reinforcement for all other surface mounted hardware - 16 gage.

I. Finish: After fabrication, tool marks and surface imperfections shall be dressed, filled and sanded as required to make all faces and vertical edges smooth, level and free of all irregularities. Doors shall be chemically treated to ensure maximum paint adhesion and shall be coated, on all exposed surfaces, with manufacturer's standard rust-inhibitive primer. Fully cure before shipment.

J. Flatness: Doors shall maintain a flatness tolerance of 1/16 inch maximum in any direction, including a diagonal direction.

2.07 LABELED DOORS & FRAMES

A. Labeled doors and frames shall be provided for those openings requiring fire protection ratings, and as scheduled on Drawings. Such doors and frames shall be Underwriters' Laboratories, Inc. labeled or other nationally recognized agency having a factory inspection service.

B. When door or frame specified to be fire-rated cannot qualify for appropriate labeling because of its design, size, hardware or any other reason, the Project Engineer / Architect shall be advised before fabricating work on that item is started.

2.08 HARDWARE LOCATIONS

A. Hinges:
1. Top: 9-3/4 inches from head of frame to centerline of top hinge.
2. Bottom: 10-3/8 inches from bottom of frame to centerline of bottom hinge.
3. Intermediate centered between top and bottom hinges on Dutch Doors:
   a. 9-3/4 inches from head of frame to centerline of hinge.
   b.
   c. 10-3/8 inches from bottom of frame to centerline of bottom hinge.
   d. 5 inches from split line to top and bottom respectively of lower and upper intermediate hinges.

B. Locks and Latches:
1. Unit and integral type locks and latches – 3'- 2" to centerline of knob.
2. Deadlocks - 5'- 0" to centerline of cross bar.
3. Roller latches - 3'-9" to centerline.

C. Panic hardware – 3'-1" to centerline of cross bar.

D. Pulls and Push Plates:
1. Door pulls – 3'-6" to center of grip.
2. Push-pull bars – 3'-1" to centerline of bar.
3. Arm pulls – 3'-11" to centerline.
4. Push plates – 4'- 0" to centerline of plate.

E. All of the above dimensions from paragraph 2.08(B) through 2.08(D) are from finished floor and shall comply with ADA and AHJ requirements.

2.09 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
1. Shop Primer: SDI A250.10.

2.10 CLEARANCES

A. Edge Clearances:
   1. Between doors and frame, at head and jambs - 1/8 inch.
   2. Door Sills: where no threshold is used - 1/4 inch maximum above finished floor; where threshold is used - 3/4 inch maximum above finished floor.
   3. Between meeting edges of pairs of doors - 1/8 inch.

B. Finished floor is defined as top surface of floor, except when resilient tile or carpet is used, when it is top of concrete slab. Where carpet is more than 1/2 inch thick, allow 1/4 inch clearance.

2.11 PREPARATION FOR FINISH HARDWARE

A. Hardware supplier shall furnish hollow metal manufacturer approved hardware schedule, hardware templates, and samples of physical hardware where necessary to ensure correct fitting and installation. Include preparation for mortise and concealed hardware.

B. Provide reinforcements for both concealed and surface applied hardware. Drill and tap mortise reinforcements at factory, using templates. Install reinforcements with concealed connections designed to develop full strength of reinforcements.

2.12 REJECTION

A. Hollow metal frames or doors which are defective, have hardware cutouts of improper size or location, or which prevent proper installation of doors, hardware or work of other trades, shall be removed. Replace rejected materials.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
   1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
      a. At fire-rated openings, install frames according to NFPA 80.
      b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
      c. Install frames with removable stops located on secure side of opening.
      d. Install door silencers in frames before grouting.
      e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
      f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
      g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
   a. Floor anchors may be set with power-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on shop drawings.
3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
5. Concrete Walls: Solidly fill space between frames and concrete with mineral-fiber insulation.
6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
7. In-Place Metal or Wood-Stud Partitions: Secure slip-on drywall frames in place according to manufacturer's written instructions.
8. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
   a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
   c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
   d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

B. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
1. Non-Fire-Rated Steel Doors:
   a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
   b. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
   c. At Bottom of Door:
      1) 1/4 inch, where no threshold or carpet.
      2) 1/8 inch, where with threshold or carpet.
   d. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.
2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
3. Smoke-Control Doors: Install doors and gaskets according to NFPA 105.

3.02

3.03 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow-metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

E. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION

SECTION 08 44 13 ALUMINUM CURTAIN WALL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Hurricane Resistant Architectural Aluminum Curtain Wall Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of curtain wall framing.

B. Related Sections:

1. Section 07 92 00 – Joint Sealants.
2. Section 08 80 00 – Glazing.

1.02 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.03 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's specifications for materials and fabrication of aluminum curtain wall and instructions and recommendations for installation and maintenance. Include certified test reports showing compliance with requirements where a test method is indicated.

B. Shop Drawings: Submit drawings showing adaptation of manufacturer's standard system to project; include typical unit elevations at 1/2 inch scale and details at 3 inch scale, to show dimensioning, member profiles, anchorage system, interface with building construction, and glazing. Show section moduli of wind-load-bearing members, and calculations of stresses and deflections for performance under design loading. Show clearly on shop drawings where and how manufacturer's system deviates from Contract Drawings and these Specifications.

C. Samples: Submit samples of each type and color of aluminum finish, on 12 inch long sections of extrusions of formed shapes and on 6 inch squares of sheet/plate. Include 2 or more samples in each set, showing near-limits of variations (if any) in color and texture of finish.

D. Delegated-Design Submittal: For glazed aluminum curtain walls indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.04 INFORMATIONAL SUBMITTALS

A. Energy Performance Certificates: NFRC-certified energy performance values from manufacturer.

B. Product test reports.

C. Field quality-control reports.

D. Sample warranties.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Installer experienced to perform work of this section who has at least five years experience in the installation of work similar to that required for this project and who is acceptable to product manufacturer.

B. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.

C. Design structural support framing components under direct supervision of a professional engineer experienced in design of this Work and licensed at the place where the Project is located.

D. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated.

E. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.07 DELIVERY, STORAGE AND HANDLING

A. Ordering Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

B. Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect curtainwall material against damage from elements, construction activities, and other hazards before, during and after curtainwall installation.

1.08 FIELD CONDITIONS

A. Ambient Conditions: Do not install sealant or glazing materials when ambient temperature is less than 40 degrees F during and 48 hours after installation.

1.09 WARRANTY

A. Special Assembly Warranty: Manufacturer agrees to repair or replace components of glazed aluminum curtain wall that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Final Completion.

B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Warranty Period: 20 years from date of Final Completion.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design glazed aluminum curtain walls.

B. General Performance: Comply with performance requirements specified, as determined by testing of glazed aluminum curtain walls representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Glazed aluminum curtain walls shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:
   a. Thermal stresses transferring to building structure.
   b. Glass breakage.
   c. Noise or vibration created by wind and thermal and structural movements.
   d. Loosening or weakening of fasteners, attachments, and other components.
   e. Failure of operating units.

C. Wind Loads: Provide framing system; include anchorage, capable of withstanding wind load design pressure as required by IBC 2012 Building Code and local Authorities having jurisdiction, whichever are more stringent.

D. Uniform Loads: A static air design load based on loads shown on Structural Drawings (without steel reinforcing) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of l/180 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.4 percent of their clear spans shall occur.

E. Impact-Resistance: Large Missile, tested in accordance with SBCCI SSTD-12 and ASTM E 1886 and ASTM E 1996.

F. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft^2 at a static air pressure differential of 6.24 pounds per square foot.

G. Water Resistance, (Static): The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a static air pressure differential of 12 pounds per square foot as defined in AAMA 501

H. Water Resistance, (Dynamic): The test specimen shall be tested in accordance with AAMA 501.1. There shall be no leakage at an air pressure differential of 12 pounds per square foot as defined in AAMA 501.

I. .Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than 73 for frame.

J. Seismic: When tested to AAMA 501.4, system must meet design displacement of 0.010 x the story height and ultimate displacement of 1.5 x the design displacement.

K. Sound Transmission Loss: When tested to ASTM E90, the Sound Transmission Class (STC) shall not be less than 34 based upon one inch insulating glass (1/4 inch, 1/2 inch AS, 1/4 inch).

2.02 MANUFACTURERS

A. Drawings and Specifications are based on Series 1600 Wall System 1 as manufactured by Kawneer Company, Inc., 555 Guthridge Court, Norcross, GA 30092. Tel. (770) 449-5555.

B. Equivalent products by the following manufacturers are acceptable:

1. Coral Architectural Products, Tuscaloosa, AL Tel. ((850) 716-9889.
2. EFCO Corporation, Monett, MO. Tel. (800) 221-4169.
3. Oldcastle Building Envelope, Terrell, TX. Tel. (866) 653-2278.
4. Traco, Cranberry Township, PA. Tel. (724) 776-7000.

C. Substitutions shall fully comply with specified requirements and Section 01 25 00 - Substitution Procedures and Section 01 60 00 - Product Requirements.

2.03 MATERIALS

A. Aluminum (Curtain Wall and Components-Hurricane Resistant):

1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T5 or 6063-T6 alloy and temper.
2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements
3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of curtain wall members are nominal and in compliance with AA Aluminum Standards and Data.

2.04 ACCESSORIES

A. Fasteners: Where exposed, shall be Stainless Steel.

B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of a silicone compatible EPDM rubber that provides for silicone adhesion.

C. Perimeter Anchors: Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

D. Thermal Barrier: Thermal separator shall be extruded of a silicone compatible elastomer that provides for silicone adhesion.

2.05 FABRICATION

A. General:

1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
3. Prepare components to receive anchor devices. Fabricate anchors.
4. Arrange fasteners and attachments to conceal from view.

2.06 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm.

2.07 SOURCE QUALITY CONTROL

A. Source Quality: Provide aluminum curtain walls specified herein from a single source.

1. Building Enclosure System: When aluminum curtain wall are part of a building enclosure system, including entrances, entrance hardware, windows, storefront framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive curtain wall system and sill plate is level in accordance with manufacturer's acceptable tolerances.

1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 INSTALLATION

A. General: Install curtain wall systems plumb, level, and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.

1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
2. Glazing: Glass shall be outside glazed and held in place with extruded aluminum pressure plates anchored to the mullion using stainless steel fasteners spaced no greater than 9" on center.
3. Water Drainage: Each light of glass shall be compartmentalized using joint plugs and silicone sealant to divert water to the horizontal weep locations. Weep holes shall be located in the horizontal pressure plates and covers to divert water to the exterior of the building.

3.03 PROTECTION AND CLEANING

A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum curtain wall system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants.

B. Cleaning: Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions. Clean units and glazing again no more than one week prior to Final Completion. Remove construction debris from project site and legally dispose of debris.

END OF SECTION

SECTION 08 71 00 DOOR HARDWARE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Hardware as shown on the Drawings and in Schedules. Door hardware is hereby defined to include all items known commercially as builders hardware, as required for swing doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame.

B. The required types of hardware include (but are not limited to) the following:
   1. Butts and hinges
   2. Lock cylinders and keys
   3. Lock and latch sets
   4. Bolts
   5. Closers
   6. Door trim units
   7. Stripping and seals
   8. Thresholds

C. Items of hardware not definitely specified, but required for the completion and proper operation of the doors, shall be suitable in type, comparable to the type specified for similar openings.
   1. Labeled doors shall be fitted with labeled hardware.

D. Modifications of hardware required by reason of construction characteristics shall provide the proper operation or functional features.
   1. Contractor shall be fully responsible for checking all details, such as wall trim clearance, bevels, backsets, proper type strike plates, length of spindles, hands of locks, etc., in order that all items of hardware shall fit properly.
   2. Hardware for application to metal shall be made to standard templates.
   3. Furnish template information to door and frame fabricators and all other trades requiring same, in order that they may cut, reinforce or otherwise prepare in the shop, materials for reception of hardware.

E. Hardware shall be free from defects affecting appearance and serviceability.
   1. Working parts shall be well fitted and smooth working without unnecessary play.
   2. Hardware shall be delivered to the building site in sufficient time in advance of its requirement for use for inspection prior to installation.

1.02 REFERENCES

A. Coordinate with the following Sections for the installation of finish hardware:
   1. Section 08 11 13 – Hollow Metal Doors and Frames.

1.03 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's product data, roughing-in diagrams, and Installation instructions for each type of hardware.
   1. Include operating instructions, maintenance information and spare part sources.

B. Samples: Submit samples for color of finishes (Black WILL NOT Be Acceptable In Lieu Of Antique Bronze Oiled Finish) and such samples as required by the Project Engineer / MDOT Architect for approval. Do not deliver hardware until approval is obtained.

C. Templates: Provide templates and / or physical hardware to trades as required and in sufficient time to prevent delay in the execution of the Work.

D. Other Action Submittals:
   1. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
      a. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
      b. Content: Include the following information:
         1) Identification number, location, hand, fire rating, size, and material of each door and frame.
         2) Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
         3) Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
   2. Keying Schedule: Prepared by or under the supervision of Installer, detailing Owner's final keying instructions for locks.
   3. Approval of schedule will not relieve Contractor of responsibility for furnishing all necessary hardware.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available during the course of the Work to consult with Contractor, Architect, MDOT Architect and Project Engineer (Owner's Representative) about door hardware and keying.

B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as follows:
   1. For door hardware, an Architectural Hardware Consultant (AHC).

C. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and

labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.

D. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1
   1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
   2. Comply with the following maximum opening-force requirements:
      a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
      b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
   3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
   4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

E. Keying Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination."

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

B. Packing and Marking: Package each item of hardware and lockset separately in individual containers, complete with screws, keys, instructions and installation template for spotting mortising tools. Mark each container with item number corresponding to number shown on Contractor's hardware schedule.

1.06 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: Three years from date of Completion, unless otherwise indicated.
      a. Manual Closers: 10 years from date of Completion.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Equivalent products by the following manufacturers are acceptable:
   1. Hinges – Hager, Ives, McKinney.
   2. Continuous Hinges – Hager, Ives, Markar.

3. Cylinders – Best, Corbin/Russwin, Sargent, Schlage.
4. Flushbolts and Accessories – Hager, Ives, Rockwood.
5. Locksets – Baldwin, Corbin/Russwin, Sargent, Schlage.
6. Deadbolts – Baldwin, Corbin/Russwin, Sargent, Schlage.
7. Exit Devices – Precision, Sargent, Von Duprin.
8. Door Closers – Corbin/Russwin (DC3000), LCN (1460), Sargent (1430).
9. Protective Plates – Hager, Ives, Rockwood.
10. Door Stops – Hager, Ives, Rockwood.
11. Overhead Stops / Holders – Glynn Johnson, Rixson, Sargent.
12. Gasketing and Thresholds – National Guard Products, Pemko, Reese.
13. Silencers – Hager, Ives, Rockwood.

B. Substitutions: Comply with specified requirements and Section 01 25 00 – Substitution Procedures and Section 01 60 00 – Product Requirements.

2.02 SCHEDULED DOOR HARDWARE

A. Provide door hardware for each door as scheduled **on** Drawings to comply with requirements in this Section.
1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products equivalent in function and comparable in quality to named products
2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:
1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.
2. References to BHMA Designations: Provide products complying with these designations and requirements for description, quality, and function.

2.03 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.
1. Keyed Alike: Key all cylinders to same change key.

B. Removable Cores: Furnish all cylinders & locksets with removable type cores. The removable core system shall be one that uses either temporary construction cores or construction keyed cores operated by a construction key until such time the construction key is rendered inactive by the change key or retractor key.

C. Keys: Brass.
1. Quantity: In addition to one extra key blank for each lock, provide the following:
a. Cylinder Change Keys: Three.

2.04

2.05 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.
   1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
   2. Fire-Rated Applications:
      a. Wood or Machine Screws: For the following:
         1) Hinges mortised to doors or frames.
         2) Strike plates to frames.
         3) Closers to doors and frames.
      b. Steel Through Bolts: For the following unless door blocking is provided:
         1) Surface hinges to doors.
         2) Closers to doors and frames.
         3) Surface-mounted exit devices.
   3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
   4. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."
   5. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.06 FINISHES

A. Provide finishes on all door hardware complying with BHMA Code 630 (Dull Stainless Steel) as specified in BHMA A156.18e.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

B. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.

C. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
   1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
   2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

D. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

E. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches of door height greater than 90 inches.

F. Lock Cylinders: Install construction cores to secure building and areas during construction period.
   1. Replace construction cores with permanent cores as indicated in keying schedule.
   2. Furnish permanent cores to Owner for installation.

G. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

H. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 07 92 00 "Joint Sealants."
   1. Cut and fit threshold and floor covers to profile of door frames, with mitered corners and hairline joints.
   2. Screw thresholds to substrate with No. 10 or larger screws, of the proper type for permanent anchorage and of bronze or stainless steel that will not corrode in contact with the threshold metal.
   3. Do not plug drainage holes or block weeps.
   4. Remove excess sealant.

I. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.

J. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

K. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

L. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

M. Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
   1. Lubricate moving parts with type lubrication recommended by manufacturer (graphite-type if no other recommended).

3.02 FIELD QUALITY CONTROL

A. Independent Architectural Hardware Consultant: Engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

3.03 DOOR HARDWARE SCHEDULE

A. **HW2** (For Exterior Hollow Metal Door)

Each Opening Shall Have:

3 – Each Hinges	McKinney	TA2714 4 1/2 X 4 1/2 X NRP X 626
1 – Lockset	Sargent	10G24LL X 626
1 – Closer	Sargent	1431P9 X TB X EN
1 – Threshold	Pemko	2005AV
1 – W/Strip	Pemko	303AV
1 – Door Bottom	Pemko	2211AV (for Hollow Metal Doors)
1 – Stop	Rockwood	(As Required)
3 – Silencers		

B. **HW14** (For Interior Hollow Metal Door @ Area Separation)

Each Opening Shall Have:

3 – Each Hinges	McKinney	TA2714 4 1/2 X 4 1/2 X 626
1 – Lockset	Sargent	10G24LL X 626
1 – Cylinder		As Required
1 – Stop	Rockwood	440 X 626 (Overhead Stop as Required)
1 – Threshold	Pemko	2005 AV X Required Length

1 – Set W/Strip	Pemko	303 AV (Head & Jambs)
1 – Door Shoe	Pemko	2211 AV (at Hollow Metal Doors)
3 – Silencers		

END OF SECTION

SECTION 08 80 00 GLAZING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Glass and glazing for Aluminum Curtain Wall.

B. Related Sections:
1. Section 08 41 13 - Aluminum Curtain Wall

1.02 PRECONSTRUCTION TESTING

A. Preconstruction Adhesion and Compatibility Testing: Test each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
1. Testing will not be required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.

1.03 ACTION SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches square.

C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.04 INFORMATIONAL SUBMITTALS

A. Preconstruction adhesion and compatibility test report.

1.05 QUALITY ASSURANCE

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
1. Prime Glass Standard: FS DD-G-45l.
2. Heat-Treated Glass Standard: FS DD-G-l403.
3. Safety Glass Standard: CPSC l6 CFR l20l.
4. GANA Publications: GANA's "Glazing Manual."

5. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect glass during transit, storage and handling to prevent scratching or breakage of glass. Replace broken glass.

1.07 PROJECT CONDITIONS

A. Schedule meeting with Glazier and other trades affected by glass installation, prior to beginning of installation.
   1. Do not perform work under adverse weather or job conditions.
   2. Install liquid sealant when temperatures are within lower or middle third of temperature range recommended by manufacturer.

1.08 WARRANTY

A. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form in which laminated-glass manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
   1. Warranty Period: 10 years from date of Completion.

B. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
   1. Warranty Period: 10 years from date of Completion.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Equivalent products by the following prime glass manufacturers are acceptable:
   1. Bayer MaterialScience LLC, Sheffield, MA. Tel. (877) 413-7957.
   2. Cardinal Glass Industries, Eden Prairie, MN. Tel. (952) 229-2600.
   3. Dependable Glass Works, Inc., Covington, LA. Tel. (800) 338-2414.
   4. Guardian Industries Corp., Carleton, MI. Tel. (800) 521-9040.

5. Old Castle Building Envelops, Santa Monica, CA. Tel. (866) 653-2278.
6. PPG Industries, Inc., Pittsburgh, PA. Tel. (800) 377-5267.
7. Safti First, San Francisco, CA. Tel. (888) 653-3333.
8. U.S. Armor LLC, Lenoxdale, MA Tel. (800) 450-3873.
9. Viracon, Inc., Owatonna, MN. Tel. (800) 533-2080.

2.02 GLASS PRODUCTS, GENERAL

A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.

B. Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.

C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
   1. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
   2. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
   3. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.03 GLASS PRODUCTS

A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.

B. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.

2.04 INSULATING GLASS

A. Material: Organically sealed panes of glass enclosing a hermetically sealed dehydrated air space and complying with ASTM E 774 for performance classification indicated. Unless shown otherwise on Drawings, use this type glass for all exterior applications.

B. Characteristics: Other requirements specified for glass characteristics, air space, sealing system, sealant spacer material, corner design and desiccant are as follows:
   1. Unit Overall Thickness: 1-5/16 inch.
   2. Exterior Pane: Tinted; color –"Atalantica" with Solarban 70XL MSVD (Sputter) Low-E on 2nd (air space) surface by PPG Industries, Inc.
   3. Outdoor Lite: Class 1 Tint float glass, 1/4 inch minimum thickness.
      a. Kind Heat Strengthen except where Fully Tempered required**.**
      b. Tint Color: Solarbroze.

c. Solar Control Low-E Coating: Sputtered on second surface.
d. Basis of Design Product: PPG Industries, Inc.

4. Air Space: 1/2 inch.
5. Indoor Lite: Class 1 (clear) float glass, Overall Thickness: 9/16 inch (Hurricane / Bullet Resistant) laminated glass.
   a. Kind Heat Strengthen**.**
   b. Basis of Design Product: PPG Industries, Inc., Clear.
6. Interlayer: 0.090 inch minimum thick clear equal to SGP by DuPont.
7. Unit Performance Requirements for "Solarbronze"
   a. Light Transmission (visible): 51 percent minimum
   b. U-Value, Summer: 0.28. maximum
   c. U-Value, Winter: 0.29 maximum
   d. Relative Heat Gain: 88 BTU per Hour Ft^2 maximum.
   e. Solar Heat Gain Coefficient (SHGC): 0.21 maximum
   f. Shading Coefficient: 0.26 maximum

2.05 LAMINATED CLEAR SAFETY GLASS

A. Two layers of 1/8 inch glass Type 1 (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select) with a 0.030 polyvinyl butyryl interlayer. Total thickness, 1/4 inch (plus). Unless shown otherwise on Drawings, use this type glass for all interior applications.

2.06 BULLET PROOF GLASS

A. 1-5/16 inch thick bullet resistant glass, comprised of four layers of 1/4 inch clear tempered glass with 0.062 inch vinyl inner layers. - Project based.

2.07 SETTING MATERIALS

A. Provide necessary primers, sealants, channels, setting blocks, etc. with items to be glazed. Conform to requirements set forth in FGJA Glazing Manual.

2.08 MISCELLANEOUS GLAZING MATERIALS

A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

B. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

C. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

D. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

E. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

F. Perimeter Insulation for Fire-Resistive Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

PART 3 - EXECUTION

3.01 PREPARATION FOR GLAZING

A. Clean glazing channel and other framing members to receive glass, immediately before glazing. Remove coatings that are not firmly bonded to substrate. Remove lacquer from metal surfaces where elastomeric sealants are used.
   1. Apply primer or sealant to joint surfaces where recommended by sealant manufacturer.

