CONSTRUCTION SPECIFICATIONS
FOR

HANCOCK
MISSISSIPPI
PORT • AIR • SPACE

RCL ARCHITECTURE, PLLC
Planning • Architecture • Interiors • Construction Management

TECHNOLOGY BUILDING SUITE 100 (B)
INTERIOR OFFICE RENOVATIONS
7225 STENNIS AIRPORT ROAD
KILN, MISSISSIPPI 39556

RCLA PROJECT No. 22535B
HCPHC PROJECT NO. AP2602
DATE: APRIL 17, 2026

OWNER:	**HANCOCK COUNTY PORT AND HARBOR COMMISSION** 14054 Fred & Al Key Road Kiln, MS. 39556 Phone: 228-467-9231
PROJECT LOCATION:	**TECHNOLOGY BUILDING SUITE 100** **STENNIS INTERNATIONAL AIRPORT** 7225 Stennis Airport Road Kiln, MS 39556
ARCHITECT:	**RCL ARCHITECTURE, PLLC** 900 W. Causeway Approach Mandeville, LA 70471 Phone: 985-727-4440
MECHANICAL:	**RITTER CONSULTING ENGINEERS LTD.** 250 Ridgeway Dr. Suite C-3 Lafayette, LA 70503 Phone: 337-984-8498
ELECTRICAL:	**CREATIVE ENGINEERING GROUP, L.L.C** 201 Highland Park Plaza, Suite 201 Covington, LA 70433 Phone: 985-249-5706 Fax: 985-249-5707

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SECTION 00090
ADVERTISEMENT FOR BIDS

NOTICE: Bidders

Sealed Bids will be received by the HANCOCK COUNTY PORT & HARBOR COMMISSION at 14054 Fred & Al Key Road, Kiln, MS, until **10:00a.m. on Thursday June 18, 2026,** and shortly thereafter opened and read for the construction of:

TECHNOLOGY BUILDING SUITE 100 (B) – INTERIOR OFFICE RENOVATIONS:

Scope of work includes the renovation of a portion of the existing Stennis Technology Building (approx.. 9,087 sq. ft.) to create an additional tenant space. Project Documents may be examined at the HANCOCK COUNTY PORT & HARBOR COMMISSION, 14054 Fred & Al Key Road, Kiln, MS or at the office of the Design Architect, RCL Architecture, PLLC, 900 W. Causeway Approach, Mandeville, La 70471 or online at www.portairspacework.com.. Cost of bid documents is non-refundable and bid documents must be purchased through the website. Return of documents is not required. All plan holders are required to have a valid email address for online registration. For information regarding website registration and online orders please contact Plan House Printing at 228-248-0181. For information regarding this project, contact Architect's office, RCL Architecture, PLLC at 985-727-4440 in Mandeville, La. Email pdimitrios@rclconsultants.com.

The BID SCHEDULE may be viewed utilizing the Mississippi Procurement Technical Assistance Program (MPTAP) website at https://mscpc.com/ [mscpc.com]

Minority and women's business enterprises are solicited to bid on this contract as prime contractors and are encouraged to make inquiries regarding potential subcontracting opportunities and equipment, material and/or supply needs.

All bidders must make positive efforts to use small and minority owned business and women business enterprises

Sealed paper bids may be submitted to the Hancock Port & Harbor Commission at 14054 Fred & Al Key Road, Kiln, MS. Electronic bids can be submitted at www.portairspacework.com. For any questions relating to the electronic bidding process, please call Plan House Printing at 662-407-0193.

A pre-bid conference has been scheduled for **2:30 p.m. on Thursday, June 4, 2026**. at the Multipurpose Room at

Stennis International Airport at 7250 Stennis Airport Rd, Kiln, MS 39556. The right is reserved by the Owner to reject any or all bids, to waive any informalities, and to award the Contract to serve the best interest of Owner. By submitting a proposal, each bidder waives any and all claims for damages against Owner concerning any failure or decision of Owner to not accept the bid.