3.02 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

I. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when installation is subjected to movement. Anchor gasket to stop with matching ribs, or by proven adhesives, including embedment of gasket tail in cured heel-bead.

J. Tool exposed surfaces of glazing liquids and compounds to provide a substantial "wash" away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.

3.03 GLAZING INSTALLATION

A. Do not commence glazing Work until the required primers have been applied and have dried. Clean all surfaces to which setting materials are to be applied to assure that the materials properly adhere and seal.

B. Experienced glaziers having highest quality workmanship shall perform all glazing. Glass shall be set without springing or forcing. Putty, glazing compound, stops and the like shall not project above the sight line. Exposed surfaces of putty and glazing compound shall be left straight, flat and clean. Corners shall be well formed.

C. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

D. Apply clear glazing compound around perimeter and at all glass-to-glass connections of butt-glazing system. Compound shall be the type recommended by the glass manufacturer for this particular installation.

3.04 STANDARDS AND PERFORMANCE

A. Watertight and airtight installation of each glass product is required, except as otherwise shown. Each installation must withstand normal temperature changes, wind loading, impact loading (for operating sash and doors), without failure including loss or breakage of glass, failure of sealant or gaskets to remain watertight and airtight, deterioration of glazing materials and other defects in the Work.

B. Protect glass from edge damage during handling and installation, and subsequent operation of glazed components of the Work. During installation, discard units with significant edge damage or other imperfections.

C. Glazing channel dimensions where shown are intended to provide for necessary bite on glass, minimum edge clearance, and adequate sealant thickness, with reasonable tolerances. Adjust as required by job conditions at time of installation.

D. Comply with combined recommendations and technical reports by manufacturers of glass and glazing products as used in each glazing channel, and with recommendations of Flat Glass Marketing Association "Glazing Manual," except where more stringent requirements are indicated.

3.05 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.
   1. Cure sealant for high early strength and durability

B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

END OF SECTION

SECTION 09 05 15 COLOR DESIGN

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: A coordinated comprehensive Color System in which requirements for materials specified in other Sections of this Specification and / or shown on the Drawings are identified for quality, color, finish, texture and pattern.

1.02 MANUFACTURER'S TRADE NAMES

A. Manufacturer's trade names and number designations used herein identify colors, finishes, textures and patterns for materials and products specified in the technical sections of the Specifications. Wherever such products are referred for selection or approval in other sections, such products shall be understood to be referenced to this Section.

B. If no selection is listed herein for products, the Project Engineer / MDOT Architect shall be contacted for a color selection.

C. Subject to approval of the Project Engineer / MDOT Architect, products of other manufacturers will be considered, provided they are equivalent to the quality, colors, finishes, textures and patterns listed and meet the requirements of the Specifications and Drawings.

1.03 SAMPLES

A. Color samples shall be submitted for approval prior to applying or installing finishes or items that are included in this Section. See appropriate technical Sections for submittal requirements. Upon receipt of samples, the Project Engineer / MDOT Architect may revise the Color schedule.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials are specified in other Sections of the Specifications. Reference by trade name or manufacturer shall be considered as establishing a standard of quality and shall in no way limit competition.

2.02 MANUFACTURERS

A. The following manufacturers were used in preparing the Color Schedule:

SECTION / MATERIALS	MANUFACTURER / NUMBER & COLOR NAME	COLOR DESCRIPTION

• 03 33 00 – Concrete (walls)	Color match per plans	(color match)
• 05 50 00 - Misc. Steel (ped. bridge)	SW #7055 Enduring Bronze	(dark brown)
• 05 50 00 - Misc. Steel (railing)	SW #7018 Dovetail	(gray)
• 08 11 13 - HM Drs & Frames (ext.)	Color match per plans	(color match)
• 08 11 13 - HM Drs & Frames (int.)	SW #7018 Dovetail	(gray)
• 08 44 15 - Aluminum Curtain Wall	Dark Bronze (match SW #7055)	(dark brown)
• 08 71 00 - Door Hardware	Stainless Steel	(stainless steel)
• 09 29 00 - Gypsum Board	SW #7018 Dovetail	(gray)

PART 3 - EXECUTION

3.01 INSTALLATION / APPLICATION, GENERAL

A. Refer to execution requirements specified in other Sections of this Specification for the specific products listed. Colors, finishes, textures or patterns not included in this Color Design will be selected by the Project Engineer / MDOT Architect upon written notification and subsequent submittals by the Contractor.

END OF SECTION

SECTION 09 29 00 GYPSUM BOARD

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Gypsum board work with a tape-and-compound joint treatment system known as "drywall finishing" work.

B. The types of Work required include the following:

1. Gypsum board including screw-type metal support system.
2. Drywall finishing (joint tape-and-compound treatment).

1.02 ACTION SUBMITTALS

A. Product Data: Manufacturer's technical product data, installation instructions and recommendations for products specified.

1.03 QUALITY ASSURANCE

A. Fire Resistance: Where work is indicated for fire resistance ratings, including those required to comply with governing regulations, provide materials and installations identical with applicable assemblies which have been tested and listed by recognized authorities, including UL.

B. Industry Standard: Comply with applicable requirements of GA-216 "Application and Finishing of Gypsum Board" by the Gypsum Association, except where more detailed or more stringent requirements are indicated including the recommendations of the manufacturer.

C. Allowable Tolerances: 1/8 inch offsets between planes of board faces, and 1/4 inch in 8 ft. for plumb, level, warp and bow.

D. Manufacturer: Obtain gypsum boards, framing and fasteners, trim accessories, adhesives and joint treatment products from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum boards.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver gypsum drywall materials in sealed containers and bundles, fully identified with manufacturer's name, brand, type and grade; store in a dry, well ventilated space, protected from the weather, under cover and off the ground.

1.05 PROJECT CONDITIONS

A. Installer must examine the substrates and the spaces to receive gypsum drywall, and the conditions under which gypsum drywall is to be installed; and shall notify the Contractor, in writing, of conditions detrimental to the proper and timely completion of the work.

1. Do not proceed with the installation until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

B. Maintain ambient temperatures at not less than 55 degrees F., for the period of 24 hours before drywall finishing, during installation and until compounds are dry.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Obtain gypsum board, framing and fasteners, trim accessories, adhesives and joint treatment products from one of the following:
   1. CertainTeed Corporation, PA Tel: (800) 233-8990.
   2. Georgia-Pacific Corp, Atlanta, GA, Tel. (800) 327-2344.
   3. National Gypsum Company, Charlotte, NC, Tel. (800) 343-4893.
   4. United States Gypsum Company, Chicago, IL, Tel. (800) 874-4968.

2.02 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.03 METAL SUPPORT MATERIALS

A. To the extent not otherwise indicated, comply with Gypsum Association Specification GA-203 "Installation of Screw-Type Steel Framing Members to Receive Gypsum board" (as specified and recommended) for metal system supporting gypsum drywall work.

B. Interior Studs: ASTM C 645; 20-gage by 3-5/8 inches deep, except as otherwise indicated or specified herein. Provide stud manufacturer's standard accessories such as clips, shoes, ties, reinforcements, fasteners and other accessories as needed for a complete stud system.
   1. Runners shall match studs; type recommended by stud manufacturer for floor and ceiling support of studs, and for vertical abutment of drywall work at other work.
   2. Provide double 20 gage studs at all openings and doorjambs and at door and opening headers.

C. Furring Members: ASTM C 645; 20-gage, hat-shaped. Where shown as "Resilient", provide manufacturer's special type designed to reduce sound transmission.

D. Fasteners: Type and size recommended by furring manufacturer for the substrate and application indicated.

2.04 GYPSUM BOARD PRODUCTS

A. Furnish gypsum board products in maximum lengths available to minimize end-to-end butt joints. To the extent not otherwise indicated, comply with GA-216, as specified and recommended.

B. Exposed gypsum board shall be Type X, fire rated type with tapered long edges and as follows:
   1. Edge Profile: Special rounded or beveled edge.
   2. Sheet Size: Maximum length available that will minimize end joints.
   3. Thickness: 5/8 inch, except where otherwise indicated.
   4. Water-resistant Type (WR-1): Provide at exterior walls and at "Wet" areas without ceramic tile; equal to 5/8 inch thick DensArmor Plus Fireguard by G-P Gypsum.
   5. Cement Board: Provide water-resistant cement based backer board as a base for all ceramic wall tiles, equal to 5/8 inch thick Durock by USG.

2.05 TRIM ACCESSORIES

A. Manufacturer's standard galvanized steel beaded units with flanges for concealment in joint compound including corner beads, edge trim and control joints; except provide semi-finishing type (flange not concealed) where indicated.

B. Where metal moldings are specifically called out on the Drawings, provide the appropriate item from below:

1. Edge Trim: USG No. 200-A.
2. Control Joint: USG No. 093.

2.06 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper, perforated type.
2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound: On interior work provide chemical hardening type for bedding and filling, ready-mixed vinyl-type or non-case in-type for topping. On exterior work provide water- resistant type.

2.07 MISCELLANEOUS MATERIALS

A. Provide auxiliary materials for gypsum drywall work of the type and grade recommended by the manufacturer of the gypsum board. Gypsum board fasteners shall comply with GA-216. Provide anti-corrosive type at exterior applications.

PART 3 - EXECUTION

3.01 PREPARATION

A. Install supplementary framing, runners, furring, blocking and bracing at opening and terminations in the Work, and at locations required to support fixtures, equipment, services, heavy trim, furnishings and similar work which cannot be adequately supported directly on gypsum board alone.

3.02 INSTALLATION OF METAL SUPPORT SYSTEMS

A. To the extent not otherwise indicated, comply with GA-203, and manufacturer's instructions.

1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination with other work.
2. Isolate stud system from transfer to structural loading to system, both horizontally and vertically.
3. Provide slip or cushioned type joints to attain lateral support and avoid axial loading. Install runner tracks at floors, ceiling and structural walls and columns where gypsum drywall stud system abuts other work.
4. Space studs 16 inches on center except as otherwise indicated.

B. Door Frames: Install additional jamb studs at door frames as indicated, but not less than 2 studs (minimum 20 gage) at each jamb. Space jack studs over doorframes at same spacing as partition studs, with bottom runner secured to doorframe.

C. Install supplementary framing, runners, furring, blocking and bracing at opening and terminations in the work, and at locations required to support fixtures, equipment, services, heavy trim, furnishings and similar work which cannot be adequately supported directly on gypsum board alone.

3.03 GENERAL GYPSUM BOARD INSTALLATION REQUIREMENTS

A. Meet at the project site with the installers of related work and review the coordination and sequencing of work to ensure that everything to be concealed by gypsum drywall has been accomplished, and that chases, access panels, openings, supplementary framing and blocking and similar provisions have been completed.
   1. In addition to compliance with GA-216 and ASTM C 840, comply with manufacturer's instructions and requirements for fire resistance ratings (if any), whichever is most stringent.

B. Install wall / partition boards vertically to avoid end- butt joints wherever possible.
   1. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.
   2. Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories.

C. Install sound attenuation blankets and insulation as indicated, prior to gypsum board unless readily installed after board has been installed.

D. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum board with "floating" internal corner construction, unless isolation of the intersecting boards is indicated or unless control or expansion joints are indicated.

E. Space fasteners in gypsum boards in accordance with manufacturer's recommendations.

3.04 SPECIAL GYPSUM BOARD APPLICATIONS

A. Install exposed gypsum board by fastening with screws.

B. Apply with uncut long edge at bottom of work, and space l/4 inch above fixture lips. Seal ends, cut-edges and penetrations of each piece with water-resistant sealant before installation.

3.05 INSTALLATION OF DRYWALL TRIM ACCESSORIES

A. Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges by nailing or stapling in accordance with manufacturer's instructions and recommendations.

B. Install metal corner beads at external corners of drywall work.

C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed.
   1. Provide type with face flange to receive joint compound except where semi-finishing type is indicated.
   2. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints.)
   3. Install metal control joint (beaded type) where indicated or required for proper installation.

3.06 INSTALLATION OF DRYWALL FINISHING

A. Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare Work for decoration. Pre-fill open joints and rounded or beveled edges, using type of compound specified herein and recommended by manufacturer.

B. Apply joint tape at joints between gypsum boards, except where a trim accessory is indicated.

C. Apply joint compound in 3 coats (not including pre-fill of openings in base), and sand between last 2 coats and after last coat.

D. Unless otherwise indicated, install drywall finishing at all gypsum board exposed to view and to receive finishes as specified.

E. Finishing Gypsum Board Assemblies: Level 4 finish, unless otherwise indicated; Level 1 finish for concealed areas, unless a higher level of finish is required for fire-resistance-rated assemblies and Level 2 finish where panels form substrates for tile, Level 5 finish is required in areas with a gloss or epoxy finished coating.

3.07 PROTECTION OF WORK

A. Installer shall advise Contractor of required procedures for protection of the gypsum drywall Work from damage and deterioration during the remainder of the construction period.

END OF SECTION

SECTION 09 91 00 PAINTING

PART 1 - GENERAL

1.01 SUMMARY

A. Painting and finishing of exterior and interior exposed items and surfaces throughout the project, except as otherwise indicated. Surface preparation, priming and finish coats specified in this Section are in addition to shop priming and surface treatment specified under other Sections of the Work.

1. The Work includes field painting of gypsum board, exposed steel, hollow metal doors and frames and primed or galvanized metal surfaces of equipment installed under the mechanical and electrical Work, except as otherwise indicated.
2. "Paint" means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.
3. Paint all exposed surfaces whether or not colors are designated in "schedules", except where the natural finish of the material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas. If color or finish is not designated, the Architect will select these from standard colors available for the materials system specified.

B. Related Sections: Section 09 05 15 – Color Design.

1.02 PAINTING NOT INCLUDED

A. The following categories of Work are not included as parts of the field-applied finish Work, or are included in other Sections of these Specifications.

B. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various Sections for structural steel, miscellaneous metal, hollow metal work, and similar items. Also, for fabricated or factory-built mechanical and electrical equipment or accessories.

C. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer finishing is specified for such items as (but not limited to) plastic toilet enclosures, prefinished partition systems, acoustic materials, architectural woodwork and casework, finished mechanical and electrical equipment including light fixture, switch-gear and distribution cabinets, elevator entrance frames, door and equipment.

D. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundations spaced, furred areas, utility tunnels, pipe spaces, duct shafts and elevator shafts.

E. Finished Metal surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.

F. Operating Parts and Labels: Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts will not require finish painting, unless otherwise indicated. Do not paint over any code-required labels, such as Underwriter's Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical information including basic materials analysis and application instructions for each coating material specified.

B. Samples for Initial Selection: For each type of topcoat product indicated. Submit color samples for selection by Architect from manufacturer's full range of colors. Indicate submitted manufacturer's closest STANDARD colors that match colors specified or provide "Custom" color if not match.

C. Samples for Verification: For each type of paint system and each color and gloss/sheen of topcoat indicated.

1. Submit Samples on rigid backing, 8 inch square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: For each product indicated, include the following:

1. Comply with Articles 3.7 and 3.8 indicating each type of primer, intermediate coat and topcoat required for each substrate by product name and number.
2. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.

E. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer / supplier shall furnish a coating maintenance manual, such as Sherwin-Williams "Custodian Project Color and Product Information" report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product / color / finish was used, product data pages, Material Safety Data sheets (MSDS), care and cleaning instructions, including touch-up procedures.

F. Substitutions for Convenience: Architect will consider formal written requests from Contractor for substitution of products in place of those specified if received within 30 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect. Substitutions which decrease the film thickness, the number of coats applied, change the generic type of coating or fail to meet the performance criteria of the specified materials WILL NOT be approved. All primers and topcoats plus the seam sealer and pit filler shall be furnished by the same manufacturer to ensure compatibility.

1.04 QUALITY ASSURANCE

A. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified.

a. Vertical and Horizontal Surfaces: Provide samples .on a 3 foot square panel.
b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on benchmark samples.
a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver all materials to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and the following information:

1. Name or title of material.
2. Fed. Spec. Number, if applicable.
3. Manufacturer's stock number and date of manufacturer.
4. Manufacturer's name.
5. Contents by volume, for major pigment and vehicle constituents.
6. Thinning instructions.
7. Application instructions.
8. Color name and number.

B. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.06 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paint in snow, rain, fog or mist; or when the relative humidity exceeds 85 percent; or to damp or wet surfaces; unless otherwise permitted by the paint manufacturer's printed instruction. Painting may be continued during inclement weather only if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during application and drying periods.

1.07 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent, but not less than 1 gallon of each material and color applied.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Benjamin Moore & Company, Montvale, NJ. Tel. (800) 344-0400.

2. Farrell-Calhoun Paint, Memphis, TN. Tel. (901) 526-2211.
3. PPG Paints, Inc., Pittsburgh, PA. Tel (412) 434-3131.
4. Rust-Oleum, Vernon Hills, IL. 60061. Tel. (800) 323-3584.
5. Sherwin-Williams Company, Cleveland, OH 44115. Tel. (800) 321-8194.

2.02 COLORS AND FINISHES

A. Paint colors, surface treatments, and finishes will be selected from color chips submitted by contractor. Prior to beginning Work, the Architect will select color chips for surfaces to be painted. Use representative colors when preparing samples for review. Final acceptance of colors will be from samples.

B. Colors Pigments: Pure, non-fading, applicable types to suit the substrates and service indicated. Lead content in the pigment, if any, is limited to contain not more than 0.5 percent lead, as lead metal based on the total non-volatile (dry-film) of the paint by weight.

C. Paint Coordination: Provide finish coats which are compatible with prime paints used. Review other sections of these Specifications in which prime paints are to be provided to ensure compatibility of total coats system for various substrates. Upon request from other trades, furnish information on characteristics of finish materials provided for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primer or remove and re-prime as required. Notify the Architect in writing of any anticipated problems using specified coating systems with substrates primed by others.

2.03 MATERIAL QUALITY

A. Provide the best quality grade of the various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying the manufacturer's identification as a standard, BEST GRADE product WILL NOT be acceptable. Proprietary names used to designate colors or materials are not intended to imply that products of the named manufacturers are required to the exclusion of equivalent products of other manufacturers.

B. Provide undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer, and use only within recommended limits.

C. mPaints in subsequent articles are specified by reference to MPI paint categories. Retaining requirements for VOC content or Environmental Performance Rating (EPR) further limits product selection; coordinate selections with products of manufacturers retained in "Manufacturers" Article.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Applicator must examine the areas and conditions under which painting Work is to be applied and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to the Applicator. Starting of painting Work will be construed as the Applicator's acceptance of the surfaces and conditions within any particular area.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Masonry (Clay and CMU): 12 percent.
3. Wood: 15 percent.
4. Plaster: 12 percent.
5. Gypsum Board: 12 percent.

C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to the formation of a durable paint film.

3.02 SURFACE PREPARATION

A. Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified, for each particular substrate condition.

1. Remove all hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection prior to surface preparation and painting operations.
2. Remove, if necessary, for the complete painting of the items and adjacent surfaces.
3. Following completion of painting of each space or area, re-install the removed items by workmen skilled in the trades involved.
4. Clean surfaces to be painted before applying paint or surface treatments.
5. Remove oil and grease prior to mechanical cleaning.
6. Schedule the cleaning and painting so that contaminates from the cleaning process with not fall onto wet, newly painted surfaces.

B. Ferrous Metals:

1. Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.
2. Touch-up shop-applied prime coats wherever damaged or bare. Where required by other Sections of these Specifications, clean and touch-up with the same type shop primer.

C. Galvanized Surfaces: Clean free of oil and surface contaminants with acceptable non-petroleum based solvent.

D. Wood: Clean wood surfaces to be painted of all dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer before application of the priming coat.

1. Prime, stain, or seal wood required being job-painted, as soon as practicable upon delivery to job. Prime edges, ends, faces, under sides, and backsides of such wood, including cabinets, counters, cases, paneling, etc. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dry.
2. When transparent finish is required, use sealer as recommended by manufacturer. Seal tops, bottoms, and cutouts of unprimed wood doors with sealer immediately upon delivery to project.

3.03 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer's directions. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue. Stir materials before application to produce a mixture of uniform density, and stir as required during the application of the materials. Do not stir surface film into the material. Remove the film and if necessary, strain the material before using.

3.04 APPLICATION

A. Apply paint in accordance with the manufacturer's directions. Use applications and techniques best suited for the substrate and type of material being applied. Apply additional coats when undercoats, stains or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance. Give special attention to ensure that all surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

B. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint. Paint the back-sides of access panels, and removable or hinged covers to match the exposed surfaces.

C. Finish exterior doors on tops, bottoms and side edges the same as the exterior faces, unless otherwise indicated.

D. Sand lightly between each succeeding enamel or varnish coat.

E. Omit the first coat (primer) on metal surfaces that have been shop-primed and touch-up painted, unless otherwise indicated or barrier coat is required for compatibility.

F. Scheduling Paint: Apply the first-coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration. Allow sufficient time between successive coatings to permit proper drying. Do not re-coat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

G. Minimum Coating Thickness: Apply each material at not less than the manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

H. Mechanical and Electrical Work: Painting of mechanical and electrical Work include items exposed to view in mechanical equipment rooms, in occupied spaces and where indicated on Drawings or specified in other Sections. Coordinate with Mechanical, Plumbing and Electrical Sections.

1. Mechanical items to be painted include, but are not limited to, the following:
   a. Piping, pipe hangers, and supports.
   b. Heat exchangers.
   c. Tanks.
   d. Ductwork.
   e. Motor, mechanical equipment and supports.
   f. Accessory items.

2. Electrical items to be painted include, but are not limited to, the following:
   a. Conduit and fittings.
   b. Switchgear.

I. Prime Coats: Apply a prime coat of material which is required to be painted or finished, and which has not been prime coated by others. Re-coat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

J. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, or other surface imperfections will not be acceptable.

K. Transparent (Clear) Finishes: Use multiple coats to produce glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections. Provide satin finish for final coats, unless otherwise indicated.

L. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint Work not in compliance with specified requirements.

3.05 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance of paint materials with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements.
4. Contractor shall remove non-complying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials.
5. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.06 CLEANING AND PROTECTION

A. Cleaning: During the progress of the Work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each workday. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

B. Protection: Protect Work of other trades, whether to be painted or not, against damage by painting and finishing Work. Correct damage by others for protection of their Work, after completion of painting operations. At the completion of Work of other trades, touch-up and restore all damaged or defaced painted surfaces.