Authorized
Representative of Hancock County
Port & Harbor Commission

By: Blaine LaFontaine, Hancock County Port &
Harbor Commission, Executive Director

Date: _____

Publish in the Sea Coast Echo, Clarion Ledger and Sun Herald

On **5/14/26 & 5/21/26** PLEASE FORWARD CERTIFIED PROOF OF PUBLICATION AND BILL TO HANCOCK COUNTY PORT AND HARBOR COMMISSION

SECTION 00200
INSTRUCTIONS TO BIDDERS

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

GENERAL

The Project Manual is divided into parts, divisions and sections in keeping with accepted industry practice to separate categories of subject matter for convenient reference thereto. Generally, there has been no attempt to divide the Specification sections into Work performed by the various building trades, Work by separate subcontractors, or Work required for separate facilities in the Project.

General Project Description:

A. Where the drawings are reduced in size from the original tracings, the amount of reduction is indicated by a note and/or bar on the drawings.

ARTICLE 1 - DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office*--The office from which the Bidding Documents may be examined and where the bidding procedures are to be administered (RCL Architecture, PLLC, 900 W. Causeway Approach, Mandeville, La 70471, 985-727-4440).

B. *Command Type Sentences*-- Command type sentences are used in the Contract Documents. These refer to and are directed to the Contractor.

C. *Responsive Bidder*-- Any person, firm or corporation submitting a bid for the work contemplated whose bid form is complete and regular, free of exclusions special conditions or unbalanced unit prices and has no alternative bids for any item unless required in the technical specifications.

D. *Responsible Bidder*--Any person, firm or corporation submitting a bid for the work contemplated who maintains a permanent place of business, has adequate plant equipment to do the work properly and within the time limit that is established, and has adequate financial status to meet his obligations contingent to the work.

E. *Engineer* – in this document Engineer refers to Architect or Consulting Engineer

ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the Advertisement or Invitation to Bid may be obtained from the Issuing Office. The deposit is not refundable and return of the document is not required.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, within five days of Owner's request, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data as may be requested in writing.

3.02 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 - EXAMINATION OF BIDDING DOCUMENTS AND SITE CONDITIONS

4.01 *Subsurface and Physical Conditions*

A. The Supplementary Conditions identify:

1. Those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site.

2. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. Copies of reports and drawings referenced in Paragraph 4.01.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which the Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions has been identified and established in Paragraph 4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.02 *Underground Facilities*

A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

4.03 *Hazardous Environmental Condition*

A. The Supplementary Conditions identify those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that Engineer has used in preparing the Bidding Documents.

B. Copies of reports and drawings referenced in Paragraph 4.03.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established in Paragraph 4.06 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings. Bidder shall be responsible for reproduction cost of all Reports and Drawings.

4.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work appear in Paragraph 4.06 of the General Conditions.

4.05 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

4.06 Reference is made to Article 7 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of Contract Documents (other than portions thereof related to price) for such other work.

4.07 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, the other related data identified in the Bidding Documents, and any Addenda;

B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;

D. obtain and carefully study (or accept consequences of not doing so) all examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto;

E. consider the information known to the Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the bidding Documents; and (3) Bidder's safety precautions and programs;

F. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;

G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

H. correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;

I. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and

J. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 - PRE-BID CONFERENCE

5.01 A Pre-Bid Conference has been scheduled for 2:30 p.m. on **Thursday, June 4, 2026**, at the Multipurpose Room Stennis International Airport at 7250 Stennis Airport Rd, Kiln, MS 39556] .

ARTICLE 6 - SITE AND OTHER AREAS

6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

ARTICLE 7 - INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than ten days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. Questions shall be submitted in writing no later than June 8, 2026 to RCL Architecture, PLLC, Attn: Paul Dimitrios, pdimitrios@rclconsultants.com, with copy to hmorales@rclconsultants.com.