3.07 EXTERIOR PAINTING SCHEDULE

A. Provide the following Benjamin Moore paint systems for the various substrates, as indicated:

1. Ferrous and Zinc Coated Metal
   a. Prime Coat: Super Spec HP P04 Acrylic Metal Primer
   b. Intermediate Coat: Super Spec HP P29 D.T.M. Acrylic Semi-gloss
   c. Topcoat: Super Spec HP P29 D.T.M. Acrylic Semi-gloss
2. Steel Shop Primed: (structural steel framing exposed to view including steel lintels and steel stairs and handrails)
   a. Prime Coat: Super Spec HP P04 Acrylic Metal Primer
   b. Intermediate Coat: Super Spec HP P29 D.T.M Acrylic Semi-gloss
   c. Topcoat: Super Spec HP P29 D.T.M Acrylic Semi-Gloss

B. Provide the following Ferrell-Calhoun paint systems for the various substrates, as indicated:

1. Ferrous and Zinc Coated Metal
   a. Prime Coat: F/C #5-56 Waterborne 100% Acrylic All Purpose Metal Primer (1.8 mils DFT)
   b. Intermediate Coat: F/C Tuff-Boy 8000 Line Waterborne 100% Acrylic DTM (1.7 mils DFT)
   c. Topcoat: F/C Tuff-Boy 8000 Line Waterborne 100% Acrylic DTM (1.7 mils DFT)
2. Steel Shop Primed: (structural steel framing exposed to view including steel lintels and steel stairs and handrails)
   a. Prime Coat: F/C #5-56 Waterborne 100% Acrylic All Purpose Metal Primer (1.8 mils DFT)
   b. Intermediate Coat: F/C Tuff-Boy 8000 Line Waterborne 100% Acrylic DTM (1.7 mils DFT)
   c. Topcoat: F/C Tuff-Boy 8000 Line Waterborne 100% Acrylic DTM (1.7 mils DFT)

C. Provide the following PPG Paints, Inc. paint systems for the various substrates, as indicated:

1. Ferrous and Zinc Coated Metal
   a. Prime Coat: PPG Pitt Tech DTM Acrylic Primer Finish, 90-712 Series (2.0-3.0 mils dry)
   b. Intermediate Coat: PPG Pitt Tech DTM Acrylic Gloss Enamel, 90-374 Series (2.0-3.0 mils dry)
   c. Topcoat: PPG Pitt Tech DTM Acrylic Gloss Enamel, 90-374 Series (2.0-3.0 mils dry)
2. Steel Shop Primed: (structural steel framing exposed to view including steel lintels and steel stairs and handrails)
   a. Prime Coat: PPG Pitt Tech DTM Acrylic Primer Finish, 90-712 Series (2.0-3.0 mils dry)
   b. Intermediate Coat: PPG Pitt Tech DTM Acrylic Gloss Enamel, 90-374 Series (2.0-3.0 mils dry)
   c. Topcoat: PPG Pitt Tech DTM Acrylic Gloss Enamel, 90-374 Series (2.0-3.0 mils dry)
   d. Intermediate Coat: Perma-Crete Vertical Concrete s Stain VCS 4-5110
   e. Topcoat: Perma-Crete Vertical Concrete s Stain VCS 4-5110 (if required for uniform color)

D. Provide the following Rust-Oleum paint systems for various substrates, as indicated:

1. Ferrous and Zinc Coated Metal
   a. Prime Coat: Rust-Oleum Universal Primer, (1.0-2.0 mils dry)

b. Intermediate Coat: Rust-Oleum 3700 Series DTM Acrylic, (2.0-3.0 mils dry)
c. Topcoat: Rust-Oleum 3700 Series DTM Acrylic, (2.0-3.0 mils dry)

2. Steel Shop Primed: (structural steel framing exposed to view including steel lintels and steel stairs and handrails)
   a. Prime Coat: Rust-Oleum Universal Primer (1.0-2.0 mils dry)
   b. Intermediate Coat: Rust-Oleum Sierra Performance Beyond No VOC UMA (2.0-3.0 mils dry)
   c. Topcoat: Rust-Oleum Sierra Performance Beyond No VOC UMA (2.0-3.0 mils dry)

E. Provide the following Sherwin-Williams paint systems for the various substrates, as indicated:

1. Ferrous and Zinc Coated Metal
   a. Prime Coat: S-W ProCryl® Universal Primer, B66-310 Series (2.0-4.0 mils dry)
   b. Intermediate Coat: Sher-Cryl™ HPA Acrylic, B66-350 Series (2.5-4.0 mils dry)
   c. Topcoat: Sher-Cryl™ HPA Acrylic, B66-350 Series (2.5-4.0 mils dry)
2. Steel Shop Primed: (structural steel framing exposed to view including steel lintels and steel stairs and handrails)
   a. Prime Coat: S-W ProCryl® Universal Primer, B66-310 Series (2.0-4.0 mils dry)
   b. Intermediate Coat: S/W Sher-Cryl™ HPA Acrylic, B66-350 Series (2.5-4.0 mils dry)
   c. Topcoat: S/W Sher-Cryl™ HPA Acrylic, B66-350 Series (2.5-4.0 mils dry)

3.08 INTERIOR PAINTING SCHEDULE

A. Provide the following Benjamin Moore paint systems for the various substrates, as indicated:

1. Gypsum Drywall(Egg Shell)
   a. Prime Coat: #N534 Ultra Spec 500 Interior Latex Primer
   b. Intermediate Coat: #N538 Ultra Spec 500 Interior Eggshell Enamel
   c. Topcoat: #N538 Ultra Spec 500 Interior Eggshell Enamel
2. Ferrous and Zinc Coated Metal
   a. Prime Coat: P04 Super Spec HP Acrylic Metal Primer
   b. Intermediate Coat: #N539 Ultra Spec 500 Interior Semi-Gloss Enamel
   c. Topcoat: #N539 Ultra Spec 500 Interior Semi-Gloss Enamel
3. Exposed Structural steel and Roof Deck (shop primed steel)
   a. Prime Coat: P04 Super Spec HP Acrylic Metal Primer
   b. Intermediate Coat: #N110 SK 5000 Dry Fall Flat
   c. Topcoat: #N110 SK 5000 Dry Fall Flat
4. Interior Brick Pavers
   a. Prime Coat: TuffCrete Solvent Acrylic Clear
   b. Topcoat: TuffCrete Solvent Acrylic Clear
5. Exposed Concrete Retaining Wall Waterproofing Sealer
   a. Primer coat: TuffCrete Solvent Acrylic Clear
   b. Topcoat: TuffCrete Solvent Acrylic Clear
6. Concrete Block Sealer (Waterproof – below grade areas)
   a. Prime Coat: Insl-x Waterblock Masonry Waterproofer
   b. Intermediate Coat: #V341 Waterborne Epoxy
   c. Topcoat: #V341 Waterborne Epoxy

B. Provide the following Ferrell-Calhoun paint systems for the various substrates, as indicated:

1. Gypsum Drywall(Egg Shell)
   a. Prime Coat: F/C #380 Perfik-Seal Interior Latex Primer/Sealer (1.8mils DFT)
   b. Intermediate Coat: F/C #3900 Line Evergreen "Zero Voc" Acrylic Int/Ext Latex Eggshell Enamel (2.1 mils DFT)
   c. Topcoat: F/C #3900 Line Evergreen "Zero Voc" Acrylic Int/Ext Latex Eggshell Enamel (2.1 mils DFT)

2. Ferrous and Zinc Coated Metal
   a. Prime Coat: F/C #5-56 100% Acrylic All Purpose Metal Primer (1.8 mils DFT)
   b. Intermediate Coat: F/C #600 Line 100% Acrylic Interior Semi-Gloss Latex Enamel (1.9 mils DFT)
   c. Topcoat: F/C #600 Line 100% Acrylic Interior Semi-Gloss Latex Enamel (1.9 mils DFT)
3. Exposed Structural steel and Roof Deck (shop primed steel)
   a. Prime Coat: F/C #5-56 100% Acrylic All Purpose Metal Primer (1.8 mils DFT). Spot prime if needed.
   b. Intermediate Coat: F/C #999 Tuff-Boy Water-Base Dry Fog Flat (3.2 mils DFT)
   c. Topcoat: F/C #999 Tuff-Boy Water-Base Dry Fog Flat (3.2 mils DFT)
   d. Topcoat: F/C #1200WB Tuff-Boy 100% Acrylic Waterborne Epoxy (2.0 mils DFT)

C. Provide the following PPG Paints, Inc. paint systems for the various substrates, as indicated:

1. Gypsum Drywall (Epoxy- in Lab)
   a. Prime Coat: PPG Speedhide Interior Latex Primer, 6-2 Series (1.0 mils dry)
   b. Intermediate Coat: PPG Pitt Glaze Waterborne Acrylic Epoxy, 16-551 Series (2.0-3.0 mils dry)
   c. Topcoat: PPG Pitt Glaze Waterborne Acrylic Epoxy, 16-551 Series (2.0-
2. Ferrous and Zinc Coated Metal
   a. Prime Coat: PPG Pitt-Tech DTM Acrylic Primer Finish, 90-712 (2.0 to 3.0 mils dry)
   b. Intermediate Coat: PPG Interior Exterior Semi-Gloss Acrylic Metal Finish, 7-374 (1.5 to 2.0 mils dry)
   c. Topcoat: PPG Interior Exterior Semi-Gloss Acrylic Metal Finish, 7-374 (1.5 to 2.0 mils dry)
3. Exposed Structural steel and Roof Deck (shop primed steel)
   a. Prime Coat: PPG Pitt-Tech DTM Acrylic Primer Finish, 90-712 (2.0 to 3.0 mils dry)-Spot prime if needed.
   b. Intermediate Coat: PPG Super Tech WB Waterborne Acrylic Dry Fall, 6-725XI
   c. Topcoat: PPG Super Tech WB Waterborne Acrylic Dry Fall, 6-725XI

D. Provide the following Rust-Oleum paint systems for the various substrates, as indicated:

1. Gypsum Drywall(Egg Shell)
   a. Prime Coat: Rust-Oleum Zinsser Dry Wall Primer (1.0-1.5 mils dry)

b. Intermediate Coat: Rust-Oleum Zinsser Perma White Interior Acrylic Satin, (1.5-2.0 mils dry)
c. Topcoat: Rust-Oleum Zinsser Perma White Interior Acrylic Satin, (1.5-2.0 mils dry

2. Ferrous and Zinc Coated Metal
a. Prime Coat: Rust-Oleum Universal Primer, (1.0-2.0 mils dry)
b. Intermediate Coat: Rust-Oleum Zinsser Perma White Interior Semi Gloss Acrylic (1.5-2.0 mils dry)
c. Topcoat: Rust-Oleum Zinsser Perma White Interior Semi Gloss Acrylic (1.5-2.0 mils dry)

3. Exposed Structural steel and Roof Deck (shop primed steel)
a. Prime Coat: Rust-Oleum Universal Primer, (1.0-2.0 mils dry)-Spot prime if needed.
b. Intermediate Coat: Rust-Oleum 5100 Series Waterborne Acrylic Dry Fall Flat
c. Topcoat: Rust-Oleum 5100 Series Waterborne Acrylic Dry Fall Flat

E. Provide the following Sherwin-Williams paint systems for the various substrates, as indicated:

1. Gypsum Drywall(Egg Shell)
a. Prime Coat: S-W ProMar 200 Zero VOC Interior Latex Primer, B28-2600 (1.0 mils dry)
b. Intermediate Coat: S-W ProMar 200 Zero VOC Interior Latex EgShel, B20-2600 (1.6 mils dry)
c. Topcoat: S-W ProMar 200 Zero VOC Interior Latex EgShel, B20-2600 (1.6 mils dry)
2. Ferrous and Zinc Coated Metal
a. Prime Coat: S-W ProCryl® Universal Primer, B66-310 Series (2.0-4.0 mils dry)
b. Intermediate Coat: S-W ProClassic Waterborne Acrylic Semi-Gloss, B31 Series (2.0-3.0 mils dry)
c. Topcoat: S-W ProClassic Waterborne Acrylic Semi-Gloss, B31 Series (2.0-3.0 mils dry)
3. Exposed Structural steel and Roof Deck (shop primed steel)
a. Prime Coat: S-W ProCryl® Universal Primer, B66-310 Series (2.0-4.0 mils dry)-Spot prime if needed.
b. Intermediate Coat: S-W Waterborne Acrylic Dry Fall, B42W2
c. Topcoat: S-W Waterborne Acrylic Dry Fall, B42W2

END OF SECTION

SECTION 09 94 15 SPECIAL WALL COATINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Surface preparation and application of textured coating system materials, including primer on exterior concrete and masonry wall surfaces.

B. Related Sections: Section 09 05 15 – Color Design for color selection.

1.02 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's technical information including label analysis and application instructions for each material proposed for use.

B. Samples: For each type of coating system and in color indicated.

1. Texture to simulate actual conditions, on representative samples of the actual substrate.
2. Resubmit samples as requested until the color and texture is achieved

1.03 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Coatings: 5 percent, but not less than 1 gallon, of each material and color applied.

1.04 QUALITY ASSURANCE

A. Single Source Responsibility:

1. Provide primers and by the same manufacturer as the finish coats.
2.

B. Coordination of Work:

1. Review sections in which other coatings are provided to ensure compatibility of the total systems for various substrates.
2. Upon request, furnish information on characteristics of specified finish materials, to ensure that compatible prime coats are used.
3. Notify the Project Engineer / MDOT Project Engineer / MDOT Architect of problems anticipated using the coatings systems specified.

C. Field Samples:

1. On actual wall surfaces, duplicate coating finishes of prepared samples.
   a. Provide full-coat finish samples on at least 20 sq. ft. of surface, until required color and texture are obtained; simulate finished lighting conditions for review of in-place Work.
   b. Final acceptance of colors will be from job applied samples.
2. The Project Engineer / MDOT Project Engineer / MDOT Architect will select one area or surface to represent surfaces and conditions for the coating.
   a. Apply coatings in this area or surface in accordance with the schedule, or as specified.
   b. After textures and colors are accepted, this surface will be used for evaluation of coating systems of a similar nature.

D. Applicator:

1. Work shall be performed by a firm with not less than 5 years successful experience in special coating applications employing personnel skilled in the application processes and operation indicated.
2. The firm is to be licensed by the State of Mississippi as a special coatings contractor.

E. Manufacturer Qualifications: A firm with not less than 10 years successful experience in producing highly abrasion resistant coating materials.

F. Required Documents of Certification:
1. Applicator is approved by Product Manufacturer.
2. Technicians utilized for work in this section have been trained by the manufacturer.
3. Specialized equipment as required by the manufacturer will be used for this work.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the job site in the manufacturer's original, new, unopened packages and containers bearing manufacturer's name and label and the following information:
1. Name or title of material.
2. Federal Specification number, if applicable.
3. Manufacturer's name, stock number and date of manufacture.
4. Contents by volume, for major pigment and vehicle constituents.
5. Application instructions.
6. Color name and number.
7. Handling instructions and precautions.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Drawings and specifications are based on products manufactured by TEX COTE Textured Coatings of America, 2422 E. 15th Street, Panama City, FL 32405. Tel. (800) 4545-0340.

B. Equivalent products by the following manufacturers are acceptable:
1. Euclid Chemical Company, 19215 Redwood Road, Cleveland, OH, Tel. (800) 321-7628.
2. Sherwin-Williams Company, 101 W. Prospect, Cleveland, OH, Tel. (800) 321-8194.
3.

2.02 COATING MATERIALS

A. Primer/Block Filler/Patching Compound (for masonry walls): SKIM COAT

B. Primer Coat: TEX COTE XL-70 "W" Primer.

C. Textured Coating: TEX COTE XL-70 "W" (sand or fine texture finish).

2.03 PRODUCT REQUIREMENTS

A. SKIM COAT block filler:
1. Acrylic latex filler.
2. Solids, by weight: 75%
3. Solids, by weight: 65%
4. Weight per Gallon: 11.9 pounds
5. Performance Criteria:

a. TTP-28 Fungus Growth Resistance: 21 days.
b. Meets all federal and state air pollution control regulations.

B.

C. TEX COTE XL-70 "W" Textured Coating:
1. Colors as selected by Project Engineer / MDOT Architect to match colors on adjacent structures.
2. Coverage: Textured Coating – 40 to 45 square feet per gallon.
3. ASTM B-117-95: Salt Spray Test (Hours) – 2100 hours - Passed.
4. ASTM D968: Abrasion – Falling Sand (Liters) – 2000 with 10% erosion – Rating Excellent.
5. ASTM D522-93A: Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings, ½" Mandrel – Passed.
6. MSDOT 971-22.2a: Freeze/Thaw (100 cycles) – Passed
7. ASTM G153-04: Standard Practice for Conducting Accelerated Outdoor Exposure Tests of Coatings, 5000 hours – Passed.
8. ASTM E84-96A: Standard Test Method for Surface Burning Characteristics of Building Materials – Class A Rating.
9. ASTM E96-95: Moisture Vapor Transmission – 20 Perms.
10. ASTM D6904-03: Standard Test Method for Wind Driven Rain Resistance on Masonry (98 mph wind) – 24 Hours – Passed.

D.

PART 3 - EXECUTION

3.01 DELIVERY AND STORAGE

A. Lids must be kept tightly sealed with no moisture allowed to enter containers

B.

C. Containers should be stored in a dry place, upright and airtight at temperatures between forty-five (45°F) degrees Fahrenheit and not exceeding one hundred (100°F) degrees Fahrenheit. Skins formed on surface of material must be removed prior to moving containers, mixing or using.

3.02 SITE CONDITIONS

A. Apply coating only when temperature of surfaces to be coated and surrounding air temperatures are between forty-five (45°F) degrees Fahrenheit and one hundred (100°F) degrees Fahrenheit, unless otherwise permitted by the manufacturer's printed instruction.

B. Coating should not be applied over frozen surfaces or when rain is imminent.

C. Incompatible substrate release agents, form oils, and any foreign material on surfaces to be coated should be removed prior to priming and coating.

D. Roof and parapet top caps should be installed and sealed against water penetration prior to priming and coating.

E. Primer shall not be exposed to ultra violet for more than four (4) weeks prior to application of coating. If exposure exceeds four (4) week, primer shall be re-coated, as recommended by the manufacturer.

F. Material use is limited to above grade surfaces only. Do not use below grade.

G. Paintable Joint Sealants must cure per manufacturer's recommendations. All joint sealants must be cleaned and wiped with an acetone solvent or approved cleaner prior to priming and coating.

3.03 SURFACE PREPARATION

A. Prior to surface preparation and application operations, completely mask, remove, or otherwise adequately protect all hardware, accessories, plates, lighting fixtures and similar items in contact with coated surfaces that are not scheduled to receive special coating. Following completion of coating of each area, reinstall removed items.

B. Before applying special coating, thoroughly clean all surfaces involved. Such surface contaminants as dust, dirt, mildew, form oils, release agents, loose substrate, etc., shall be removed by water-blasting. Excessive form oils, release agents and curing compounds may require light sandblasting. Water-blasting/power-washing of all surfaces to be coated is required. Schedule all cleaning so that dust and other contaminates from cleaning process will not fall on wet or newly coated surfaces.

3.04 MATERIAL PREPARATION

A. Mix and prepare coating materials in compliance with the manufacturer's directions.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of coatings in a clean condition, free of foreign materials and residue

C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film, and if necessary, strain material before using.

3.05 APPLICATION

A. Apply coatings according to manufacturer's written instructions and recommendations.

1. Use experienced applicators.
2. Provide finish coats compatible with the primers used.
3. Use applicators and techniques best suited for substrate and type of material being applied.
4. Keep equipment clean and in proper condition to provide best quality work as intended by this Specification.
5. Apply coating under adequate illumination, evenly spread and smoothly applied to assure desired finish.
6. A wet edge shall be maintained to prevent lap-marks.
7. Avoid starting and stopping midway on wall. Continue to a natural break such as a panel edge or corner.

3.06 FIELD QUALITY CONTROL

A. The Project Engineer / MDOT Project Engineer / MDOT Architect reserves the right to invoke the following test procedure at any time, and as often as he deems necessary, during the period when coating operations are being conducted.

1. The Contractor shall engage the services of an independent testing laboratory to sample the coating being used.
2. Samples of material delivered to project site will be taken, identified and sealed, and certified in the presence of the Project Engineer.

B. The testing laboratory shall perform appropriate tests for the following characteristics as required by the Owner:

1. Quantitative materials analysis.
2. Absorption.
3. Accelerated weathering.
4. Color retention.
5. Alkali and mildew resistance.
6. Abrasion resistance.

7. Apparent reflectivity.
8. Washability.
9. Dry opacity.
10. Recoating.
11. Skinning.

C. Results showing materials being used do not comply with requirements, the Contractor may be directed to stop Work.
   1. The Contractor shall remove non-complying materials, pay for testing, recoat surfaces coated with rejected materials, or remove rejected materials from previously coated surfaces.
   2. Upon recoating with specified materials, if the two coatings are not compatible, the Contractor shall remove materials as necessary to correct.

3.07 CLEANING AND PROTECTION

A. At the end of each workday, remove discarded coating materials, rubbish, empty cans, rags and other discarded materials from the site.

B. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Project Engineer / MDOT Project Engineer / MDOT Architect, and leave in an undamaged condition.

C. Provide "Wet Paint" signs to protect newly coated finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of coating operations

D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

E. Upon completion of work, clean walls and spattered surfaces. Remove spattered coatings by washing, scraping or other proper methods, using care not to scratch or damage adjacent finished surfaces.

END OF SECTION

SECTION 14 21 00 ELECTRIC TRACTION ELEVATORS

PART - GENERAL

1.01 SUMMARY

A. Section Includes: Electric Traction Elevators.

B. Products Supplied But Not Installed Under this Section:

1. Hoist Beam

2. Pit Ladder

3. Inserts mounted in block walls for rail attachments

C. Work Supplied Under Other Sections:

1. Main line disconnects for each elevator.
   a. One fused three phase permanent power in building electrical distribution room

2. Hoistway ventilation shall be in accordance with local and national building code requirements.

3. Guide Rail Support shall be structurally adequate to extend from pit floor to top of hoistway, with spans in accordance with requirements of authority having jurisdiction and final layouts.

4. Removable barricades at all hoistway openings, in compliance with OSHA 29 CFR 1926.502 in addition to any local code requirements.

5. Lifeline attachments capable of withstanding 5000 lb load in accordance with OSHA 29 CFR 1926.502. Provide a minimum of 2 at the top, front of each hoistway.

6. Pit lighting: Fixture with switch and guards. Provide illumination level equal to or greater than that required by ASME A17.1/CSA B44 2000, or applicable version.