7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

ARTICLE 8 - BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5% percent of Bidder's maximum Bid price and in the form of a certified check or bank money order or a Bid bond (on the form attached) issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions.

8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 10 days after the Notice of Award, Owner may consider Bidder in default, annul the Notice of Award and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Agreement or 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within fourteen days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which the Work is to be substantially completed and ready for final payment is set forth in the Bid Form.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, are set forth in the Contract. Bidders acknowledge that this is a grant funded project with shortened timeline for reimbursement. Owner reserves the right to seek actual losses and damage resulting delay, including but not limited to any loss of grant funding, in additional to or instead of the liquidated damage penalty stated.

ARTICLE 11 - SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents. Whenever it is specified or described in the Bidding Documents that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, provision for providing the substitutes will be included in the Bid.

ARTICLE 12 - SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute in which case apparent Successful Bidder shall submit an acceptable substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General Conditions.

12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 13 - PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents.

13.02 All blanks on the Bid Form shall be completed by printing in ink or by typewriter and the Bid signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternative, and unit price item listed therein. In the case of optional alternatives, the words "No Bid," "No Change," or "Not Applicable" may be entered.

13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.

13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.

13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

13.06 A Bid by an individual shall show the Bidder's name and official address.

13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.

13.08 All names shall be typed or printed in ink below the signatures.

13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.10 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

13.12 Effective May 1, 2012, all bids for public works projects utilizing funds received from a federally declared disaster or a spill of national significance shall be subject to the hiring policies established by Miss. Code Ann. § 31-5-37. This Project does utilize funds received from a federally declared disaster.

ARTICLE 14 - BASIS OF BID; COMPARISON OF BIDS

14.01 *Lump Sum*

A. Where prices are requested to be submitted as a lump sum, Bidders shall submit a Bid on a lump sum basis as set forth in the Bid Form. Where alternates are included, the Bidder shall submit prices per each alternate. Owner may select any combination of Base Bids and alternates in order to determine the lowest and best bid.

14.02 *Unit Price*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.

B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

D. The Owner reserves the right to increase or decrease the amount of any class of unit price work that may be deemed necessary. No minimum or maximum quantity for any bid item is guaranteed by the Owner.

14.03 For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 11.02.B of the General Conditions.

14.04 If Contractor is to bid the time of completion, Bid prices will be compared after adjusting for differences in the time designated by Bidders for Substantial Completion. The adjusting amount will be determined at the rate set forth in the Contract Documents for liquidated damages for failing to achieve Substantial Completion for each day before or after the desired date appearing in Article 9.

ARTICLE 15 - SUBMITTAL OF BID

15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the following data:

15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Advertisement or Invitation to Bid and shall be enclosed in a sealed package plainly marked with the Project title, (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, Certificate of Responsibility number and project name and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed as indicated in the Notice to Bidders and/or Invitation to Bid. If an electronic bid is submitted, a cover sheet should be included with the following information: the Bidder's name, contact information, Certificate of Responsibility number and project name.

15.03 Non-Resident Bidders ("Preference Statue" Miss. Code Ann. § 31-3-21(3))

A. Effective July 1, 2010, all bids submitted by a non-resident contractor which does not include the non-resident contractor's current state law shall be rejected and not considered for award. If the state does not have a preference law, then the contractor shall submit a letter stating such from an officer of the court.

15.04 When Bids are submitted electronically, the same requirements under Article 15.01 through 15.03 shall apply.

ARTICLE 16 - MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.

16.02 If within 24 hours after Bids are opened, any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is re-bid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 - OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the Advertisement or Invitation to Bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form prior to the Notice of Award.

19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents.

19.06 If the Contract is to be awarded, Owner will award the Contract to the Lowest responsive and responsible bidder.

19.07 A bidder may be disqualified for failure to comply with the bid requirements.

ARTICLE 20 - CONTRACT SECURITY AND INSURANCE

20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds.