7. Control space lighting with switch. Coordinate switch with lighting for machine space as allowable by code.

C. Mississippi Standard Specifications for Road and Bridge Construction, 2017 Work-Related Items:

1. Temporary Facilities and Controls

2. Cast-in-Place Concrete

3. Earthwork

D. Related Sections in Project Specifications:

1. Section 042200 - Unit Masonry

2. Section 055000 - Metal Fabrications

3. Section 237400 - Heating, Ventilating, and Air Conditioning

4. Section 260000 - Electrical

E. Industry and government standards:

1. ICC/ANSI A117.1 Accessible and Usable Buildings and Facilities

2. ADAAG - Accessibility Guidelines for Buildings and Facilities

3. ANSI/NFPA 70, National Electrical Code

4. ANSI/NFPA 80, Standard for Fire Doors and Fire Windows

5. ASME/ANSI A17.1, Safety Code for Elevators and Escalators.

1.02 DESCRIPTION OF ELEVATOR

A. Basis of Design Elevator Equipment:

KONE EcoSpace™ gearless traction elevator

B. Basis of Design Equipment Control: KCM831

C. Drive: Non Regenerative

D. Quantity of Elevators: 2

E. Landings: 2

F. Openings: 2 Front Openings

G. Travel: 28'-0" south tower and 21'-0" north tower

H. Rated Capacity: 2500 lbs

I. Rated Speed: 150 fpm

J. Cab Height: 8' 0"

K. Clear height under suspended ceiling: +/- 7'-4"

L. Entrance Width and Type: Left/Right

M. Entrance Height: 7' 0"

N. Main Power Supply: 208 Volts + 5%, three-phase

O. Operation: Simplex

P. Machine Location: Inside the hoistway mounted on car guide rail

Q. Control Space Location: Adjacent to hoistway at 2nd floor

R. Elevator Equipment shall conform to the requirements of seismic zone: non-seismic

S. Maintenance Service Period: 12 months

1.03 PERFORMANCE REQUIREMENTS

A. Car Performance

1. Car Speed ± 5% of contract speed under any loading condition or direction of travel.

2. Car Capacity: Safely lower, stop and hold (per code) up to 125% of rated load.

B. System Performance

1. Vertical Vibration (maximum): 25 mg

2. Horizontal Vibration (maximum): 25 mg

3. Jerk Rate (maximum): 3.3 ft/sec3

4. Acceleration (maximum) 1.3 ft/sec2

5. In Car Noise: = 55 dB(A)

6. Leveling Accuracy: ±0.2 inches

7. Starts per hour (maximum): 120

1.04 SUBMITTALS

A. Comply with Section 01 33 00 - Submittal Procedures.

B. Product Data: Submit manufacturer's product literature for each proposed system.

1. Cab design, dimensions and layout.

2. Layout, finishes, and accessories and available options.

3. Controls, signals and operating system.

4. Color selection charts for cab and entrances.

C. Shop Drawings:

1. Clearances and travel of car.

2. Clear inside hoistway and pit dimensions.

3. Location and layout of equipment and signals.

4. Car, guide rails, buffers and other components in hoistway.

5. Maximum rail bracket spacing.

6. Maximum loads imposed on building structure.

7. Hoist beam requirements.

8. Location and sizes of access doors.

9. Location and details of hoistway door and frames.

10. Electrical characteristics and connection requirements.

D. Operation and maintenance data:

1. Provide manufacturer's standard maintenance and operation manual.

E. Diagnostic Tools

1. Prior to seeking final acceptance for the completed project as specified by the Contract Documents, the Elevator Contractor shall deliver to the Owner any specialized tool(s) that may be required to perform diagnostic evaluations, adjustments, and/or parametric software changes and/or test and inspections on any piece of control or monitoring equipment installed. This shall include any specialized tool(s) required for monitoring, inspection and/or maintenance where the means of suspension other than conventional wire ropes are furnished and installed by the Elevator Contractor. Any and all such tool(s) shall become property of the Owner. Any diagnostic tool provided to the Owner by the Elevator Contractor shall be configured to perform all levels of diagnostics, systems adjustment and parametric software changes which are available to the Elevator Contractor. In those cases where diagnostic tools provided to the Owner require periodic recalibration/or re-initiation, the Elevator Contractor shall perform such tasks at no additional cost to the Owner for a period equal to the term of the maintenance agreement from the date of final acceptance of the competed project During those intervals in which the Owner might find it necessary to surrender a diagnostic tool for re-calibration, re-initiation, or repair, the Elevator Contractor shall provide a temporary replacement for the tool at no additional cost to the Owner. The Elevator Contractor shall deliver to the Owner, printed instructions for the proper use of any tool that may be necessary to perform diagnostic evaluations, system adjustment, and/or parametric software changes on any unit of microprocessor-based elevator control equipment and means of suspension other than standard elevator steel cables furnished and installed by the Elevator Contractor. Accompanying the printed instructions shall be any and all access codes, password, or other proprietary information that is necessary to interface with the microprocessor-control equipment.

1.05 QUALITY ASSURANCE

A. Manufacturer: Minimum of fifteen years experience in the fabrication, installation and service of elevators of the type and performance of the specified. The manufacturer shall have a documented quality assurance program.

B. Installer: The equipment manufacturer shall install the elevator.

C. Inspection and Testing: In accordance with requirements of local jurisdiction, obtain required permits, inspections and tests.

1.06 DELIVERY, STORAGE AND HANDLING

A. Comply with manufacturer's recommendations for delivery, storage and handling.

B. If the construction site is not prepared to receive the elevator equipment at the agreed ship date, the General Contractor shall be responsible to provide a safe,

dry, and easily accessible storage area on or off the premises. Additional lablor costs for double handling will be the responsibility of the general contractor.

C. Delivered elevator materials shall be stored in a protected environment in accordance with manufacturer recommendations. A minimum storage area of 10 feet by 20 feet is required adjacent to the hoistway.

1.07 WARRANTY

A. Provide manufacturer warranty for a period of one year. The warranty period is to begin upon Substantial Completion of the Contract. Warranty covers defects in materials and workmanship. Damage due to ordinary use, vandalism, improper or insufficient maintenance, misuse, or neglect do not constitute defective material or workmanship.

1.08 MAINTENANCE SERVICE

A. The elevator manufacturer shall provide maintenance service consisting of regular examinations and adjustments of the elevator equipment for a period of 12 months after date of substantial completion. Replacement parts shall be produced by the original equipment manufacturer.

B. Maintenance service be performed during regular working hours of regular working days and shall include regular time call back service.

C. Maintenance service shall not include adjustments, repairs or replacement of parts due to negligence, misuse, abuse or accidents.

PART 2 PRODUCTS

2.02 MANUFACTURER

A. Provide AC gearless machine room-less elevator systems subject to compliance with the design and performance requirements of this specification. Elevator manufacturers may include but are not limited to one of the following:

1. Basis of Design: EcoSpace™ traction elevators by KONE, Inc. (www.kone.com).

2. Otis Elevator Company (www.otis.com).

3. Thyssenkrupp Elevator (www.thyssendruppelevator.com).

4. Schindler (www.us.schindler.com).

1.02 EQUIPMENT: CONTROL COMPONENTS AND CONTROL SPACE

A. Controller: Provide microcomputer based control system to perform all of the functions.

1. All high voltage (110V or above) contact points inside the controller cabinet shall be protected from accidental contact in a situation where the controller doors are open.

2. Controller shall be separated into two distinct halves; Motor Drive side and Control side. High voltage motor power conductors shall be routed and physically segregated from the rest of the controller.

3. Provide a serial cardrack and main CPU board containing a non-erasable EPROM and operating system firmware.

4. Variable field parameters and adjustments shall be contained in a non-volatile memory module.

B. Drive: Provide Variable Voltage Variable Frequency AC drive system to develop high starting torque with low starting current.

C. Controller Location: Locate controller{s} in a room adjacent to the hoistway at the top landing on the machine side of the elevator.

2.01 EQUIPMENT: HOISTWAY COMPONENTS

A. Machine: AC gearless machine, with permanent magnet synchronous motor, direct current electro-mechanical disc brakes and integral traction drive sheave, mounted to the car guide rail at the top of the hoistway.

B. Governor: Friction type over-speed governor rated for the duty of the elevator specified.

C. Buffers, Car and Counterweight: Polyurethane buffer.

D. Hoistway Operating Devices:

1. Emergency stop switch in the pit

2. Terminal stopping switches.

3. Emergency stop switch on the machine

E. Positioning System: System consisting of magnets and proximity switches.

F. Guide Rails and Attachments: Steel rails with brackets and fasteners.

2.03 EQUIPMENT: HOISTWAY ENTRANCES

A. Hoistway Entrances

1. Sills: extruded.

2. Doors: Hollow metal construction with vertical internal channel reinforcements.

3. Fire Rating: Entrance and doors shall be UL fire-rated for 1-1/2 hour.

4. Entrance Finish: Brushed Stainless Steel.

5. Entrance Markings Jamb Plates: Provide standard entrance jamb tactile markings on both jambs, at all floors. Plate Mounting: Refer to manufacturer drawings.

2.04 EQUIPMENT: CAR COMPONENTS

A. Car Frame: Provide car frame with adequate bracing to support the platform and car enclosure.

B. Platform: Platform shall be all steel construction.

C. Car Guides: Provide guide-shoes mounted to top and bottom of both car and counterweight frame. Each guide-shoe assembly shall be arranged to maintain constant contact on the rail surfaces.

D. Steel Cab Finish: Stainless Series

1. Car Wall Finish: Sides - Brushed Stainless Steel / Rear Wall Tempered Glass.

2. Car Front Finish: Brushed stainless steel.

3. Car Door Finish: Brushed stainless steel.

4. Ceiling:

a. Round LED Down Light Drop Ceiling - LF-88: Satin Finished Stainless Steel three panel suspended ceiling with Round LED lights.

6. Handrail:

a. 1 ½" solid flat handail to be located on back wall of car enclosure.

7. Flooring: By others. (Not to exceed 2sqft and 1/2" finished depth.)

8. Threshold: Aluminum

E. Emergency Car Signals

1. Emergency Siren: Siren mounted on top of cab that is activated when the alarm button in the car operating panel is engaged. Siren shall have rated sound pressure level of 80 dB(A) at a distance of three feet from device. Siren shall respond with a delay of not more than one second after activation of alarm button.

2. Emergency Car Lighting: Provide emergency power unit employing a 12-volt sealed rechargeable battery and totally static circuits shall illuminate the elevator car and provide current to the alarm bell in the event of building power failure.

3. Emergency Exit Contact: An electrical contact shall be provided on the car-top exit.

4. Ventilation: Fan.

2.02 EQUIPMENT: SIGNAL DEVICES AND FIXTURES

A. Car Operating Panel: Provide car operating panel with all push buttons, key switches, and message indicators for elevator operation. Fixture finish to be Stainless Steel.

1. Flush mounted car operating panel shall contain a bank of round, mechanical, illuminated buttons marked to correspond to landings served, emergency call button, door open button, door close button, and key switches for lights, inspection, and exhaust fan. Buttons have amber illumination (halo). All buttons to have raised text and Braille marking on left hand side. The car operating display panel shall be amber DOT-matrix. All texts, when illuminated, shall be amber. The car operating panel shall have a brushed stainless steel finish.

2. Additional features of car operating panel shall include:

a. Car Position Indicator within operating panel amber.

b. Elevator Data Plate marked with elevator capacity and car number on car top.

c. Help buttons with raised markings.

d. In car stop switch per local code.

e. Firefighter's hat.

f. Firefighter's Phase II Key-switch.

g. Call Cancel Button.

h. Pre-programmed integrated ADA phone (complete description of krms features included as standard)

i. Help Button/Communicator. Activation of help button will initiate two-way communication between car and a location inside the building, switching over to alternate location if call is unanswered, where personnel are available to take the appropriate action. Visual indicators are provided for call initiation and call acknowledgement.

j. Firefighter's Phase II emergency in-car operating instructions.

k. Landing Passing Signal: A chime bell shall sound in the car to signal that the car is either stopping at or passing a floor served by the elevator.

B. Hall Fixtures: Wall mounted hall fixtures shall be provided with necessary push buttons and key switches for elevator operation. Wall mounted hall fixtures shall have a brushed stainless steel finish.

1. Hall fixtures shall feature round, mechanical, buttons in applied mount face frame. Hall fixtures shall correspond to options available from that landing. Buttons shall be in a vertically mounted fixture. Hall fixtures shall not be jamb-mounted.

C. Car Lantern and Chime: A [vandal resistant] directional lantern visible from the corridor shall be provided in the car entrance. When the car stops and the doors are opening, the lantern shall indicate the direction in which the car is to travel and a chime will sound. The chime will sound once for up and twice for down. [The car riding lantern face plate shall have a Scottish Quad Textured Steel finish]

2.03 EQUIPMENT: ELEVATOR OPERATION AND CONTROLLER

A. Elevator Operation

1. Simplex Collective Operation: Using a microprocessor-based controller, operation shall be automatic by means of the car and hall buttons. If all calls in the system have been answered, the car shall park at the last landing served.

2. Zoned Car Parking.

3. Relative System Response Dispatching.

B. Standard Operating Features to include:

1. Full Collective Operation
2. Fan and Light Control.
3. Load Weighing Bypass.
4. Ascending Car Uncontrolled Movement Protection
5. Top of Car Inspection Station.

C. Additional Operating Features to include:

1. Independent Service
2. Hoistway Access Bottom Landing
3. Hoistway Access Top Landing
4. Car Secure Access.
5. Provide provisions for coaxial cable for CCTV. CCTV by others.
6. Intercom Provisions

D. Elevator Control System for Inspections and Emergency

1. Provide devices within controller to run the elevator in inspection operation.
2. Provide devices on car top to run the elevator in inspection operation.
3. Provide within controller an emergency stop switch to disconnect power from the brake and prevents motor from running.
4. Provide the means from the controller to mechanically lift and control the elevator brake to safely bring car to nearest available landing when power is interrupted.
5. Provide the means from the controller to reset the governor over speed switch and also trip the governor.
6. Provide the means from the controller to reset the emergency brake when set because of an unintended car movement or ascending car over speed.
7. Provide the means for the control to reset elevator earthquake operation.

2.07 EQUIPMENT: DOOR OPERATOR AND CONTROL

A. Door Operator: A closed loop permanent magnet VVVF high-performance door operator shall be provided to open and close the car and hoistway doors simultaneously. Door movement shall be cushioned at both limits of travel. Electro-mechanical interlock shall be provided at each hoistway entrance to prevent operation of the elevator unless all doors are closed and locked. An electric contact shall be provided on the car at each car entrance to prevent the operation of the elevator unless the car door is closed.

B. The door operator shall be arranged so that, in case of interruption or failure of electric power, the doors can be readily opened by hand from within the car, in accordance with applicable code. Emergency devices and keys for opening doors from the landing shall be provided as required by local code.

C. Doors shall open automatically when the car has arrived at or is leveling at the respective landings. Doors shall close after a predetermined time interval or immediately upon pressing of a car button. A door open button shall be provided in the car. Momentary pressing of this button shall reopen the doors and reset the time interval.

D. Door hangers and tracks shall be provided for each car and hoistway door. Tracks shall be contoured to match the hanger sheaves. The hangers shall be designed for power operation with provisions for vertical and lateral adjustment. Hanger sheaves shall have polyurethane tires and pre-lubricated sealed-for-life bearings.

E. Electronic Door Safety Device. The elevator car shall be equipped with an electronic protective device extending the full height of the car. When activated, this sensor shall prevent the doors from closing or cause them to stop and reopen if they are in the process of closing. The doors shall remain open as long as the flow of traffic continues and shall close shortly after the last person passes through the door opening.

PART 3 EXECUTION

3.06 EXAMINATION

A. Field measure and examine substrates, supports, and other conditions under which elevator work is to be performed.

B. Do not proceed with work until unsatisfactory conditions are corrected.

C. Prior to start of Work, verify hoistway is in accordance with shop drawings. Dimensional tolerance of hoistway from shop drawings: -0 inches +2 inches. Do not begin work of this section until dimensions are within tolerances.

D. Prior to start of Work, verify projections greater then 2 inches (4 inches if ASME A17.1/CSA B44 2000 applies) must be beveled not less then 75 degrees from horizontal.

E. Prior to start of Work, verify landings have been prepared for entrance sill installation. Traditional sill angle or concrete sill support shall not be required.

F. Prior to start of Work, verify elevator pit has been constructed in accordance with requirements, is dry and reinforced to sustain vertical forces, as indicated in approved submittal. Verify that sumps or sump pumps located within pit will not interfere with installed elevator equipment.

G. Prior to start of Work, verify control space has been constructed in accordance with requirements, with access coordinated with elevator shop drawings, including Sleeves and penetrations.

H. Verify installation of GFCI protected 20-amp in pit and adjacent to each signal control cabinet in control space.

3.07 PREPARATION

A. Coordinate installation of anchors, bearing plates, brackets and other related accessories.

3.08 INSTALLATION

A. Install equipment, guides, controls, car and accessories in accordance with manufacturer installation methods and recommended practices.

B. Properly locate guide rails and related supports at locations in accordance with manufacturer's recommendations and approved shop drawings. Anchor to building structure using isolation system to minimize transmission of vibration to structure.

C. All hoistway frames shall be securely fastened to fixing angles mounted in the hoistway. Coordinate installation of sills and frames with other trades.

D. Lubricate operating system components in accordance with manufacturer recommendations.

E. Perform final adjustments, and necessary service prior to substantial completion.

3.09 CONSTRUCTION

A. Interface with Other Work:

1. Guide rail brackets attached to steel shall be installed prior to application of fireproofing.

2. Coordinate construction of entrance walls with installation of door frames and sills. Maintain front wall opening until elevator equipment has been installed.

a. Ensure adequate support for entrance attachment points at all landings.

b. Coordinate wall openings for hall push buttons, signal fixtures and sleeves. Each elevator requires sleeves within the hoistway wall.

c. Coordinate emergency power transfer switch and power change pending signals as required for termination at the primary elevator signal control cabinet in each group.

d. Coordinate interface of elevators and fire alarm system.

e. Coordinate interface of dedicated telephone line.

SPECIFIER NOTE: *Include the following articles if specifying KONE EcoSpace traction elevator with integrated control location. Delete articles if not required.*

f. Coordinate the installation of the non fused three phase permanent power disconnect in hoist way at top landing

3.10 TESTING AND INSPECTIONS

A. Perform recommended and required testing in accordance with authority having jurisdiction.

B. Obtain required permits and provide originals to Owner's Representative.

3.11 DEMONSTRATION

A. Prior to substantial completion, instruct Owner's Representative on the proper function and required daily maintenance of elevators. Instruct personnel on emergency procedures.

END OF SECTION

SECTION 23 74 00 PACKAGED OUTDOOR HVAC EQUIPMENT

PART 1 - GENERAL

1.01 VARIABLE REFRIGERANT FLOW A/C SYSTEM:

A. Basis of design is a Mitsubishi Electric CITY MULTI VRFZ (Variable Refrigerant Flow Zoning). Other acceptable manufacturers are LG and Samsung.

B. SYSTEM DESCRIPTION: The variable capacity heat pump air conditioning system. The CITY MULTI VRFZ systems shall be the split system heat pump and the S-Series (cool/heat) split system heat pump. Each indoor unit or group of indoor units shall be capable of operating in any mode independently of other indoor units or groups. To ensure owner comfort, each indoor unit or group of indoor units shall be independently controlled and capable of changing mode automatically when zone temperature strays 1.8 degrees F from set point for ten minutes. The sum of connected capacity of all indoor air handlers shall range from 50% to 150% of outdoor rated capacity.

C. QUALITY ASSURANCE: The units shall be listed by Electrical Testing Laboratories (ETL) and bear the ETL label. All wiring shall be in accordance with the National Electrical Code (N.E.C.). The units shall be manufactured in a facility registered to ISO 9001 and ISO14001 which is a set of standards applying to environmental protection set by the International Standard Organization (ISO). All units must meet or exceed the 2010 Federal minimum efficiency requirements and the proposed ASHRAE 90.1 efficiency requirements for VRF systems. Efficiency shall be published in accordance with the DOE alternative test procedure, which is based on the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Standards 340/360, 1230 and ISO Standard 13256-1. A full charge of R-410A for the condensing unit only shall be provided in the condensing unit.

C. DELIVERY, STORAGE AND HANDLING: Unit shall be stored and handled according to the manufacturer's recommendation.

D. WARRANTY: The units shall be covered by the manufacturer's limited warranty for a period of one (1) year from date of installation.

1. If the systems are:
   1) designed by a certified CITY MULTI Diamond Designer,
   2) installed by a contractor that has successfully completed the Mitsubishi Electric three day service course
   3) verified with a completed commissioning report submitted to and approved by the Mitsubishi Electric Service Department, then the units shall be covered by an extended manufacturer's limited warranty for a period of five (5) years from date of installation.

2. In addition the compressor shall have a manufacturer's limited warranty for a period of seven (7) years from date of installation.

3. If, during this period, any part should fail to function properly due to defects in workmanship or material, it shall be replaced or repaired at the discretion of the manufacturer.

4. This warranty shall not include labor.

5. Manufacturer shall have a minimum of twenty-nine years of HVAC experience in the U.S. market. All manufacturer technical and service manuals must be readily available for download by any local contractor should emergency service be required. Registering and sign-in requirements which may delay emergency service reference are not allowed.

6. The CITY MULTI VRFZ system shall be installed by a contractor with extensive CITY MULTI install and service training. The mandatory contractor service and install training should be performed by the manufacturer.

C. PKFY (Wall Mounted) INDOOR UNIT

1. General: The PKFY shall be a wall-mounted indoor unit section and shall have a modulating linear expansion device and a flat front. The PKFY shall be used with the S-Series outdoor unit. The PKFY shall support individual control using M-NET DDC controllers.

2. Indoor Unit: The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function, and a test run switch. Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from the factory.

3. Unit Cabinet:
   a. All casings, regardless of model size, shall have the same white finish
   b. Multi directional drain and refrigerant piping offering four (4) directions for refrigerant piping and two (2) directions for draining shall be standard.
   c. There shall be a separate back plate which secures the unit firmly to the wall.

4. Fan:
   a. The indoor fan shall be an assembly with one or two line-flow fan(s) direct driven by a single motor.
   b. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
   c. A manual adjustable guide vane shall be provided with the ability to change the airflow from side to side (left to right).
   d. A motorized air sweep louver shall provide an automatic change in airflow by directing the air up and down to provide uniform air distribution.

5. Filter:
   a. Return air shall be filtered by means of an easily removable, washable filter.

6. Coil:
   a. The indoor coil shall be of nonferrous construction with smooth plate fins on copper tubing.
   b. The tubing shall have inner grooves for high efficiency heat exchange.
   c. All tube joints shall be brazed with phos-copper or silver alloy.
   d. The coils shall be pressure tested at the factory.
   e. A condensate pan and drain shall be provided under the coil.
   f. Both refrigerant lines to the PKFY indoor units shall be insulated.

7. Electrical:
   a. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
   b. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz)

8. Controls:
   a. This unit shall use controls provided by Mitsubishi Electric to perform functions necessary to operate the system. Please refer to Part 5 of this guide specification for details on controllers and other control options.
   b. The unit shall be able to control external backup heat.
   c. The unit shall have a factory built in receiver for wireless remote control
   d. Indoor unit shall compensate for the higher temperature sensed by the return air sensor compared to the temperature at level of the occupant when in HEAT mode. Disabling of compensation shall be possible for individual units to accommodate instances when compensation is not required.
   e. Control board shall include contacts for control of external heat source. External heat may be energized as second stage with 1.8 degree F deadband from set point.

D.PEFY-NMHU (ALTERNATE HIGH STATIC OPTION), CEILING-CONCEALED DUCTED INDOOR UNIT

1. General: The PEFY-NMHU (Alternate High Static Option) unit shall be a ceiling concealed ducted indoor fan coil that mounts above the ceiling with a fixed rear return and a horizontal discharge supply, and shall have a modulating linear expansion device. The PEFY-NMHU shall be used with the S-Series outdoor unit. The PEFY-NMLU shall support individual control using M-NET DDC controllers. PEFY-NMHU (Alternate High Static Option) models shall feature external static pressure settings up 0.80 in. WG. Units shall have the ability to control supplemental heat via connector CN24 and a 12 VDC output.

2. Indoor Unit: The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from the factory.

3. Unit Cabinet: The cabinet shall be ceiling-concealed, ducted. The cabinet panel shall have provisions for a field installed filtered outside air intake.

4. Fan: The indoor unit fan shall be an assembly with one or two Sirocco fan(s) direct driven by a single motor. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings. The indoor unit shall have a ducted air outlet system and ducted return air system.

5. Filter: Provide Mitsubishi rear return filter box with long-life filter.

6. Coil: The indoor coil shall be of nonferrous construction with smooth plate fins on copper tubing. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phos-copper or silver alloy. The coils shall be pressure tested at the factory. A condensate pan and drain shall be provided under the coil. The condensate shall be gravity drained from the fan coil. Both refrigerant lines to the PEFY indoor units shall be insulated.