ARTICLE 21 - SIGNING OF AGREEMENT

21.01 When Owner gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement with the other Contract Documents which are identified in the Agreement as attached thereto. Within 10 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within ten days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 22 - SALES AND USE TAXES

22.01 The Contractor may be subject to a Contractor's Tax in the state where the project is located. If applicable, all Contractor's taxes shall be included in the Bid.

ARTICLE 23 - RETAINAGE

23.01 Provisions concerning Contractor's rights to deposit securities in lieu of retainage are set forth in the Agreement.

ARTICLE 24 – CONTRACTS TO BE ASSIGNED

Not included.

ARTICLE 25 - PARTNERING

Not included.

ARTICLE 26- FEDERALLY DECLARED DISASTER FUNDS

Not included.

SECTION 00410
BID FORM

NOTE: Use preferably black ink for completing this Bid form.

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted for:

TECHNOLOGY BUILDING SUITE 100 (B) – INTERIOR OFFICE RENOVATIONS

1.02 This Bid is submitted to:

Hancock County Port & Harbor Commission
14054 Fred & Al Key Road
Kiln, MS 39556

1.03 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

1.04 The person to contact for additional information regarding this Bid:

NAME: _____
TITLE: _____
TELEPHONE: _____

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

2.02 Bidder accepts that Owner has the right to award the contract to the lowest qualified bidder and accept the base bid, combination of base bid and any alternates, or reject all bids, whichever is in the best interest of the Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.

Addendum No.	Addendum Date

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site

conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in SC-4.02 as containing reliable "technical data" and, (2) reports and drawings of Hazardous Environmental Conditions, if any, at the site that have been identified in SC-4.06 as containing reliable "technical data".

E. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

ARTICLE 4 – FURTHER REPRESENTATIONS

4.01 Bidder further represents that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

BID SCHEDULE A: BASE BID					
Item	**Description**	**Qty**	**Units**	**Unit Price**	**Amount**
1	The work includes the following: renovation of portion of the existing building (approx.. 9,087 sf) to create an additional tenant space as per plans and specifications.	1	Lump Sum		
				TOTAL BASE BID	

BID SCHEDULE B: ADDITIVE ALTERNATE 1: Not Applicable					
Item	**Description**	**Qty**	**Units**	**Unit Price**	**Amount**
Alt 1	Buildout offices in Suite #2 – includes all walls, doors and frames, finishes and associated electrical work. (Base Bid includes finish ceiling, lights, and floor finish).				

BID SCHEDULE C: ADDITIVE ALTERNATE 2: *Not Applicable*					
Item	**Description**	**Qty**	**Units**	**Unit Price**	**Amount**
Alt 2	Not Applicable				

NOTE TO BIDDERS

The following Bid Schedule Tabulation will be used to read the Bids aloud:

Bid Schedule A **$_____**

Unit Prices have been computed in accordance with Paragraph 11.03.B of the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete within **120** calendar days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within **165** calendar days after the date when the Contract Times commence to run.

6.02 Bidder accepts the provisions of the Contract as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are attached to and made a condition of this Bid:

A. Required Bid security in the form of Bid Bond, Section 00430.

B. List of Subcontractors

C. Signed Section 00870- Certification Regarding Debarment, Suspension, Non-Collusion and Other Responsibility Matters

D. Required bidders current certificate of responsibility issued by the state of Mississippi

E. If the bidder is a non-resident contractor, a copy of the bidder's current state bidder preference law pertaining to that states treatment of non-resident contractors pursuant to Miss. Code Ann. 8 31-3-21(3) or a statement on letterhead and signed by the same person who signs the bid form stating that no preference laws exist in that state.

F. E-Verify Compliance Letter and screenshot

G. Notarized Standards of Responsibility Form

H. Official Secretary of State's Letter of Good Standings with the State of Mississippi

I. Corporate Minutes or other document showing authority to sign Bid Form

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BIDDER'S SIGNATURE AND SWORN STATEMENT

STATE OF _____

COUNTY OF _____

BIDDER

9.01 The name of the bidder submitting this proposal is:

_____

Headquarters Address: _____
Street

_____
City State Zip

_____
Phone Fax

_____
Email

Local Mailing Address (if different than above):

_____
Street

_____
City State Zip

Address to which all communications concerned with this Bid and with the resulting Contract shall be sent:

_____
Name Street or P.O. Box

_____
City State Zip

Attention: _____
Name Title

Submitted on _____, 20_____.

State Contractor License No. _____. (If applicable)

Submit UEI number for confirmation of SAM.gov registration:._____

Indicate MBE/WBE status: _____.

9.02 Bidder is:

An Individual

Name (typed or printed): _____

By: _____ (SEAL)
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____ (SEAL)

By: _____
(Signature of general partner – attach evidence of authority to sign)

First Partner Name (typed or printed): _____

Address: _____

Second Partner Name (typed or printed: _____

Address: _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____
(Signature – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(CORPORATE SEAL)

Attest: _____
(Signature of Corporate Secretary)

Date of Qualification to do business in _____ *[State Where Project is Located]* is ____________.

A Joint Venture

Name of Joint Venturer: _____

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of first joint venture partner – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of second joint venture partner – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

9.02 I (Bidder) have examined and prepared the foregoing Bid(s) based on the information contained in the Project Manual provided with the Bid; that I have checked the same in detail before submitting this Bid; that I have full authority to make such statements and submit this Bid in (its) (their) (my) behalf; and that these statements are true and correct.

Signature: _____

Title: _____ (Corporate Seal)

NOTARY PUBLIC:

Subscribe and sworn to before me this _____ day of _____, 20__.

Notary Public – State of _____.

My Commission expires _____ (Notary Seal).

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SECTION 00430
BID BOND

Any singular reference to Bidder, Surety, Owner, or other party shall be considered plural where applicable.

BIDDER (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):
Hancock County Port and Harbor Commission
14054 Fred & Al Key Rd
Kiln, MS 39556

BID
Bid Due Date: [Insert Date]
Project:

TECHNOLOGY BUILDING SUITE 100 (B) INTERIOR OFFICE RENOVATIONS
7225 Stennis Airport Road, Kiln, Mississippi 39556.

BOND
Bond Number: [Insert Number]
Date (Not later than Bid due date): [Insert Date]
Penal sum _____ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

BIDDER	SURETY
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature and Title	Signature and Title (Attach Power of Attorney)
Attest: _____	Attest: _____
Signature and Title	Signature and Title

Note: Above addresses are to be used for giving required notice.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Surety's liability. Recovery of such penal sum under the terms of this Bond shall be the Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2. All Bids are rejected by Owner, or

3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

SECTION 00520
CONTRACT

THIS AGREEMENT is by and between _____

(Owner) and _____

(Contractor).

Owner and Contractor, in consideration of the mutual covenants set forth herein, agree as follows:

ARTICLE 1 - WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

A. Includes the furnishing of all labor, equipment, and materials necessary for the or the reconfiguration of the Technology Building tenant space to 2 office spaces as outlined in the drawings and specification provided Here-in.

B. The work includes the following: The project involves a renovation of portion of the existing building (approx.. 9,087 sf) to create an additional tenant space. Scope includes the construction of a new fire-rated demising wall at the north end to isolate mechanical, electrical, and data infrastructure from the north wing. The interior build-out creates new private offices, a conference room, and storage within the former open-office area. Updated floor and ceiling finishes will be installed throughout as specified. Associated electrical and mechanical work is included.