7. Electrical: The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).

8. Controls: This unit shall use controls provided by Mitsubishi Electric to perform functions necessary to operate the system. Please refer to Part 5 of this guide specification for details on controllers and other control options. Control board shall include contacts for control of external heat source. External heat may be energized as second stage with 1.8 degree F deadband from set point.

E. Simple MA Remote Controller (PAC-YT51CRB)

The Simple MA Remote Controller (PAC-YT51CRB) shall be capable of controlling up to 16 indoor units (defined as 1 group). The Simple MA Remote Controller shall be compact in size, approximately 3" x 5" and have limited user functionality. The Simple MA supports temperature display selection of Fahrenheit or Celsius. The Simple MA Remote Controller shall allow the user to change on/off, mode (cool, heat, auto (R2/WR2-Series only), dry, and fan), temperature setting, and fan speed setting. The Simple MA Remote Controller shall be able to limit the set temperature range from the Simple MA The room temperature shall be sensed at either the Simple MA Remote Controller or the Indoor Unit dependent on the indoor unit dipswitch setting. The Simple MA Remote Controller shall display a four-digit error code in the event of system abnormality/error.

The Simple MA Remote Controller shall only be used in same group with PAR-21MAA (Deluxe MA Remote Controllers), Wireless MA (PAR-FL32MA-E / PAR-FA32MA-E), or with other PAC-YT51CRB (Simple MA Remote Controllers), with up to two remote controllers per group.

The Simple MA Remote Controller shall require no addressing. The Simple MA Remote Controller shall connect using two-wire, stranded, non-polar control wire to TB15 connection terminal on the indoor unit. The PAC-YT51CRB shall require cross-over wiring for grouping across indoor unit

END SECTION

SECTION 26 05 10 GENERAL REQUIREMENTS

PART 1 – GENERAL

1.01 GOVERNING CLAUSE

The phrase "CONTRACTOR shall furnish and install" unless specified or indicated otherwise, shall be omitted for the sake of brevity in these specifications. However, these phrases are implied. Any mention of material and/or operations in the specifications or drawings will require CONTRACTOR to furnish and install such materials and perform each and every operation required for a complete and operable system and to the complete satisfaction of the ENGINEER. The drawings are diagrammatic and may not necessarily show each and every wire, conduit, conduit routing, junction electrical box and/or final connection required for all pieces of equipment. However, the intent of this paragraph is to require that the CONTRACTOR furnish labor and materials to make all required final electrical power connections whether or not shown to all equipment shown on the drawings issued as bidding documents for this project.

1.02 GENERAL CONDITIONS

A. General Conditions, Supplementary General Conditions, Information to Bidders, General Requirements, Special Conditions, Addenda, Wage Rates, and other pertinent documents issued under these specifications and shall be complied with in every respect as though fully written herein.

B. Not withstanding any reference in the specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, such reference shall be interpreted as establishing a standard of quality and performance and shall not be construed as limiting competition; and in such cases, may at his option use any article, device, product, material, fixture, form or type of construction which in the final judgment of the ENGINEER expressed in writing, is an approved equal to that specified.

1.03 RECORD DRAWINGS AND OPERATING AND MAINTENANCE MANUALS

Furnish to the ENGINEER at job acceptance and completion, the following:

A. Record Drawings: One set of blue line prints marked in black, showing an accurate location of all variations of the work actually installed related to the original drawings. The drawings shall include all approved and installed Change Orders, field condition changes, and other variations from the original plans and specifications.

B. Operation and Maintenance Manuals: Furnish three copies of an operation and maintenance manual for each electrical system and for each piece of equipment. Three copies of the complete manuals bound in a 3-inch, 3-ring black binder with color coded tabs as directed by the ENGINEER labeling all shop drawings, approved manufacturers brochures, control diagrams, maintenance instructions and other data required by the contract documents reflecting the record fabrication and installation of all systems or equipment installed. One manual shall be furnished prior to the time that the system or equipment tests are performed. The remaining two manuals shall be furnished to the ENGINEER before the contract is closed-out.

C. The following identification shall be inscribed in minimum 3/4" high alphabet type letters on the outside front corner: The words "OPERATING AND MAINTENANCE MANUAL", the name and location of the project and the contract number. The manual shall include the names, addresses, and telephone number of each subcontractor installing equipment and systems, and the local manufacturers' representative for each item of equipment and each system. This information shall be contained on the first page of the binder. Lettering shall be permanent signage and not stick-on type.

D. The manual shall have a typewritten table of contents with the tab sheets placed before instructions covering the subject. The instruction sheets shall be legible with large sheets of drawings folded in. The manual shall include a system layout showing circuits, devices, and controls; control diagrams with explanation of operation and control of each component; start-up control sequence, and operation; a detailed description of the function of each principal component of the system; the procedure for starting; the procedure for operating; shut-down instructions; installation instructions, maintenance and overhaul instructions; lubrication schedule including type, grade, illustrations; test procedures; performance data; and parts list. The parts list for equipment shall indicate the sources of supply, recommended spare parts, and the service organization which is reasonably convenient to the site. The manual shall be complete in all respects for all equipment, controls, and accessories provided.

1.04 TESTS AND INSPECTIONS

The complete job shall be, during actual construction, and for the warranty provision period, subject to the supervision of the ENGINEER and will have the following tests and inspections conducted without any additional cost to the contract.

A. By ENGINEER'S inspections and tests conducted by him or for him in his presence. Upon written notice, CONTRACTOR shall furnish not to exceed two men, one to include the job foreman and tools to assist and be directed by the ENGINEER for a reasonable amount of time to make such tests and inspections as are requested by the ENGINEER pertaining to the safety and operation of any device or system installed.

B. By complete insulation break-down tests with a megger of each and every branch circuit, and service entrance. All 600 volt conductors shall meet a minimum of resistance of 1,000,000 OHMS. Tests shall be performed prior to any connections to overcurrent devices, devices or equipment. All readings shall be made in the ENGINEER'S presence or his authorized representative and a type-written report of same submitted to him before the job is subject to his approval. The manufacturer, cat. no. and type or megger shall be noted on the report.

C. By any federal, state or local authority having jurisdiction of the project.

D. By the Mississippi State Rating Bureau. After inspection by this agency, corrections of any deficiencies shall be made which were found adversely affecting the insurance to be carried by the OWNER. Acceptance of the Rating Bureau's report or subsequent reports lie with the ENGINEER or OWNER. Electrical contractor/subcontractor shall pay all cost for this work.

E. Properly phase out the entire electrical system to balance all loads as close as possible.

F. Certified Test Reports: Before any equipment or materials are delivered to the project site, certified copies of all test reports specified in the individual sections of this specification shall be submitted to the ENGINEER for his approval.

1.05 GUARANTEE

A. Guarantee to the OWNER all work performed and all equipment installed under this contract shall be free from defects in workmanship and materials for a period of one year unless noted otherwise from date of final written acceptance by the ENGINEER and the OWNER.

B. Defects shall be corrected arising during this one year period at the CONTRACTOR'S own expense, upon written notice of the OWNER or his authorized representative.

1.06 GENERAL INFORMATION

A. Plans are diagrammatic. Judgment and care shall be exercised to install all electrical work in a practical manner which shall function properly and fit the construction and finishes. Electrical devices not shown or specified which shall be required or any device or system to produce a complete and operative system shall be brought to the ENGINEER'S attention at least five days prior to the bid date in order for such devices to be noted or clarified in an addendum, otherwise furnished at his own expense.

B. Cooperate with others in laying out work so that the electrical phase of the work will properly fit the construction and finishes. Space requirements, etc. other than that shown on the plans required to facilitate the electrical construction, shall be brought to the ENGINEER'S attention prior to commencing any work so that proper action may be taken to remedy this.

C. Exact location of equipment shall be determined on the job. Do not scale electrical drawings for exact location of any equipment. All mounting heights shall be verified prior to rough-in.

D. ENGINEER reserves the right to change the location of any equipment improperly installed and to change the exact location of any equipment connection location up to twenty feet prior to rough-in with no additional cost to the contract.

E. Circuit grouping, conduit or cable runs are indicated diagrammatically with number of conductors shown in each raceway to clarify the operation and function of various systems. Provide the proper number of conductors and conduits or cables to produce an operative system as specified herein. Where conductors are not shown, consult manufacturer's recommendations.

F. Branch circuit shall be indicated as 2 or 3 wire circuits unless otherwise noted. No two ungrounded conductors will be connected to the same ungrounded main in any panel. There shall be no splicing of branch circuit conductors in any panel, safety switch or non-automatic circuit breaker in separate enclosures.

G. All materials shall be new (unless otherwise noted on the drawings or specified herein) and of approved equal or superior quality to those specified. All equipment or materials shall conform to the latest requirements of Underwriter's Laboratories, National Electrical Code, National, State or local agency having jurisdiction, American National Standards Institute (ANSI), National Electrical Safety Code and National Fire Protection (NFPA) Codes.

H. All conductors shall be color coded as specified herein. All conductors not complying with the specified color code shall be removed and replaced solely at the electrical subcontractor's expense.

I. All materials, devices, equipment, etc. shall be installed, tested and connected in strict compliance with manufacturer's recommendations.

J. Install all materials, equipment, devices, etc. in a neat and workmanlike manner. Use only experienced labor or employ appropriate subcontractor to do all cutting and patching necessary for the installation of his materials.

K. Protect from damage all apparatus and equipment furnished on this project. Equipment and materials shall be properly stored and adequately protected and carefully handled to prevent damage before and during installation. Equipment and materials shall be handled, stored and protected in accordance with the manufacturer's recommendations and as approved by the ENGINEER. Electrical conduit shall be stored to provide protection from the weather and accidental damage. Plastic conduit shall be stored on even supports and in locations not subject to direct sun rays or excessive heat. Cables shall be sealed, stored and handled carefully to avoid damage to the outer covering or insulation and damage from moisture and weather. Any piece of equipment or material marred or damaged shall be repaired, repainted and/or replaced to the complete satisfaction of the ENGINEER.

L. Any piece of equipment, switch, device, etc. shown mounted on and/or adjacent to any installed equipment which, if installed, may impair the proper operation of that equipment, shall be removed by the electrical contractor/subcontractor as required in order that installed equipment shall function properly. ENGINEER shall be notified immediately if any such condition exists.

1.07 REMOVAL OF SALVAGE MATERIAL AND DEBRIS

It shall be the responsibility of the CONTRACTOR to have all trash, salvage material, etc. related to the electrical work completely removed from the project site at all times during construction.

1.08 TRENCHING AND BACKFILLING

A. All trenching shall be done by mechanical means and all sides straight and vertical. Width of trenches shall not exceed eight inches on either side of placed equipment.

B. All backfill material and compaction shall meet requirements of Mississippi Standard Specifications for Road and Bridge Construction, 2017.

C. Where required by safety or recommended standards and where any excavated trench or hole is more than five feet deep, install shoring on all sides to protect against sides caving in. Shoring method and material shall be the CONTRACTOR'S responsibility.

1.09 CUTTING, PATCHING, FINISHING AND PAINTING

A. The CONTRACTOR shall be responsible for all cutting required to install his work. All existing walls shall be carefully trenched, cut, etc. to depths required to completely recess conduit and boxes. Where masonry walls are encountered, blocks and/or brick shall be carefully saw cut to exact box dimensions and conduit shall be routed in cavities, air spaces, etc.

B. It shall be the responsibility of the CONTRACTOR to have all patching, finishing, painting, etc. done by qualified personnel related to his work.

C. It shall be the responsibility of the CONTRACTOR to have all exposed conduit, piping and wireways painted where exposed in any space or location.

1.10 CORROSION PROTECTION

It is the intent of these specifications to have all joints, connections, etc. exposed to climatic conditions to be completely watertight using the following:

A. Nylon gland rings on all Liquid-tite conduit connectors.

B. Nylon gland rings on all locknuts installed in boxes subject to moisture.

C. Insulated throat connectors on all compression connectors.

D. Corrosion inhibitors shall be placed in all environmental, control panels, exposed to damp or wet locations. Inhibitors shall be an approved equal to "Hoffman" A-HCI-1, A-HCI-5 and A-CI-40 and shall be sized in accordance with volume content of the device to be protected.

E. Where equipment is exposed to severe conditions such as salts, acids, alkalies, sewer gases, etc., all equipment shall be sprayed inside and out with two coats of General Electrical AGlyptal No. 1201-A@ or an approved equal.

1.11 PROJECT SITE INSPECTION

It shall be the responsibility of the CONTRACTOR to visit the proposed sites and make his own observation of the work to be done under the plans and specifications and same shall be contained in his bid proposal. Failure to do so will not relieve him of any responsibility and will not be justification for requesting additional money from the OWNER.

1.12 COORDINATION OF EXISTING UTILITIES

It shall be the responsibility of the CONTRACTOR to coordinate all existing utilities location both overhead and underground and verify their locations with the various utilities prior to commencing any work. CONTRACTOR shall call Mississippi One Call System, 811, and obtain a utility location request number and refer to this number each time a utility company is notified of diggings or trenching near their utilities. Failure to do this shall not relieve him of any responsibility and will not be justification for requesting additional money from the OWNER due to damage of any of these utility lines.

1.13 CONSTRUCTION TOOLS, UTILITIES AND BUILDINGS

The CONTRACTOR shall furnish all tools, utilities, job office and storage buildings required for his use and to protect all electrical equipment as directed by the ENGINEER.

1.14 PAYMENT ITEMS

Progress payments shall be made to the CONTRACTOR based on the percentage of work performed on various payment items. The electrical payment items shall be included with the preliminary schedule of values and payment requests submitted by the CONTRACTOR.

1.15 MANUFACTURER'S RECOMMENDATIONS

Where installation procedures are specified to be in accordance with the recommendations of the manufacturer of the material or equipment being installed, printed copies of these recommendations shall be furnished to the ENGINEER by the CONTRACTOR prior to installation. Installation of the item will not be allowed to proceed until the recommendations are received. Failure to furnish these recommendations can be cause for rejection of the material.

1.16 SUBMITTALS

Specific items requiring submittals shall be as specified herein. Shop drawings shall be submitted and approved before procurement, fabrication or delivery of such items to the project site. Partial submittals are not acceptable; such submittals will be returned without review.

A. Manufacturer's Data: Submittals for each manufactured item shall be manufacturer's descriptive literature, equipment drawings, diagrams, performance and characteristic curves and catalog cuts. Each submittal shall include the manufacturer's name, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, specification reference, applicable federal, military and industry specification references and all other information necessary to establish contract compliance.

B. Shop drawings shall show types, sizes, accessories, elevations, plans, sectional view, installation details, elementary diagrams and wiring diagrams. Wiring diagrams shall identify circuit terminals and shall indicate the internal wiring for each item of equipment and the interconnection between the items. Drawings shall also indicate adequate clearance for operation, maintenance and replacement of operating equipment devices. If any equipment is disapproved, the drawings shall be revised to show acceptable equipment and be resubmitted.

C. Standards Compliance: When materials or equipment must conform to the standards of organizations such as the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturer's Association (NEMA) and Underwriters' Laboratories (UL), proof of such conformance shall be submitted to the ENGINEER for approval. If any organization uses a label or listing to indicate compliance with a particular standard, the label or listing will be acceptable evidence, unless otherwise specified in the individual sections. In lieu of the label or listing, the CONTRACTOR shall submit a certificate from an independent testing organization, which is competent to perform acceptable tests and is approved by the ENGINEER. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item conforms to the specified organization's standard. For materials and equipment whose compliance with organizational standards or specifications is not regulated by an organization using its own listing or label as proof of compliance, a certificate of compliance from the manufacturer shall be submitted for approval. The certificate shall identify the manufacturer, the product and the referenced standard and shall simply state that the manufacturer certifies that the product conforms to all requirements of the project specification and of the referenced standards listed.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

All materials, equipment and devices shall, as a minimum standard, meet the requirements of UL where UL standards are established for those items and the requirements of NFPA 70. All items shall be new unless specified or indicated otherwise.

2.02 NAMEPLATES

Fed. Spec. L-P-387. Provide laminated plastic nameplates for each panel, motor control center, transformer, relay, contactor, starter, safety switch and device. Each nameplate inscription shall identify the equipment and serving panel, and when applicable, the location. Nameplates shall be melamine plastic, 0.125-inch thick, white with black center core. Surface shall be matte finish.

Corners shall be square. Accurately align lettering and engrave into the black core. Minimum size of nameplates shall be as follows:

A. Style No. 1: 1.0 inch by 2.5 inches for panelboard and terminal cabinet enclosures.

B. Style No. 2: 0.5 inch by 1.5 inches for safety switches, enclosed individually mounted circuit breakers, small junction/terminal boxes, etc.

2.03 WARNING SIGNS

ANSI Z35.1. Provide warning signs for the power panel enclosures. Provide signs with the legend "DANGER HIGH VOLTAGE KEEP OUT" printed in three lines of nominal 3-inch high letters.

PART 3 – EXECUTION

3.01 NAMEPLATE MOUNTING

Provide number, location and letter designation of nameplates. Fasten nameplates to the device or enclosure with a minimum of two oval head stainless steel screws.

3.02 PAINTING OF EQUIPMENT

A. Factory Applied: Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test.

B. Field Applied: Paint electrical equipment as required to match finish or to meet safety criteria. Painting shall be a minimum of three coats consisting of primer and two finish coats. Touch-up paint of all equipment shall be required where equipment has become damaged as a result of handling, rusting, etc. Paint shall be applied in even three coats, consisting of prime coat and two finish coats. See plans for special PVC applications.

END OF SECTION

SECTION 26 05 20 CODES AND STANDARDS

PART 1 - GENERAL

1.01 DESCRIPTION

The following codes and standards shall be complied with as though fully written herein in these specifications and shall be applicable to CONTRACTOR, supplier and manufacturer. Dates and amendments shall be the latest edition thereof in force at time of project bid date. Bidders shall be responsible for obtaining their own copies of these codes and standards and pay all cost thereof. Bidders may request addresses of codes and standards issuing agency from ENGINEER in writing in sufficient time to obtain required copies from issuing standards institute.

A. National Fire Protection Association (NFPA)

NFPA 70	National Electrical Code (N.E.C.)
NFPA 78	Lightning Protection Code
NFPA 77	Recommended Practice on Static Electricity

B. American National Standards Institute (ANSI)

ANSI B16.11	Forged Steel Fittings, Socket Welding and Threaded
ANSI C57.12.01	General Requirements for Dry-Type Distribution and Power Transformers
ANSI C57.12.91	Test Code for Dry-Type Distribution and Power Transformers
ANSI Z35.1	Accident Prevention Signs
C80.1	Specification for Rigid Steel Conduit, Zinc-Coated

C. Occupational Safety and Health Act (OSHA) Requirements

D. Underwriters Laboratories (UL)

UL 6	Rigid Metallic Conduit
UL 50	Cabinets and Boxes
UL 360	Liquid-Tite Flexible Steel Conduit
UL 467	Grounding and Bonding Equipment
UL 486A	Wire Connectors and Soldering Lugs for Use with Copper Conductors
UL 468C	Splicing Wire Connectors
UL 489	Molded Case Circuit Breakers
UL 508	Enclosures
UL 510	Insulating Tape
UL 514A	Outlet Boxes and Fittings
UL 651	Schedule 40 and 80 Rigid PVC Conduit
UL 854	Service-Entrance Cables
UL 869	Service Equipment
UL 943	Ground-Fault Circuit Interrupters
UL 1059	Terminal Blocks
UL 1449	Transient Voltage Surge Suppressors
UL 1561	Dry-Type General Purpose and Power Transformers
UL 1581	Reference Standard for Electrical Wires, Cables and Flexible Cords
UL 2200	Stationary Engine Generator Assemblies

E. National Electrical Manufacturer's Association (NEMA)

WC3	Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
TC3	PVC Fittings for Use with Rigid PVC Conduit and Tubing
RN1	PVC Externally Coated Rigid Galvanized Steel Conduit and Electrical Metallic Tubing
ICS1	General Standards for Industrial Control and Systems
ICS2	Standards for Industrial Control Devices, Controllers and Assemblies
ICS6	Terminal Blocks for Industrial Control Equipment and Systems
TC2	Electrical Plastic Tubing (EPT) and Conduit EPC-40 and EPC-80
TR1	Transformers, Regulators and Reactors
WD1	General Purpose Wiring Devices
LA1	Surge Arrestors

F. Institute of Electrical and Electronic Engineers (IEEE): Standard Dictionary of Electrical and Electronics Terms

G. American Society for Testing and Materials (ASTM)

A53	Pipe, Steel, Black and Hot-Dipped Zinc-Coated
A123	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
A153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
B8	Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard or Soft
A525	General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
A780	Repair of Damaged Hot-Dip Galvanized Coatings

PART 2 - PRODUCT (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 26 05 23 CONTROL-VOLTAGE ELECTRICAL POWER CABLES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Building wire.

B. Cable including instrumentation, control, etc.

C. Wiring connections and terminations.

1.02 REFERENCES

A. NEMA WC 3 - Rubber-insulated wire and cable for the transmission and distribution of electrical energy.

B. NEMA WC 5 - Thermoplastic-insulated wire and cable for the transmission and distribution of electrical energy.

1.03 SUBMITTALS

A. Submit manufacturer's product data under the provisions of Section 16010, Shop Drawings Submittal.

B. Submit manufacturer's instructions.

PART 2 - PRODUCTS

2.01 CONDUCTORS

A. Thermoplastic-Insulated Building Wire: NEMA WC 5.

B. Rubber-Insulated Wire: NEMA WC 3.

C. Feeders and Branch Circuits: Copper, stranded conductor, 600-volt insulation, THWN.

D. Service Entrance Cable: Copper, stranded conductor, 600-volt insulation, THHN-2 – THWN-2 with 90°C temperature rating.

E. Control Circuits: Copper, stranded conductor, 600-volt insulation, THHN - THWN.

F. Electronic Sensor Cable: Per manufacturer's recommendations.

G. Instrumentation Cable: Per manufacturer's recommendations.

PART 3 - EXECUTION

3.01 GENERAL WIRING METHODS

A. Use no wire smaller than #12 AWG for power circuits and no smaller than #14 AWG for control wiring.

B. Place an equal number of conductors for each phase of a circuit in same raceway or cable.

C. Splice only in junction or outlet boxes.

D. Neatly train and lace wiring inside boxes, equipment and panelboards.

3.02 WIRING INSTALLATION IN RACEWAYS

A. Pull all conductors into a raceway at the same time. Use UL listed wire pulling lubricate for pulling #4 AWG and larger wires.

B. Completely and thoroughly swab raceway system before installing conductors.

3.03 CABLE INSTALLATION

Provide protection for exposed cables where subject to damage.

3.01 WIRING CONNECTIONS AND TERMINATIONS

A. Splice only in accessible junction boxes.

B. Thoroughly clean wires before installing lugs and connectors.

C. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

D. Terminate spare conductors with electrical tape and wire nut.

E. Splices in all junction boxes shall be made by the compression method. Crimp connectors shall be "Buchanan" Cat. #2006S, #2008S or #2011S with #2007, #2014 or #3007B caps or approved equal.

3.02 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 16010.

B. Inspect wire and cable for physical damage and proper connection.

C. Torque test conductor connections and terminations to manufacturers recommended values.

D. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

3.03 WIRE AND CABLE INSTALLATION SCHEDULE

A. Exterior Locations: Conductors in raceways.

B. Underground Locations: Conductors in raceways.

C. Color Coding (Power System): The following conductor color coding shall be used:

480/277-Volt System	208Y/120-Volt System

Phase A - Brown

Phase B - Orange

Phase C - Yellow

Neutral - Gray

Equipment Ground - Green

Phase A - Black

Phase A - Switch Leg - Gray

Phase B - Red

Phase B - Switch Leg - Pink

Phase C - Blue

Phase C - Switch Leg - Purple

Travelers - Yellow

Neutral - White

Equipment Ground - Green

END OF SECTION

SECTION 26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 Description

A. Power system grounding.

B. Communication and instrumentation system grounding.

C. Electrical equipment and raceway grounding and bonding.

D. Building ground grids.

1.02 System Description

A. Ground the electrical service system neutral at service entrance equipment to grounding electrode.

B. Provide communications system grounding conductor at point of service entrance and connect to grounding electrode.

C. Bond together system neutrals, service equipment enclosures, exposed non-current carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, receptacle ground and connectors.

1.03 Submittals

A. Submit maintenance and grid layout data and shop drawings under provisions of Section 26 05 10.

B. Indicate location of system grounding electrode connections and routing of grounding electrode conductor.

PART 2 - PRODUCTS

2.01 Materials

A. Ground Rods: Copper-encased steel, 3/4-inch diameter, minimum length 10 feet.

B. Ground Conductor Grid: 4/0 bare copper.

C. Ground Electrode Conductor: Size as noted on drawings with THWN insulation.

D. Exothermic welds shall be as scheduled on the drawings.

PART 3 - EXECUTION

3.01 Installation

A. Provide a separate, insulated equipment grounding conductor in branch circuits. Terminate each end on a grounding lug, bus or bushing.

B. Connect grounding electrode conductors to ground electrode by exothermic weld using cable to rod connection.

C. Grounding Electrode: Use driven ground rod as shown on plans.

D. Use minimum #6 AWG copper conductor for communications service grounding conductor. Leave six feet (3 m) slack conductor at terminal cabinet or backboard.

E. Provide grounding and bonding at utility company's metering equipment.

F. Bond all metal parts of equipment support structures, etc. to ground grid.

G. Refer to drawings for schedule of exothermic connections.

3.02 Field Quality Control

A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

B. Measure ground resistance from system neutral connection at service entrance to convenient ground reference point using suitable ground testing equipment. Resistance shall not exceed 5 ohms. Where resistance exceeds 5 ohms, additional ground rods shall be driven. Top of all rods shall be minimum of 2'-0" below finish grade elevation.

C. Do not cover and ground grid or connections until inspected and approved by ENGINEER.

END OF SECTION

SECTION 26 05 29 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Conduit and equipment supports.

B. Fastening hardware.

C. Related Work

1.02 COORDINATION

Coordinate size, shape and location of concrete pads with details on drawings and manufacturer's recommendations.

1.03 QUALITY ASSURANCE

Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

PART 2 - PRODUCTS

2.01 MATERIAL

A. Support Channel: Stainless Steel.

B. Hardware: Stainless Steel.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Fasten hanger rods, conduit clamps and outlet and junction boxes to structure using stainless steel screws and stainless bolts, nuts and Bellville washers. Do not use spring steel clips and clamps.

B. Do not fasten supports to conduit.

C. Fabricate supports from stainless steel angle and stainless steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with Bellville washers under all nuts.

D. Furnish and install additional steel framing as required to span between ceiling girts for support of lighting fixtures, electric heaters, etc.

END OF SECTION

SECTION 26 05 30 BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Equipment and materials specified by manufacturer's name and catalog number or an approved equal by the ENGINEER unless otherwise specifically stated herein.

B. CONTRACTOR shall submit to the ENGINEER in triplicate, typewritten copies of all electrical materials and equipment proposed for use on the project within ten (10) days after award of contract. If this list is not received prior to fifteen (15) days after award of contract, CONTRACTOR is required to furnish specified items by manufacturer and catalog number.

C. Verbal or written requests by sales agents, manufacturer's agents, CONTRACTOR'S or subcontractors for substitutions of specified equipment by manufacturer and catalog number prior to opening of bids will not be considered or approved. In no case will prior approval be given verbally or in writing of any equipment whether specified by manufacturer and catalog or not prior to opening of bids.

D. CONTRACTOR shall not place any orders or release shipment of any piece of equipment or materials until all formal submittals have been approved by ENGINEER including any supplemental submittal requirements requested by the ENGINEER.

E. Samples of any equipment or materials may be required at the ENGINEER's request. This shall apply to specified items and substituted items. Samples shall be made available to the ENGINEER at his designated location. Special equipment such as motor control centers, generators, automatic transfer switch, radio equipment, fire alarm or intrusion alarm systems would be required to be set up and inspections made available at the manufacturer's plant locations. All expenses for travel, per diem, etc. will be paid for by the CONTRACTOR. This expense may include an OWNER'S representative.

F. The ENGINEER's opinion shall be final and binding on the approved equal status for equality of any substituted item from that listed by manufacturer and/or manufacturer catalog number.

G. Submittals for approval by ENGINEER shall include shop drawings, manufacturer's brochures and data sheets, samples where required such as paint, waterproofing, marking tape, wiring and cable; test reports, testing procedures, finishes, etc.

H. Submittals shall be required, but not limited to, the following:
1. Transformers.
2. Wire and cable.
3. Conduit and fittings.
4. Boxes, covers and plates.
5. Branch circuit compression connectors.
6. Marking and identification devices.
7. Grounding system.
8. Paint.

9. Lighting fixtures.
10. Panelboards.
11. Miscellaneous as shown on drawings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 26 05 33 RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Metal conduit.

B. Flexible metal conduit.

C. Liquid-Tite flexible metal conduit.

D. Non-metal conduit.

E. PVC coated metal conduit.

F. Fittings and conduit bodies.

G. Wall and ceiling outlet boxes.

H. Pull and junction boxes.

1.02 RELATED SECTIONS

A. Section 26 05 26, Grounding and Bonding for Electrical Systems.

B. Section 26 05 29, Hangers and Supports for Electrical Systems.

C. Section 26 05 53, Identification for Electrical Systems.

D. Section 26 27 16 Electrical Cabinets and Enclosures

E. Section 26 27 26 Wiring Devices

1.03 REFERENCES

A. ANSI C80.1 — Rigid Steel Conduit, Zinc Coated

B. ANSI/NEMA PB 1 - Fittings, Cast Metal Boxes and Conduit Bodies for Conduit and Cable Assemblies.

C. ANSI/NFPA 70 - National Electrical Code.

D. NECA "Standard of Installation".

E. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.

F. NEMA TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).

G. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

H. ANSI/NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.

I. ANSI/NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.

J. ANSI/NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.

K. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.04 DESIGN REQUIREMENTS

A. Conduit Size: ANSI/NFPA 70 (unless noted otherwise on the drawings and contained herein).

B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.05 SUBMITTALS

A. Submit under provisions of Section 26 05 10, Shop Drawings, Project Data and Samples.

B. Product Data: Provide for metallic conduit, liquid-tight flexible metal conduit, non-metallic conduit, conduit bodies and fittings , boxes.

1.06 PROJECT RECORD DOCUMENTS

A. Submit under provisions of Section 26 05 10.

B. Accurately record actual routing of all underground conduits and mark on record drawings.

1.07 FIELD SAMPLES

A. Provide under provisions of Section 26 05 30.

B. Provide field sample of PVC coated steel conduit, one each at two feet long.

C. Provide field sample of connectors and fittings.

1.08 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect and handle products to site.

B. Accept conduit on site. CONTRACTOR shall, prior to acceptance, inspect for damage.

C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

D. Protect PVC conduit from sunlight.

1.09 PROJECT CONDITIONS

A. Verify all field measurements as required or shown on drawings.

B. Verify routing and termination locations of conduit prior to rough-in.

C. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required parallel and perpendicular to structures.

PART 2 - PRODUCTS

2.01 CONDUIT REQUIREMENTS

A. All wiring shall be installed in conduit, including power, low voltage, sensor control, and instrumentation.

B. Minimum size conduit shall be as follows:
1. 3/4-inch for power and branch circuit wiring, unless noted otherwise on the drawings.
2. 1-inch for low voltage, sensor control and instrumentation, unless noted otherwise on the drawings.

C. Conduit shall be installed in accordance with the following schedule:
1. Outside secondary service and feeder conduit risers above grade: Galvanized thick wall rigid steel (GRC).
2. Conduit in earth (no encasement): Galvanized thick wall rigid steel (GRC) or Schedule 80 PVC as noted. Metallic conduit shall be coated with three (3) coats of polyvinyl polyethylene or hot asphalt application.
3. In all poured building construction concrete, thick wall galvanized rigid steel conduit (GRC) or Schedule 80 PVC.
4. In exposed locations indoors and outdoors: Galvanized thick wall rigid steel (GRC).
5. In exposed locations outdoors: Galvanized thick wall rigid steel (GRC).

2.02 FITTINGS

A. Where conduits, 1/2-inch through 1-inch conduits, enter junction boxes, pullboxes, panels, cabinets, gutters, etc. use insulated throat connectors, Raco Cat. #1003 and 1004, Locknuts #1133 and 1134, insulated throat bushing and #1222, 1223, and 1224, insulated throat ground bushings for rigid conduit, Raco Cat. #2912, 2913, 2914, for EMT. Raco Cat. #3302, 3303, 3304 for flexible metal conduit. Raco Cat. 3512, 3513 and 3514 for Liquid-Tite connectors. Conduits 1-1/4-inch and above entering junction boxes, pullboxes, panels, cabinets, gutters, etc. shall have insulated throat grounding bushings equal to Raco Cat. #1225, 1226, 1228, 1230, 1232, 1234 and 1236.

B. Only threaded joint connectors and malleable iron no thread compression box connectors shall be used on rigid conduit. No fittings requiring set screws or indentor type applications, including BM connectors, will be allowed.

2.03 CONDUIT STRAPS AND HANGERS

Two (2) hole push-on stamped straps Raco Cat. #2232, 2233, 2234, 2235, 2236 and 2238 for rigid conduit. These anchors shall be used on surface areas such as concrete, masonry, wide flange beams, columns and wood. All screws shall be stainless steel.

Install seal-off fittings where required by code or shown on the drawings for the job. Fittings shall be Crouse-Hinds Type EYS for vertical runs, Type EZS for horizontal and vertical runs, or Type EYS elbow seals, or approved equal in Killark or Appleton. All seals shall be properly installed using a non-hardening sealing compound and shall be sealed as soon as cable is installed.

2.04 RIGID METAL CONDUIT

A. Manufacturers:
1. Allied

2. Wheatland
3. Republic
4. Approved equal

B. Rigid Galvanized Steel Conduit (GRC): ANSI C801. UL 6.

2.05 PVC COATED METAL CONDUIT

A. Manufacturers:
1. Robroy
2. Approved equal

B. Description: NEMA RN1; rigid steel conduit with external and internal PVC coating, 20 mil, 0.05 mm thick.

C. Fittings and Conduit Bodies: ANSI/NEMA FB1; steel fittings with external and internal PVC coating to match conduit.

2.06 LIQUID-TIGHT FLEXIBLE METAL CONDUIT

A. Manufacturers:
1. Alflex
2. Anamet
3. AFC
4. Approved equal

B. Description: Interlocked aluminum construction with PVC jacket.
C. Fittings: ANSI/NEMA FB1.

2.07 ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:
1. Allied Tubing
2. LTV Steel
3. Wheatland
4. Triangle
5. Approved equal

B. Description: ANSI C80.3, UL 797 zinc-coated. Maximum size 2 inches.

2.08 NON-METALLIC CONDUIT

A. Manufacturers:
1. Carlon
2. Approved equal

B. Description: NEMA TC2; Schedule 80 PVC.

C. Fittings and Conduit Bodies: NEMA TC3.

2.09 OUTLET BOXES

A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, galvanized steel.
1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2-inch or 3/4-inch male fixture studs where required.
2. Only 4-inch square boxes with raised gang covers will be allowed.

B. Cast Boxes: NEMA FB 1, Type FD, aluminum. Provide gasketed cover by box manufacturer. Provide threaded hubs as required.

2.10 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

B. Surface-Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface-mounted junction box.
1. Material: Cast aluminum.
2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.
3. PVC coated over water plant facility.

C. In-Ground or Concrete Cast Metal Box: NEMA 250, Type 6, inside flanged, recessed cover box for flush mounting.
1. Material: Galvanized cast iron.
2. Cover: Nonskid cover with neoprene gasket and stainless steel cover screws.
3. Cover Legend: ELECTRIC, COMM.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install conduit in accordance with NECA "Standard of Installation".

B. Install non-metallic conduit in accordance with manufacturer's instructions.

C. Arrange supports to prevent misalignment during wiring installation.

D. Support conduit using coated steel straps with stainless steel screws.

E. Fasten conduit supports to structures and surfaces under provisions of this section.

F. Do not support conduit with wire or perforated pipe straps in any type structure. Remove wire used for temporary supports.

G. Route all conduit, whether exposed or concealed, parallel and perpendicular to structures, etc.

H. Route conduit in and under slab from point-to-point.

I. Maintain 12-inch (300 mm) clearance between conduit and surfaces with temperatures exceeding 104° F. (40° C.).

J. Bring conduit to shoulder of fittings, fasten securely.

K. Join non-metallic conduit using cement as recommended by manufacturer. Wipe non-metallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.

L. Use conduit hubs for sealing locknuts to fasten conduit to cast boxes. All conduit entering top or sides of all junction boxes, pullboxes, wiring gutters, etc., exposed to weather shall have myers hub connectors.

M. Install no more than equivalent of four 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2-inch (50 mm) size. Radio telemetry system conduit bends shall not exceed two (2) 90-degree turns. All bends shall be long radius. All field bends on conduit shall be made in accordance with tables in Article 346, NFPA 70.

N. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.

O. Provide suitable fittings to accommodate expansion and deflection where conduit crosses control and expansion joints.

P. Provide suitable nylon pull string or No. 14 AWG steel wire in each conduit except sleeves and nipples.

Q. Use suitable caps to protect installed conduit against entrance of dirt and moisture.

R. Ground and bond conduit under provision of Section 26 05 26.

S. Identify conduit under provisions of Section 26 05 53.

T. All conduit male threads shall be coated with "General Electric" RTV silicone sealer where conduit is installed outdoors, in contact with concrete or earth.

U. All feeders shall be run in galvanized or sheradized thick wall rigid steel (GRC), no exceptions.

V. All conduits shall be sized as noted on the drawings and contained herein. Where size not shown, consult ENGINEER.

W. All upturned conduits shall be capped during construction rough-in to prevent moisture or debris from entering. Pull through each and every conduit a dry swab of sufficient size to remove any and all moisture. Seal all conduit terminations with GE Silicone or duct puddy prior to final acceptance of the project.

X. Maximum length of flexible liquid-tite conduit shall not exceed 5 feet.

Y. Assure ground continuity on all branch circuitry conduits with two locknuts, one inside and one outside of all boxes, cabinets and gutters for rigid conduit.

Z. Conduit Curb:
1. In concrete slabs or floors, provide a 2-inch high curb extending 2-inches from the outer surface of the conduit penetrating the floor, to prevent corrosion.
2. Terminate conduit stub-ups in couplings, slightly above the finished concrete curb.
3. Paint the stub-up with Scotch-Clad Protective Coating #1706 or equal, a minimum of 6-inches above and below the finished surface of the concrete.

AA. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.

BB. Install electrical boxes to maintain headroom and to present neat mechanical appearance.

CC. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

DD. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire.

EE. Install boxes to preserve fire resistance rating of partitions and other elements.

FF. Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices with each other.

GG. Use flush mounting outlet boxes in finished areas with raised gang covers.

HH. Do not install flush mounting boxes back-to-back in walls; provide minimum 6 inch (150 mm) separation. Provide minimum 24 inches (600 mm) separation in acoustic rated walls.

II. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

JJ. Use stamped steel bridges to fasten flush mounting outlet box between studs. Span between studs.

KK. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

LL. Use adjustable steel channel fasteners for hung ceiling outlet box.

MM. Do not fasten boxes to ceiling support wires.

NN. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.

OO. Use gang box where more than one device is mounted together. Do not use sectional box.

PP. Use gang box with plaster ring for single device outlets.

QQ. Use cast outlet box in exterior locations exposed to the weather and wet locations.

RR. Large Pull Boxes: Boxes larger than 100 cubic inches (1600 cubic centimeters) in volume or 12 inches (300 mm) in any dimension.
1. Interior Dry Locations: Use hinged enclosure under provisions of Section 16160.
2. Other Locations: Use surface-mounted cast metal box.

3.02 CONDUIT SUPPORTS

Support conduits as follows:

A. Galvanized rigid thick wall conduit (GRC), IMC and EMT, within three feet of all outlet boxes, junction boxes, cabinets, gutters or fittings. Horizontally anchored at 10'-0" maximum intervals. Other spacings are noted on the plans.

B. Liquid-tight flexible conduit (Sealtite), within 12 inches of all outlet boxes, junction boxes, cabinets, gutters or fittings and bends or turns. Horizontally anchored at 2-foot intervals. Minimum size permitted is 3/4-inch.

3.03 INTERFACE WITH OTHER PRODUCTS

A. Coordinate installation of outlet box for mechanical equipment furnished under Division 15.

B. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening. Use raised gang square covers.

C. Coordinate mounting heights and locations of outlets mounted above counters, benches and backsplashes.

D. Position outlet boxes to locate luminaires as shown on drawings.

3.04 ADJUSTING

A. Adjust flush-mounting outlets to make front flush with finished wall material. Maximum tolerance is 1/8-inch recess in finished wall.

B. Install knockout closure in unused box opening.

END OF SECTION

SECTION 26 05 40 UTILITY SERVICE

PART 1 GENERAL

1.01 Description

A. Scope: Furnish all labor materials, equipment and incidentals required to provide electric utility service for the project from the serving utility. The services consist of one 4-wire services, 480/227-volt three-phase services. In general, the following work shall be performed by the Contractor.
1. Secondary wiring from the meter base to all panels and devices. All wiring, lighting and miscellaneous components.

B. Coordination: Contractor shall make all arrangements with regard to the service connections required. It shall be the responsibility of the Contractor to fully coordinate with the serving utility requirements.

C. Work performed by others: The following work will be performed by the serving utility:
1. Supply of distribution transformer, primary lines, 480/227-volt three-phase service from transformer to meter base.

1.02 Quality Assurance

Work in connection with electric utility shall be done in strict conformance with the requirements of the serving utility.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 26 05 50 EQUIPMENT WIRING SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Make all final electrical connections to all equipment shown on drawings or required for a complete and operable system.

B. All final electrical connections shall be made in strict compliance with NPFA-70 National Electrical Code Latest Edition.

1.02 RELATED SECTIONS

A. Section 26 05 10, General Requirements.

B. Section 26 05 20, Codes and Standards.

C. Section 26 05 33, Raceway and Boxes for Electrical Systems.

D. Section 26 05 23, Control-Voltage Electrical Power Cables.

E. Section 26 05 26, Grounding and Bonding for Electrical Systems.

1.03 PROJECT RECORD DOCUMENTS

Submit documents in accordance with provisions of Section 26 05 10.

PART 2 - PRODUCTS

Products are listed under related sections of the specifications.

PART 3 - EXECUTION

3.01 INSTRUCTIONS

A. Shall be installed in conduit where and as shown on the drawings and in accordance with drawings and specifications.

B. Power connections shall be as follows:
1. Set disconnect as shown on drawings.
2. Run branch circuits as indicated on the drawings and make hardwired connections to all devices.
3. Run all conduit and wiring for all control systems specified on this project.
4. Run circuits from panelboards to and make final electrical connections.

END OF SECTION

SECTION 26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Nameplates.

B. Wire and cable markers.

1.02 RELATED WORK

Section 26 05 10, General Requirements.

1.03 SUBMITTALS

A. Submit shop drawings under provisions of Section 26 05 10.

B. Include schedule for nameplates.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Nameplates: Engraved three-layer laminated plastic, white letters on a black background.

B. Wire and Cable Markers: Cloth markers, split sleeve or tubing type.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Degrease and clean surfaces to receive nameplates.

B. Install nameplates parallel to equipment lines.

C. Secure nameplates to equipment fronts and panels using stainless steel screws.

3.02 WIRE IDENTIFICATION

Provide wire markers on each conductor in enclosures and at load connection. Identify with branch circuit number for power circuits and with control wire number as indicated on equipment manufacturer's shop drawings for control wiring.

3.03 NAMEPLATE ENGRAVING SCHEDULE

Provide nameplates to identify all electrical distribution and control equipment and loads served. Letter Height: 1/8 inch (3 mm) for individual switches and loads served and 1/4 inch (6 mm) for control equipment panel identification unless noted otherwise.

END OF SECTION

SECTION 26 06 20 SCHEDULES FOR LOW-VOLTAGE ELECTRICAL DISTRIBUTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. CONTRACTOR to furnish all materials and labor and perform all operations, including, but not limited to, coordination with general construction shop and field drawings, manufacturer's recommendations and installation instructions, to produce a complete and operative system. It is specifically noted that the plans are diagrammatic and the specifications are descriptive and do not show every piece of equipment, conduit, wiring boxes, etc.; however, where any mention of a system or system operation is indicated in the contract documents, CONTRACTOR shall provide material and labor for that system to be fully operational to the satisfaction of the ENGINEER and OWNER.

B. The following operative systems shall be applicable to this project.
1. Secondary underground 480-volt service and distribution system, complete with conduit, conductors, termination lugs, trenching and backfill, and testing.
2. Building power system (600-volt and below) complete with final electrical connections to all motors, panels, auxiliary equipment controls, control panel, distribution equipment, transformers, etc.
3. Lighting systems complete with fixtures, accessories, mounting hardware, lamps, etc.
4. Grounding protection system complete with wiring, connectors, ground rods, exothermic connections, compression connectors and certification from supplier.
5. Miscellaneous systems complete as shown on the drawings and as stated herein.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 26 22 00 LOW-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.01 DESCRIPTION

Dry-type transformers for free-standing floor mounted or wall mounted.

1.02 RELATED WORK SPECIFIED ELSEWHERE

Section 26 05 26 Grounding and Bonding for Electrical Systems.

1.03 SUBMITTALS

Submit under provisions of Section 26 05 10.

PART 2 - PRODUCTS

2.01 TRANSFORMERS

A. Requirements for 208Y/120 volts shall be supplied by dry-type transformers furnished and installed where shown on drawings.

B. Transformer shall be three-phase, connected 480-volt, three-phase Delta on primary side and 208Y/120-volt, three-phase, four-wire, 60 Hz on secondary side, 2-22% taps above and below nominal voltage.

C. Transformers shall have 115EC. temperature rise above 40EC. ambient. All insulating materials to be in accordance with NEMA ST20 standards for 220EC., UL component recognized insulation system.

D. Transformer coils shall be of the continuous wire wound construction and shall be impregnated with non-hygroscopic, thermosetting varnish. Each layer shall have end fillers, or tie-downs, to provide maximum mechanical strength. Materials must have a minimum of one year of proven field usage. Accelerated laboratory tests not acceptable in lieu of actual field experience. Insulation system used shall be component recognized by Underwriter's Laboratories. The coils shall also have a final wrap of electrical insulating material to prevent mechanical injury to the wire as well as increasing the electrical breakdown strength. Coils with exposed wire will not be accepted.