ARTICLE 2 - THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

TECHNOLOGY BUILDING SUITE 100 (B) INTERIOR OFFICE RENOVATIONS

ARTICLE 3 - ENGINEER

3.01 The Project has been designed by:

RCL Architecture, PLLC
900 W. Causeway Approach,
Mandeville, La 70471

(Architect), who is to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 - CONTRACT TIMES

4.01 Time of the Essence

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 Days to Achieve Substantial Completion and Final Payment

A. The Work will be substantially completed within **120** days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within **165** days after the date when the Contract Times commence to run.

4.03 Liquidated Damages

A. Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner **$** 1000.00 for each day that expires after the time specified in Paragraph 4.02 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner **$** 1000.00 for each day that expires after the time specified in Paragraph 4.02 for completion and readiness for final payment until the Work is completed and ready for final payment. Contractor recognizes that this is a grant funded project, and Owner reserves the right at its unilateral option to recover actual losses or damages from delay, including but not limited to loss of grant funding.

ARTICLE 5 - CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined below:

Base Bid:_____

Alternates:_____

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

As provided in Paragraph 11.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer as provided in Paragraph 9.07 of the General Conditions. Unit prices have been computed as provided in Paragraph 11.03 of the General Conditions.

ARTICLE 6 - PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions. Contractor shall be in compliance with all terms and conditions of the grant documents and contract at the time of invoice submission.

6.02 Progress Payments; Retainage

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment in accordance with Article 14 of the General Conditions during performance of the Work as provided in Paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions:

a. 95 percent of Work completed (with the balance being retainage); and

b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

2. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and less 95 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 Final Payment

A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

ARTICLE 7 - INTEREST

7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the rate specified by Mississippi State Law.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Agreement Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.

B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."

E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 9 - CONTRACT DOCUMENTS

9.01 Contents

A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to 6, inclusive).

2. Performance bond (pages 1 to 2, inclusive).

3. Payment bond (pages 1 to 2, inclusive).

4. Other bonds (pages X to X, inclusive).

a. _____ (pages _____ to _____, inclusive).

b. _____ (pages _____ to _____, inclusive).

c. _____ (pages _____ to _____, inclusive).

5. General Conditions (pages 0 to 46, inclusive).

6. Supplementary Conditions (pages 1 to 11, inclusive).

7. Specifications as listed in the table of contents of the Project Manual.

8. The Drawings listed on the sheet index included in or with the Project Manual.

9. Addenda (numbers X to X, inclusive).

10. Exhibits to this Agreement (enumerated as follows):

a. Contractor's Bid (pages X to X, inclusive).

b. Documentation submitted by Contractor prior to Notice of Award (pages X to X, inclusive).

c. _____.

11. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:

a. Notice to Proceed (pages X to X, inclusive).

b. Work Change Directives.

b. Change Order(s).

12. Certification Regarding Debarment, Suspension, Non-Collusion and Other Responsibility Matters as required by the Project Manager (page 1 only)

13. Miss. Code § 31-5-37, Agreement of Compliance and Certified Employment Plan Form

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 10 - MISCELLANEOUS

10.01 Terms

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 Assignment of Contract

A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 Successors and Assigns

A. Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 Severability

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 Contractor's Certifications

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 Other Provisions: N/A

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement in duplicate. One counterpart each has been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or identified by Owner and Contractor or on their behalf.

This Agreement will be effective on _____, _____ (which is the Effective Date of the Agreement).

OWNER:

_____

By: _____

Title: _____

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for giving notices:

_____

_____

_____

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of Owner-Contractor Agreement.)

CONTRACTOR:

_____

By: _____

Title: _____

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for giving notices:

_____

_____

_____

License No.: _____
(Where applicable)

Agent for service or process: _____

_____

(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)

SECTION 00610

PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

CONTRACT
Date:
Amount:
Description (Name and Location):

BOND
Bond Number:
Date (Not earlier than Contract Date):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL
Company:

Signature: _____ (Seal)
Name and Title:

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

Attest: _____
Signature and Title

CONTRACTOR AS PRINCIPAL
Company:

Signature: _____ (Seal)
Name and Title:

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title:

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.