E. Core shall be constructed of high grade, non-aging silicone steel with high magnetic permeability and low hysteresis and eddy current losses. Magnetic flux densities are to be kept well below the saturation point. The core laminations shall be clamped together with structural steel angles. The completed core and coil shall then be bolted to the base of the enclosure but isolated from the base of the enclosure by means of rubber, vibration-absorbing mounts. There shall be no metal-to-metal contact between the core and coil and the enclosure. On transformers 500 KVA and smaller, the vibration isolating system shall be designed to provide a permanent fastening of the core and coil to the enclosure. Sound isolating systems requiring the completed removal of all fastening devices will not be acceptable.

F. The entire transformer enclosure shall be degreased, cleaned, phosphatized,

primed and finished with a gray, baked enamel.

G. The core of the transformer shall be visibly grounded to the enclosure by means of flexible grounding conductor sized in accordance with applicable NEMA and NEC standards.

H. Sound levels shall be guaranteed by the manufacturer not to exceed to the following:
1. 25 to 50 KVA 45 DB
2. 51 to 150 KVA 50 DB

I. The transformer shall be listed by Underwriters' Laboratory for the specified temperature rise.

J. Product and Manufacturer: Provide equipment manufactured by one of the following:
1. Square D Company.
2. General Electric Company.
3. Westinghouse Electric Company.
4. Or equal.

PART 3 - EXECUTION

3.01 FREE-STANDING TRANSFORMERS

A. Mount on floor on minimum of 2-inch vibration neoprene pad.

B. Electrical connections on each side shall be flexible metal conduit and wiring.

3.02 WALL-MOUNTED TRANSFORMERS

A. Mount on wall with manufacturers recommended mounting devices.

B. Electrical connections on each side shall be flexible metal conduit and wiring.

END OF SECTION

SECTION 26 24 00 SWITCHBOARDS AND PANELBOARDS

PART 1 GENERAL

1.01 Description

Lighting and power panelboards.

1.02 Related Sections

A. Section 25 05 10, General Provisions.

B. Section 26 05 26, Grounding and Bonding for Electrical Systems.

C. Section 26 05 53, Electrical Identification.

1.03 Submittals

A. Submit under provisions of Section 26 05 10.

B. Submit manufacturer's data indicating bussing, enclosure, circuit numbering, sizes, etc.

PART 2 PRODUCTS

2.01 Panelboards

A. Shall be dead-front construction with solderless pressure terminals.

B. Main and neutral busses shall be of capacity scheduled on drawings. Bussing shall be tin-plated, copper-based on maximum current density in accordance with UL Standard 891.

C. Complete typewritten directory with transparent plastic cover inside of door. All panels shall be identified as they are designated on the drawings by 3/4-inch plastic phenolic sign with 1/4-inch indented letters on front face of panel attached with minimum of two (2) screws.

D. Trim and door with lock and catch with two (2) keys. Keys shall be common to all panelboards.

E. Circuit Breakers:
1. Circuit breakers shall be quickmake and quickbreak on manual or automatic operation, with minimum interrupting capacity of 10,000 amps RMS symmetrical.
2. Breakers shall be trip-free. Each breaker shall have trip indication independent of the ON or OFF positions.
3. All breakers shall be UL listed and meet NEMA Standards Publication No. AB1 and Federal Specification No. WOCO375a and any amendments to the above where applicable.
4. All breakers shall be calibrated for operation in an ambient temperature of 40E C.
5. All two- and three-pole breakers shall be common trip.
6. Automatic operation of the circuit breaker shall be obtained by means of

thermal and/or magnetic tripping devices located in each pole. Thermal devices shall provide the time-delay tripping on overloads and the magnetic device shall provide instantaneous tripping on short circuits.

7. All breakers shall be bolt-on type.

PART 3 EXECUTION

3.01 Installation

A. Panels shall be securely mounted with through bolts, anchors or other approved means.

B. Mount all panelboards with top breaker handle not more than 6'-6" above finish floor.

C. Connect the phase wires of three (and/or four) wire home runs to breakers connected to separate phase busses of the panelboard. Panelboard circuits shall be numbers in sequence vertically and all circuits shall appear in the panel exactly as they are shown on the drawings. All branch circuit neutral connections shall be identified by adhesive number tags to identify with their branch circuit phase conductors where neutral connections connect to the panel neutral bus.

D. Neutrals and equipment ground conductors shall not be connected together in any panel beyond service entrance main.

E. No two ungrounded conductors shall be connected to the same circuit breaker terminal.

F. There shall be no splicing of conductors in panelboards.

G. Panelboards shall be as scheduled on the drawings and as manufactured by Square D Company, Type NQOD, or approved equal.

END OF SECTION

SECTION 26 27 16 ELECTRICAL CABINETS AND ENCLOSURES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Hinged cover enclosures.

B. Cabinets.

C. Mounting panel.

D. Terminal blocks and accessories.

1.02 REFERENCES

A. NEMA 250 - Enclosures for electrical equipment (1,000 volts maximum).

B. ANSI/NEMA ICS 1 - Industrial control and systems.

C. ANSI/NEMA ICS 4 - Terminal blocks for industrial control equipment and systems.

D. ANSI/NEMA ICS 6 - Enclosures for industrial control equipment and systems.

E. UL 50 - Enclosures.

1.03 SUBMITTALS

A. Submit shop drawings and product data under provisions of Sections 26 05 10.

B. Shop Drawings for Equipment and Enclosure Panels: Include wiring schematic diagram, wiring diagram, outline drawings and construction diagram as described in ANSI/NEMA ICS 1.

PART 2 - PRODUCTS

2.01 HINGED COVER ENCLOSURES

A. Construction: NEMA 250; Type 4x stainless steel.

B. Finish: Polished stainless steel.

C. Covers: Continuous hinge, held closed by hasp and staple for padlock.

2.02 CABINETS

A. Construction:
1. 14-gauge grade stainless steel.
2. Drip shield top and seam-free sides, front and back.
3. 16-gauge stainless steel continuous hinge with stainless steel pin.
4. Cover fasteners with captive plated steel screws.
5. Hasp and staple for padlocking.
6. Knockouts in bottom.
7. Collar studs with back mounting panel.

8. Corrosion inhibitors.
9. Electric heater with thermostat where located outdoors.
10. Size: Verify size required with equipment to be housed or as noted on drawings.

B. Manufacturer and Catalog No.: Hoffman Cat. No. scheduled with back panel or approved equal (minimum size).

2.03 TERMINAL BLOCKS AND ACCESSORIES

A. Terminal Blocks: ANSI/NEMA ICS 4; UL listed.

B. Power Terminals: Unit construction type, closed-back type, with tubular pressure screw connectors, rated 600 volts.

C. Signal and Control Terminals: Modular construction type, channel mounted; tubular pressure screw connectors, rated 300 volts.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install cabinets and enclosures plumb; anchor securely to structural supports at each corner with stainless steel bolts, nuts and Belleville washers.

B. Install trim plumb.

END OF SECTION

SECTION 26 27 26 WIRING DEVICES

PART 1 - GENERAL

1.01 Description

Furnish and install wiring devices as shown or noted on plans, including all required mounting hardware, etc.

1.02 Submittals

A. Submit shop drawings and product data under provisions of Sections 16010 and 01340, Shop Drawings Submittal.

B. Submit manufacturer's data.

PART 2 - PRODUCTS

2.01 Safety Switches

A. Type: Horsepower rated, heavy-duty, single throw, three-pole with visible blade and safety handle. Fused and/or unfused as specified elsewhere and/or designated on the Drawings and/or as required by NEC. Sized as required by NEC and/or as shown on the Drawings.

B. Each switch shall have indented plastic phenolic sign (minimum 1/8-inch lettering) identifying load served with voltage and horsepower attached to switch with stainless steel screws.

C. Enclosure: Stainless Steel NEMA 1 for dry, indoor locations and Stainless Steel NEMA 4X for outdoor and wet locations.

D. Manufacturers:
1. Square D Co.
2. General Electric Co.
3. Westinghouse.
4. Or equal.

2.02 Receptacle

A. Indoor Locations:
1. Duplex grounding receptacle, two pole, three wire, 125 volt AC, 20 ampere, stainless steel cover plates. Products and Manufacturers:
   a. Cat. #5362-CR, by Arrow-Hart Inc.
   b. Cat. #53CM62, by Harvey Hubbell Inc.
   c. Or equal.
2. Single grounding receptacle, corrosion resistant, two pole, three wire, 125 volt AC, 20 ampere, stainless steel cover plates. Products and Manufacturers:
   a. Cat. #5361-CR, by Arrow-Hart Inc.
   b. Cat. #53CM61, by Harvey Hubbell In
   c. Or equal.

B. Ground Fault Receptacle Where Designated on the Drawings:

1. Type: UL listed, 20 ampere, 125 volt AC, sensitivity of 5 mA, three wires, weather-proof cover plates.
2. Manufacturer:
   a. Hubbell, No. 6F-5362-GY with a 5221 cover plate.
   b. Or equal.

C. Weatherproof Receptacle Where Designated on the Drawings: Type UL listed duplex grounding receptacle, corrosion resistant, two pole, three wire, 20 ampere, 125 volt AC, weatherproof cover plates.

2.03 Switches

A. Indoor Non-Hazardous Locations:
1. Single pole AC toggle switch, quiet type, 120/277 volt AC, 20 ampere, Brown, specification grade with stainless steel cover, screws and grounding terminal. Products and Manufacturers:
   a. Cat. #20AC1 by Pass & Seymour, Inc.
   b. Cat. #CS 120 by Hubbell.
   c. Or equal.
2. Toggle switches of the three-way type shall be quiet type, 120/277 volt AC, 20 ampere, specification grade with stainless steel cover, screws and grounding terminal. Products and Manufacturers:
   a. Cat. #20AC3 by Pass & Seymour, Inc.
   b. Cat. #CS 320 by Hubbell.
   c. Or equal.
3. Toggle switches of the four-way type shall be of the same grade and manufacture as the single pole and three-way type.
4. Toggle switches of the two-pole, single throw type shall be of the same grade and manufacturer as above.
5. Dimming Switch:
   a. Coordinated with fluorescent fixture ballasts specified.
   b. Suitable for controlling light output from two of a four-lamp fluorescent fixture.
   c. Include integral snap switch on dimming dialer.
   d. Manufacturer:
      (1) Thyrocon Controls.
      (2) Hunt.
      (3) Or equal.

B. Horsepower-Rated Switches:
1. Type: Toggle operated, horsepower rated with thermal overload protection.
2. Enclosure: NEMA 1 for dry, indoor locations and NEMA 4 for outdoor and damp or wet indoor locations.
3. Products and Manufacturers: Provide one of the following:
   a. Type 609T by Allen-Bradley.
   b. Class 2510 by Square D Co.
   c. Or equal.

2.04 Fuses

A. Type: Dual-element, current-limiting, UL Class RK5, 600 volts, unless otherwise noted or specified.

B. Interrupting Capacities (UL Listed): 200,000 RMS amperes.

C. Coordination:
   1. Coordinated for installation in existing and new equipment.
   2. Properly coordinated for size, type and rating as required for equipment and circuits to be protected.

D. Repair Parts: One replacement fuse for each and every fuse installed under this Contract.

E. Manufacturers: Provide products from one of the following:
   1. Bussman Division, McGraw Edison Company.
   2. Gould Inc., Circuit Protection Division.
   3. Or equal.

PART 3 - EXECUTION

3.01 Mounting

A. Safety switches shall be mounted on structural frame with minimum of four points of attachment using stainless or galvanized steel hardware.

B. Install one spare set of fuses inside fused switch enclosure attached to side.

C. In non-hazardous locations, install wiring devices in outlet or device boxes.

D. Mount wall switches four feet, zero inches above finished floor unless otherwise noted.

END OF SECTION

SECTION 26 51 00 INTERIOR LIGHTING

PART 1 - GENERAL

1.01 DESCRIPTION

Lighting fixture lamps.

1.02 RELATED SECTIONS

A. Section 26 05 10, General Requirements.

B. Section 26 56 00, Exterior Lighting.

1.03 SUBMITTALS

A. Submit under provisions of Section 26 05 10.

B. Submit manufacturer's data sheets showing manufacturer, wattage, type, lumens and general characteristics of each type lamp.

PART 2 - PRODUCTS

2.01 LAMPS

A. Lamps shall be of the proper size and type as noted in the fixture schedule for each type fixture.

B. Incandescent lamps shall be inside frosted, 120 volts, as manufactured by General Electric, Sylvania or approved equal.

C. Fluorescent lamps shall be rapid start, energy savings as manufactured by General Electric, Sylvania or approved equal.

D. High pressure sodium lamps shall be clear, universal burn as manufactured by General Electric, Sylvania or approved equal.

E. Metal halide lamps shall be base up to horizontal burn position. They shall be Metalarc/C lamps as manufactured by Sylvania or approved equal.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 26 56 00 EXTERIOR LIGHTING

PART 1 - GENERAL

1.01 DESCRIPTION

Exterior building lighting fixtures and accessories.

1.02 RELATED SECTIONS

A. Section 26 05 10, General Requirements.

B. Section 26 05 23, Control-Voltage Electrical Power Cables.

C. Section 26 05 33, Raceway and Boxes for Electrical Systems.

D. Section 26 05 26, Grounding and Bonding for Electrical Systems.

E. Section 26 05 29, Hangers and Supports for Electrical Systems.

F. Section 26 51 00, Interior Lighting.

1.03 SUBMITTALS

A. Submit under provisions of Section 26 05 10.

B. Submit manufacturer's data showing construction, lens, paint finishes, metal gauge, dimensions, etc.

PART 2 - PRODUCTS

2.01 FIXTURES

A. Fixtures shall be completely factory prewired. Should internal wiring be required, use #14 Type AF wire.

B. Recessed fixtures shall be in accordance with NEC Article 410.

C. Fixtures shall be as scheduled in the lighting fixture schedule shown on the drawings. Fixtures shall be by manufacturer and catalog number or approved equal.

D. Ballast shall be of the proper size and type for the fixtures. Ballast in fluorescent fixtures shall be high power factor, ETL approved and CBM certified, rapid start, low heat type. Ballast shall be Class "P" rated equipped with an approved internal thermal protective device responsive to ballast temperature which shall open the circuit before damage occurs to ballast.

E. Fluorescent lighting fixture lens specified by catalog number and/or by descriptive reference shall be acrylic plastic and shall equal or exceed IES-SPI-NEMA test for yellowing factor of not to exceed three after 2,000 hours exposure in a Fade-ometer for the standard test condition.

PART 3 - EXECUTION

3.01 SUPPORTS

All fixtures shall have the necessary studs, straps, fittings, etc., in accordance with manufacturer's installation recommendations, for a complete and safe installation to the proper mounting height required by job conditions. All lay-in fluorescent lighting fixtures shall have wire hanger on adjacent corners on each end (minimum of two hangers) attached to fixture housing and anchored to building structure. Minimum gauge wire shall be 12-gauge steel. In addition to the wire hangers, each lay-in fluorescent fixture shall have earthquake clips for attachments to ceiling grid system. Provide all auxiliary framing required to anchor fixtures to metal building structure in plant.

END OF SECTION

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISIONS NO. 907-821-3 **CODE: (SP)**

DATE: 08/30/2017

SUBJECT: Prefabricated Pedestrian Bridge

PROJECT: STP-0003-01(193) / 107192301 & 302 - Harrison County

Section 907-821, Prefabricated Pedestrian Bridge, is hereby added to and becomes a part of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows.

SECTION 907-821 -- PREFABRICATED PEDESTRIAN BRIDGE

907-821.01--Description. This work shall consist of LRFD structural design, providing and installing a prefabricated pedestrian bridge in place, in accordance with these specifications and as shown on the plans. See the special provision supplement for technical specifications and details on contract plans for the construction of an elevator-stair tower at each end of the pedestrian bridge.

907-821.01.1--Design. Through truss bridges shall be designed by a Mississippi Licensed Professional Engineer experienced in through truss bridge design. Designer shall be responsible for obtaining site information and local code requirements.

In addition to normal dead loads, the bridge shall be designed for the following:

Uniform Live Load: Pedestrian bridges shall be designed for an evenly distributed live load of 90 pounds per square foot of deck area.

Vehicle Load: Vehicles shall be prohibited from accessing the bridge.

Wind Load: Bridges shall be designed for wind loads as determined by local codes and ASCE 7-10, Minimum Design Loads for Buildings and Other Structures using a minimum 170 mph wind.

Design Criteria: The design of the bridge shall be in accordance with the following specifications.

A.A.S.H.T.O. LRFD Design Specifications, 2014 and interims thru 2016.
A.A.S.H.T.O. LRFD Guide Specifications for the Design of Pedestrian Bridges, 2009 with interims thru 2015.

Seismic: Bridges shall be designed for seismic loads of the intensity required by local codes.

Temperature: Bridge shall be designed to accommodate a temperature differential of 120°F. Slip pads of UHMW polyethylene shall be placed between the smooth surface of the setting plate and the smooth bearing plate of the bridge. At least 1-inch clearance shall be provided between

the bridge and concrete abutments.

Deflection: The vertical deflection of the bridge due to pedestrian live load shall not exceed 1/400 of the span length. The maximum deflection due to vehicular loads shall not exceed 1/800 of the span length. For pedestrian comfort, the minimum load used for the deflection check shall be a minimum of 500 pounds per lineal foot of bridge. The horizontal deflection due to lateral wind load shall not exceed 1/500 of the span length.

907-821.01.2--Shop Drawings and Submittals. The Engineer shall be provided a minimum of eight (8) copies of the shop drawings with structural calculations each bearing the design Engineer's seal, manufacturer's product data, and color charts for color section.

907-821.01.3--Warranty. The manufacturer shall provide a warranty against defects in material and workmanship for a period of 10 years.

907-821.02--Materials.

907-821.02.1--General. These specifications are a fully engineered clear span bridge of welded steel construction and shall be regarded as minimum standards for design and construction.

The bridge manufacturer shall have been in business of design and fabrication of bridges for a minimum of five (5) years and provide a list of five (5) successful bridge projects, of similar construction each of which has been in service at least three years.

The specific type bridge required will be a "Connector" style bridge.

907-821.02.2--Dimensions.

Width: Inside clear width of bridge shall be 8 feet 0 inches.

Span: End to end length of bridge shall be 160 feet as verified by the Contractor on site.

Camber: Bridge shall be cambered to match the vertical data shown on the plans. Vertical truss members shall be perpendicular to the ground (horizon) after the bridge is erected and dead loads applied.

907-821.02.3--Materials. Structural members shall have a minimum thickness of material of at least 3/16 inch.

Concrete floors shall be completely formed by the bridge manufacturer with a minimum of 22 gage galvanized floor deck and shall include an integral curb along each edge. The floor deck shall be manufactured by a member of the Steel Deck Institute or have their deck properties certified by the Steel Deck Institute. The slab shall carry a 200 pounds per square foot superimposed live load. The pouring and finishing of 4000 psi lightweight concrete without additives and the furnishing of the reinforcement shall be the responsibility of the Contractor. After the concrete has cured, an appropriate sealer should be applied by the Contractor.

Field splices shall be bolted with High Strength ASTM A325 bolts; Type 3 bolts are required for weathering steel bridges.

Welding materials shall be in strict accordance with the American Welding Society (AWS). Structural welding code, D1.1. Filler metal as specified in 4.1 shall be used for the particular welding process required. Welders will be certified in accordance with AWS D1.1

907-821.02.4--Railing & Accessories. Railings shall have a smooth inside surface with no protrusions or depressions. Ends of angles and tubes shall be closed and ground smooth. In accordance with AASHTO, railings for pedestrian use should be a minimum of 42 inches above the floor deck.

The safety fencing consisting of 2"x2" welded wire mesh 8 gage or heavier shall be installed on the sides and top.

907-821.02.5--Finishes. Painted bridges shall be sand blasted in accordance with SSPC SPC-6. The bridge shall be painted with an approved epoxy primer followed by an approved Aliphatic Urethane Gloss Enamel topcoat. Bridges shall be provided with paint for touch up after erection. Color shall be selected by the Engineer.

907-821.03--Construction Requirements.

907-821.03.1--Fabrication and Quality Control. Bridge fabricator shall be certified by the American Institute of Steel Construction to have the personnel, organization, experience, capability, and commitment to produce fabricated structural steel for Conventional Steel Structures and Simple Steel Structures with Sophisticated Paint Endorsement as set forth in the AISC Certification Program.

Workmanship, fabrication, and shop connections shall be in accordance with American Association of State Highway and Transportation Officials Specifications (AASHTO).

Welding operators shall be properly accredited experienced operators, each of whom shall submit satisfactory evidence of experience and skill in welding structural steel with the kind of welding to be used in work, and who have demonstrated the ability to make uniform good welds meeting the size and type of weld required.

Welding shall utilize E70 or E80 series electrodes. The weld process used shall be Flux Core Arc Welding (FCAW) or Gas Metal Arc Welding (GMAW) or Shielded Manual Arc Welding (SMAW per ANSI/AASHTO/AWS D1.5) "Bridge Welding Code".

The connection of bridge end post to top chord should be a mitered joint with the exposed welds ground smooth.

The connection of the floor beam to a pony truss system shall not be solely into the side of a tubular bottom chord without the use of additional stiffeners.

907-821.03.2--Erection. The bridge shall be installed in strict accordance with the manufacture's written instructions, and the drawings.

907-821.04--Method of Measurement. Prefabricated Pedestrian Bridge, constructed and complete in accordance with the requirements of the contract, will be measured by the unit quantity per each unit.

Elevator-Stair Towers, constructed and complete in accordance with the requirements of the contract, will be measured as a lump sum quantity.

No separate measurement will be made for concrete deck, electrical, mechanical and other individual items.

907-821.05--Basis of Payment. Prefabricated pedestrian bridges, measured as prescribed above, shall be paid for at the contract unit price per each, which price shall be full compensation for furnishing all materials and supplies; for performing all work necessities for each completed unit; and for all equipment, tools, labor and incidentals necessary to complete the work.

Elevator-Stair Towers, measured as prescribed above, shall be paid for at the lump sum contract price, which price shall be full compensation for furnishing all materials and supplies; for performing all work necessities for each completed unit; and for all equipment, tools, labor and incidentals necessary to complete the work. Drilled shafts, trial shafts, permanent casing and temporary casing are not included in this pay item and will be paid for separately.

Payment will be made under:

907-821-A: Prefabricated Pedestrian Bridge	- per each
907-821-B: Elevator-Stair Towers	- lump sum

S E C T I O N 9 0 5 - P R O P O S A L

Date _____

Mississippi Transportation Commission
Jackson, Mississippi

Sirs: The following proposal is made on behalf of _____
_____ of _____
_____
for constructing the following designated project(s) within the time(s) hereinafter specified.

The plans are composed of drawings and blue prints on file in the offices of the Mississippi Department of Transportation, Jackson, Mississippi.

The Specifications are the current Standard Specifications of the Mississippi Department of Transportation approved by the Federal Highway Administration, except where superseded or amended by the plans, Special Provisions and Notice(s) to Bidders attached hereto and made a part thereof.

I (We) certify that I (we) possess a copy of said Standard and any Supplemental Specifications.

Evidence of my (our) authority to submit the Proposal is hereby furnished. The proposal is made without collusion on the part of any person, firm or corporation. I (We) certify that I (we) have carefully examined the Plans, the Specifications, including the Special Provisions and Notice(s) to Bidders, herein, and have personally examined the site of the work. On the basis of the Specifications, Special Provisions, Notice(s) to Bidders, and Plans, I (we) propose to furnish all necessary machinery, tools, apparatus and other means of construction and do all the work and furnish all the materials in the manner specified. I (We) understand that the quantities mentioned herein are approximate only and are subject to either increase or decrease, and hereby propose to perform any increased or decreased quantities of work at the unit prices bid, in accordance with the above.

I (We) acknowledge that this proposal will be found irregular and/or non-responsive unless a certified check, cashier's check, or Proposal Guaranty Bond in the amount as required in the Advertisement (or, by law) is submitted electronically with the proposal or is delivered to the Contract Administration Engineer prior to the bid opening time specified in the advertisement.

INSTRUCTION TO BIDDERS: Alternate and Optional Items on Bid Schedule.

1. Two or more items entered opposite a single unit quantity WITHOUT DEFINITE DESIGNATION AS "ALTERNATE ITEMS" are considered as "OPTIONAL ITEMS". Bidders may or may not indicate on bids the Optional Item proposed to be furnished or performed WITHOUT PREJUDICE IN REGARD TO IRREGULARITY OF BIDS.
2. Items classified on the bid schedule as "ALTERNATE ITEMS" and/or "ALTERNATE TYPES OF CONSTRUCTION" must be preselected and indicated on bids. However, "Alternate Types of Construction" may include Optional Items to be treated as set out in Paragraph 1, above.
3. Optional items not preselected and indicated on the bid schedule MUST be designated in accordance with Subsection 102.06 prior to or at the time of execution of the contract.
4. Optional and Alternate items designated must be used throughout the project.

I (We) further propose to perform all "force account or extra work" that may be required of me (us) on the basis provided in the Specifications and to give such work my (our) personal attention in order to see that it is economically performed.

I (We) further propose to execute the attached contract agreement (Section 902) as soon as the work is awarded to me (us), and to begin and complete the work within the time limit(s) provided for in the Specifications and Advertisement. I (We) also propose to execute the attached contract bond (Section 903) in an amount not less than one hundred (100) percent of the total of my (our) part, but also to guarantee the excellence of both workmanship and materials until the work is finally accepted.

I (We) shall submit electronically with our proposal or deliver prior to the bid opening time a certified check, cashier's check or bid bond for **five percent (5%) of total bid** and hereby agree that in case of my (our) failure to execute the contract and furnish bond within Ten (10) days after notice of award, the amount of this check (bid bond) will be forfeited to the State of Mississippi as liquidated damages arising out of my (our) failure to execute the contract as proposed. It is understood that in case I am (we are) not awarded the work, the check will be returned as provided in the Specifications.

SECTION 905 -- PROPOSAL (CONTINUED)

I (We) hereby certify by digital signature and electronic submission via Bid Express of the Section 905 proposal below, that all certifications, disclosures and affidavits incorporated herein are deemed to be duly executed in the aggregate, fully enforceable and binding upon delivery of the bid proposal. I (We) further acknowledge that this certification shall not extend to the bid bond or alternate security which must be separately executed for the benefit of the Commission. This signature does not cure deficiencies in any required certifications, disclosures and/or affidavits. I (We) also acknowledge the right of the Commission to require full and final execution on any certification, disclosure or affidavit contained in the proposal at the Commission's election upon award. Failure to so execute at the Commission's request within the time allowed in the Standard Specifications for execution of all contract documents will result in forfeiture of the bid bond or alternate security.

Respectfully Submitted,

DATE _____

_____
Contractor

BY _____
Signature

TITLE _____

ADDRESS _____

CITY, STATE, ZIP _____

PHONE _____

FAX _____

E-MAIL _____

(To be filled in if a corporation)

Our corporation is chartered under the Laws of the State of _____ and the names, titles and business addresses of the executives are as follows:

_____
President Address

_____
Secretary Address

_____
Treasurer Address

The following is my (our) itemized proposal.

Construction of a Pedestrian Crossing Bridge over US 90 near Caillavet Street in Biloxi, known as Federal Aid Project Nos. STP-0003-01(193) / 107192301 & 302 in Harrison County.

Line no.	Item Code	Adj Code	Quantity	Units	Description[Fixed Unit Price]
				Roadway Items	
0010	201-A001		1	Lump Sum	Clearing and Grubbing
0020	202-B080		289	Square Yard	Removal of Concrete Sidewalk
0030	202-B089		165	Linear Feet	Removal of Curb &/or Curb and Gutter, All Types
0040	202-B168		35	Square Yard	Removal of Island Pavement, All Types
0050	202-B172		560	Square Feet	Removal of Legend, All Types
0060	202-B178		1	Each	Removal of Low Mast Lighting Assembly and Foundation
0070	202-B195		1	Each	Removal of Pull Box
0080	203-G002	(E)	50	Cubic Yard	Excess Excavation, LVM, AH
0090	211-B001	(E)	47	Cubic Yard	Topsoil for Slope Treatment, Contractor Furnished
0100	216-B001		1,189	Square Yard	Solid Sodding, Bermuda
0110	219-A001		7	Thousand Gallon	Watering ($20.00)
0120	234-A001		600	Linear Feet	Temporary Silt Fence
0130	234-D001		2	Each	Inlet Siltation Guard
0140	237-A002		80	Linear Feet	Wattles, 20"
0150	503-C010		166	Linear Feet	Saw Cut, Full Depth
0160	608-A001	(S)	253	Square Yard	Concrete Sidewalk, Without Reinforcement
0170	608-C001		112	Square Feet	Detectable Warning Panels
0180	609-B001	(S)	16	Linear Feet	Concrete Curb, Doweled
0190	609-D013	(S)	166	Linear Feet	Combination Concrete Curb and Gutter Type 3B
0200	616-A001	(S)	35	Square Yard	Concrete Median and/or Island Pavement, 10-inch
0210	618-A001		1	Lump Sum	Maintenance of Traffic
0220	619-D1001		34	Square Feet	Standard Roadside Construction Signs, Less than 10 Square Feet
0230	619-D2001		300	Square Feet	Standard Roadside Construction Signs, 10 Square Feet or More
0240	619-E3001		3	Each	Changeable Message Sign
0250	619-F1006		1,160	Linear Feet	Portable Median Barrier, Less Than or Equal to 45 MPH
0260	619-F2002		1,160	Linear Feet	Remove and Reset Portable Median Barrier
0270	619-G4005		24	Linear Feet	Barricades, Type III, Single Faced
0280	619-G7001		2	Each	Warning Lights, Type "B"
0290	620-A001		1	Lump Sum	Mobilization
0300	626-H002		335	Linear Feet	Thermoplastic Double Drop Legend, White
0310	635-A076		6	Each	Traffic Signal Head, Type 6
0320	637-A002		1	Each	Pullbox Enclosure, Type 2
0330	645-B001		6	Each	Accessible Pedestrian Detection Assembly
0340	647-A001		1	Lump Sum	Removal of Existing Traffic Signal Equipment

Line no.	Item Code	Adj Code	Quantity	Units	Description[Fixed Unit Price]
0350	653-A002		14	Square Feet	Traffic Sign, Type III
0360	699-A001		1	Lump Sum	Roadway Construction Stakes
				Bridge Items	
0370	803-K003	(S)	1,840	Linear Feet	Drilled Shaft, 30" Diameter
0380	803-M002	(S)	60	Linear Feet	Trial Shaft, 30" Diameter
0390	803-O004	(S)	1,040	Linear Feet	Permanent Casing, 30" Diameter
0400	803-O027	(S)	240	Linear Feet	Temporary Casing, 30" Diameter
0410	907-821-A001		1	Each	Prefabricated Pedestrian Bridge
0420	907-821-B001		1	Lump Sum	Prefabricated Pedestrian Bridge, Elevator-Stair Towers

CONDITIONS FOR COMBINATION BID

If a bidder elects to submit a combined bid for two or more of the contracts listed for this month's letting, the bidder must complete and execute these sheets of the proposal in each of the individual proposals to constitute a combination bid. In addition to this requirement, each individual contract shall be completed, executed and submitted in the usual specified manner.

Failure to execute this Combination Bid Proposal in each of the contracts combined will be just cause for each proposal to be received and evaluated as a separate bid.

It is understood that the Mississippi Transportation Commission not only reserves the right to reject any and all proposals, but also the right to award contracts upon the basis of lowest separate bids or combination bids most advantageous to the State.

It is further understood and agreed that the Combination Bid Proposal is for comparison of bids only and that each contract shall operate in every respect as a separate contract in accordance with its proposal and contract documents.

I (We) agree to complete each contract on or before its specified completion date.

* *

COMBINATION BID PROPOSAL

This proposal is tendered as one part of a Combination Bid Proposal utilizing option ___* of Subsection 102.11 on the following contracts:

* Option to be shown as either (a), (b), or (c).

	Project No.	County		Project No.	County
1.	____________	____________	6.	____________	____________
2.	____________	____________	7.	____________	____________
3.	____________	____________	8.	____________	____________
4.	____________	____________	9.	____________	____________
5.	____________	____________	10.	____________	____________

(a) If Combination A has been selected, your Combination Bid is complete.

(b) If Combination B has been selected, then complete the following page.

SECTION 905 - COMBINATION BID PROPOSAL (Continued)

Project Number	Pay Item Number	Unit	Unit Price Reduction	Total Item Reduction	Total Contract Reduction
1. _____	_____	_____	_____	_____	
2. _____	_____	_____	_____	_____	
3. _____	_____	_____	_____	_____	
4. _____	_____	_____	_____	_____	
5. _____	_____	_____	_____	_____	
6. _____	_____	_____	_____	_____	
7. _____	_____	_____	_____	_____	
8. _____	_____	_____	_____	_____	

Project Number	Pay Item Number	Unit	Unit Price Reduction	Total Item Reduction	Total Contract Reduction
9. _____	_____ _____	_____ _____	_____ _____	_____ _____	
10. _____	_____ _____	_____ _____	_____ _____	_____ _____	

(c) If Combination C has been selected, then initial and complete ONE of the following.

_____ I (We) desire to be awarded work not to exceed a total monetary value of $ _____.

_____ I (We) desire to be awarded work not to exceed _____ number of contracts.

Certification with regard to the Performance of Previous Contracts or Subcontracts subject to the Equal Opportunity Clause and the filing of Required Reports

The Bidder hereby certifies that he has ____, has not ____, participated in a previous contract or subcontract subject to the Equal Opportunity Clause, as required by Executive Orders 10925, 11114, or 11246, and that he has ____, has not ____, filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

_____
(COMPANY)

DATE: _____

NOTE: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7 (b) (1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the Equal Opportunity Clause. Contracts and Subcontracts which are exempt from the Equal Opportunity Clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of $10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime Contractors and Subcontractors who have participated in a previous contract or subcontract subject to the Executive orders and have not filed the required reports should note that 41 CFR 60-1.7 (b) (1) prevents the award of contracts and subcontracts unless such Contractors submit a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U. S. Department of Labor.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

CERTIFICATION

I,_____,
(Name of person signing bid)

individually, and in my capacity as_____ of
(Title of person signing bid)

_____do hereby certify under
(Name of Firm, partnership, or Corporation)

penalty of perjury under the laws of the United States and the State of Mississippi that_____

_____, Bidder
(Name of Firm, Partnership, or Corporation)

on Project No. **STP-0003-01(193)/ 107192301000 & STP-0003-01(193)/ 107192302000**

in **Harrison** County(ies), Mississippi, has not either

directly or indirectly entered into any agreement, participated in any collusion; or otherwise taken any action in restraint of free competitive bidding in connection with this contract; nor have any of its corporate officers or principal owners.

Except as noted hereafter, it is further certified that said legal entity and its corporate officers, principal owners, managers, auditors and others in a position of administering federal funds:

a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in (b) above; and

d) Have not within a three-year period preceding this application/ proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

Do exceptions exist and are made a part thereof? Yes / No

Any exceptions shall address to whom it applies, initiating agency and dates of such action.

Note: Exceptions will not necessarily result in denial of award but will be considered in determining bidder responsibility. Providing false information may result in criminal prosecution or administrative sanctions.

The bidder further certifies that the certification requirements contained in Section XI of Form FHWA 1273, will be or have been included in all subcontracts, material supply agreements, purchase orders, etc. except those procurement contracts for goods or services that are expected to be less than the Federal procurement small purchase threshold fixed at 10 U.S.C. 2304(g) and 41 U.S.C. 253(g) (currently $25,000) which are excluded from the certification requirements.

The bidder further certifies, to the best of his or her knowledge and belief, that:

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

2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this contract, Standard Form-LLL, Disclosure Form to Report Lobbying, in accordance with its instructions will be completed and submitted.

The certification contained in (1) and (2) above is a material representation of fact upon which reliance is placed and a prerequisite imposed by Section 1352, Title 31, U.S. Code prior to entering into this contract. Failure to comply shall be subject to a civil penalty of not less than $10,000 and not more than $100,000. The bidder shall include the language of the certification in all subcontracts exceeding $100,000 and all subcontractors shall certify and disclose accordingly.

All of the foregoing is true and correct.

Executed on _____ _____

Signature

(01/2016 F)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SAM.GOV Registration and DUNS Number

Bidders are advised that the Prime Contractor must maintain current registration in the **System for Award Management** (http://www.sam.gov) at all times during the project. A Dun and Bradstreet Data Universal Numbering System (DUNS) Number (http://www.dnb.com) is one of the requirements for registration in the System for Award Management.

Bidders are advised that prior to the award of this contract, they MUST be registered in the System for Award Management.

I (We) acknowledge that this contract cannot be awarded if I (We) are not registered in the System for Award Management prior to the award of this contract. _____ (Yes / No)

I (We) have a DUNS Number . _____ (Yes / No)

DUNS Number: _____

Company Name: _____

Company e-mail address: _____

(6/2015F)

SECTION 902

CONTRACT FOR **STP-0003-01(193)/ 107192301000 & STP-0003-01(193)/ 107192302000**

LOCATED IN THE COUNTY(IES) OF **Harrison**

STATE OF MISSISSIPPI,
COUNTY OF HINDS

This contract entered into by and between the Mississippi Transportation Commission on one hand, and the undersigned contractor, on the other witnesseth;

That, in consideration of the payment by the Mississippi Transportation Commission of the prices set out in the proposal hereto attached, to the undersigned contractor, such payment to be made in the manner and at the time of times specified in the specifications and the special provisions, if any, the undersigned contractor hereby agrees to accept the prices stated in the proposal in full compensation for the furnishing of all materials and equipment and the executing of all the work contemplated in this contract.

It is understood and agreed that the advertising according to law, the Advertisement, the instructions to bidders, the proposal for the contract, the specifications, the revisions of the specifications, the special provisions, and also the plans for the work herein contemplated, said plans showing more particularly the details of the work to be done, shall be held to be, and are hereby made a part of this contract by specific reference thereto and with like effect as if each and all of said instruments had been set out fully herein in words and figures.

It is further agreed that for the same consideration the undersigned contractor shall be responsible for all loss or damage arising out of the nature of the work aforesaid; or from the action of the elements and unforeseen obstructions or difficulties which may be encountered in the prosecution of the same and for all risks of every description connected with the work, exceptions being those specifically set out in the contract; and for faithfully completing the whole work in good and workmanlike manner according to the approved Plans, Specifications, Special Provisions, Notice(s) to Bidders and requirements of the Mississippi Department of Transportation.

It is further agreed that the work shall be done under the direct supervision and to the complete satisfaction of the Executive Director of the Mississippi Department of Transportation, or his authorized representatives, and when Federal Funds are involved subject to inspection at all times and approval by the Federal Highway Administration, or its agents as the case may be, or the agents of any other Agency whose funds are involved in accordance with those Acts of the Legislature of the State of Mississippi approved by the Governor and such rules and regulations issued pursuant thereto by the Mississippi Transportation Commission and the authorized Federal Agencies.

The Contractor agrees that all labor as outlined in the Special Provisions may be secured from list furnished by

It is agreed and understood that each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and this contract shall be read and enforced as though it were included herein, and, if through mere mistake or otherwise any such provision is not inserted, then upon the application of either party hereto, the contract shall forthwith be physically amended to make such insertion.

The Contractor agrees that he has read each and every clause of this Contract, and fully understands the meaning of same and that he will comply with all the terms, covenants and agreements therein set forth.

Witness our signatures this the____ day of _____,_____.

_____
Contractor(s)

By_____

Title_____

Signed and sealed in the presence of:
(names and addresses of witnesses)

_____

MISSISSIPPI TRANSPORTATION COMMISSION

By_____
Executive Director

_____
Secretary to the Commission

Award authorized by the Mississippi Transportation Commission in session on the ____ day of _____,_____, Minute Book No. _____, Page No. _____.

Revised 8/06/2003

SECTION 903
PERFORMANCE AND PAYMENT BOND

CONTRACT BOND FOR: **STP-0003-01(193)/ 107192301000 & STP-0003-01(193)/ 107192302000**

LOCATED IN THE COUNTY(IES) OF: **Harrison**

STATE OF MISSISSIPPI,
COUNTY OF HINDS

Know all men by these presents: that we, _____
(Contractor)
_____ Principal, a _____

residing at_____ in the State of _____

and _____
(Surety)
residing at _____ in the State of _____,

authorized to do business in the State of Mississippi, under the laws thereof, as surety, effective as of the contract date shown below, are held and firmly bound unto the State of Mississippi in the sum of _____

_____

($_____) Dollars, lawful money of the United States of America, to be paid to it for which payment well and truly to be made, we bind ourselves, our heirs, administrators, successors, or assigns jointly and severally by these presents.

The conditions of this bond are such, that whereas the said _____

_____

principal, has (have) entered into a contract with the Mississippi Transportation Commission, bearing the date of _____ day of _____ A.D. _____ hereto annexed, for the construction of certain projects(s) in the State of Mississippi as mentioned in said contract in accordance with the Contract Documents therefor, on file in the offices of the Mississippi Department of Transportation, Jackson, Mississippi.

Now therefore, if the above bounden _____
_____in all things shall stand to and abide by and well and truly observe, do keep and perform all and singular the terms, covenants, conditions, guarantees and agreements in said contract, contained on his (their) part to be observed, done, kept and performed and each of them, at the time and in the manner and form and furnish all of the material and equipment specified in said contract in strict accordance with the terms of said contract which said plans, specifications and special provisions are included in and form a part of said contract and shall maintain the said work contemplated until its final completion and acceptance as specified in Subsection 109.11 of the approved specifications, and save harmless said Mississippi Transportation Commission from any loss or damage arising out of or occasioned by the negligence, wrongful or criminal act, overcharge, fraud, or any other loss or damage whatsoever, on the part of said principal (s), his (their) agents, servants, or employees in the performance of said work or in any manner connected therewith, and shall be liable and responsible in a civil action instituted by the State at the instance of the Mississippi Transportation Commission or any officer of the State authorized in such cases, for double any amount in money or property, the State may lose or be overcharged or otherwise defrauded of, by reason of wrongful or criminal act, if any, of the Contractor(s), his (their) agents or employees, and shall promptly pay the said agents, servants and employees and all persons furnishing labor, material, equipment or supplies therefor, including premiums incurred, for Surety Bonds, Liability Insurance, and Workmen's Compensation Insurance; with the additional obligation that such Contractor shall promptly make payment of all taxes, licenses, assessments, contributions, damages,

any liquidated damages which may arise prior to any termination of said principal's contract, any liquidated damages which may arise after termination of the said principal's contract due to default on the part of said principal, penalties and interest thereon, when and as the same may be due this state, or any county, municipality, board, department, commission or political subdivision: in the course of the performance of said work and in accordance with Sections 31-5-51 et seq. Mississippi Code of 1972, and other State statutes applicable thereto, and shall carry out to the letter and to the satisfaction of the Executive Director of the Mississippi Department of Transportation, all, each and every one of the stipulations, obligations, conditions, covenants and agreements and terms of said contract in accordance with the terms thereof and all of the expense and cost and attorney's fee that may be incurred in the enforcement of the performance of said contract, or in the enforcement of the conditions and obligations of this bond, then this obligation shall be null and void, otherwise to be and remain in full force and virtue.

_____	_____
(Contractors) Principal	Surety
By _____	By _____
	(Signature) Attorney in Fact
	Address _____
	_____
Title _____	_____
(Contractor's Seal)	(Printed) MS Agent
	_____
	(Signature) MS Agent
	Address _____
	_____
	_____
	(Surety Seal)
	_____
	Mississippi Insurance ID Number

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we_____
Contractor

_____
Address

_____
City, State ZIP

As principal, hereinafter called the Principal, and _____
Surety

a corporation duly organized under the laws of the state of _____

as Surety, hereinafter called the Surety, are held and firmly bound unto **State of Mississippi, Jackson, Mississippi**

As Obligee, hereinafter called Obligee, in the sum of **Five Per Cent (5%) of Amount Bid**

Dollars($_____)

for the payment of which sum will and truly to be made, the said Principal and said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for **Construction of a Pedestrian Crossing Bridge over US 90 near Caillavet Street in Biloxi, known as Federal Aid Project Nos. STP-0003-01(193) / 107192301 & 302 in Harrison County.**

NOW THEREFORE, the condition of this obligation is such that if the aforesaid Principal shall be awarded the contract, the said Principal will, within the time required, enter into a formal contract and give a good and sufficient bond to secure the performance of the terms and conditions of the contract, then this obligation to be void; otherwise the Principal and Surety will pay unto the Obligee the difference in money between the amount of the bid of the said Principal and the amount for which the Obligee legally contracts with another party to perform the work if the latter amount be in excess of the former, but in no event shall liability hereunder exceed the penal sum hereof.

Signed and sealed this _____day of _____, 20___

_____
(Principal) (Seal)

_____ By:_____
(Witness) (Name) (Title)

_____
(Surety) (Seal)

_____ By:_____
(Witness) (Attorney-in-Fact)

_____
(MS Agent)

_____
Mississippi Insurance ID Number

OCR-485

REV. 1/2016

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
OFFICE OF CIVIL RIGHTS
JACKSON, MISSISSIPPI

LIST OF FIRMS SUBMITTING QUOTES

I/we received quotes from the following firms on: Letting Date: **October 24, 2017**

Project No: **STP-0003-01(193)/ 107192301000 & STP-0003-01(193)/ 107192302000**

County: **Harrison**

Disadvantaged Business Enterprise (DBE) Regulations as stated in 49 CFR 26.11 require the Mississippi Department of Transportation (MDOT) to create and maintain a comprehensive list of all firms quoting/bidding subcontracts on prime contracts and quoting/bidding subcontracts on federally-funded transportation projects. For every firm, we require the following information:

Firm Name: ______________________
Contact Name/Title: ______________________
Firm Mailing Address: ______________________
Phone Number: ______________________
_______ DBE Firm _______ Non-DBE Firm

Firm Name: ______________________
Contact Name/Title: ______________________
Firm Mailing Address: ______________________
Phone Number: ______________________
_______ DBE Firm _______ Non-DBE Firm

Firm Name: ______________________
Contact Name/Title: ______________________
Firm Mailing Address: ______________________
Phone Number: ______________________
_______ DBE Firm _______ Non-DBE Firm

Firm Name: ______________________
Contact Name/Title: ______________________
Firm Mailing Address: ______________________
Phone Number: ______________________
_______ DBE Firm _______ Non-DBE Firm

Firm Name: ______________________
Contact Name/Title: ______________________
Firm Mailing Address: ______________________
Phone Number: ______________________
_______ DBE Firm _______ Non-DBE Firm

____
S

____