3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:

3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and

3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 3.1; and

3.3. Owner has agreed to pay the Balance of the Contract Price to:

1. Surety in accordance with the terms of the Contract;

2. Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.

4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:

4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or

2. Deny liability in whole or in part and notify Owner citing reasons therefor.

5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To a limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4, as well as any and all professional costs related to any defects or default of Contractor; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

12.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3. Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone
Surety Agency or Broker
Owner's Representative (engineer or other party)

SECTION 00615

PAYMENT BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

CONTRACT
Date:
Amount:
Description (Name and Location):

BOND
Bond Number:
Date (Not earlier than Contract Date):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Payment Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL
Company:

Signature: _____ (Seal)
Name and Title:

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

Attest: _____
Signature and Title

CONTRACTOR AS PRINCIPAL
Company:

Signature: _____ (Seal)
Name and Title:

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title:

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to Owner, this obligation shall be null and void if Contractor:

2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2. Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.

4. Surety shall have no obligation to Claimants under this Bond until:

4.1. Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the addresses described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2. Claimants who do not have a direct contract with Contractor:

1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and

2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and

3. Not having been paid within the above 30 days, have sent a written notice to Surety and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.

5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.

6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:

6.1. Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2. Pay or arrange for payment of any undisputed amounts.

7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.

8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

15.1. Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

15.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone
Surety Agency or Broker:
Owner's Representative (engineer or other party):

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Hancock County Port & Harbor Commission
14054 Fred & Al Key Road
Kiln, Mississippi 39556

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*—The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*—See Paragraph 11.01 for definition.

17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*—The individual or entity named as such in the Agreement.

20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*—Sections of Division 1 of the Specifications.

22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.

23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*—Polychlorinated biphenyls.

31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.

37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands

furnished by Owner which are designated for the use of Contractor.

42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.

46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.

47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.

48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

49. *Unit Price Work*—Work to be paid for on the basis of unit prices.

50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. Intent of Certain Terms or Adjectives:

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or *terms* of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to *describe* an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. Day:

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective:

1. The word "defective," when modifying the word "Work," refers *to* Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. Furnish, Install, Perform, Provide:

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, *materials*, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in *connection* with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 Starting the Work

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 Before Starting Construction

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and *completing* the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a *preliminary* Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during

performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 Preconstruction Conference; Designation of Authorized Representatives

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 Initial Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the *Contract* Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it *provides* a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to *form* and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 Reference Standards

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at *the* time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual, *or* code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies*:*

1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field *measurements*. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work*: If, during the performance of the Work, Contractor *discovers* any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation , (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. Resolving *Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 Amending and Supplementing Contract Documents

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's *written* interpretation or clarification.

3.05 Reuse of Documents

A. Contractor and any Subcontractor or Supplier shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its *consultants*, including electronic media editions; or

2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other *project* without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 Electronic Data

A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the

party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 Availability of Lands

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 Subsurface and Physical Conditions

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 Differing Subsurface or Physical Conditions

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by

Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. Possible Price and Times Adjustments:

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 Underground Facilities

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data;

b. locating all Underground Facilities shown or indicated in the Contract Documents;

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated:

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly

review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 Reference Points

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 Hazardous Environmental Condition at Site

A. *Reports and Drawings:* The Supplementary Conditions identify those reports and *drawings* known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the *scope* of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) *secure* or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area *until* after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of

such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, *attorneys*, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract *Documents*. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, *Surety* Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do *business* is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance *companies* that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 Certificates of Insurance

A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, *certificates* of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, *certificates* of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

C. Failure of Owner to demand such certificates or other evidence of *Contractor's* full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect *Contractor*.

E. The insurance *and* insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 Contractor's Insurance

A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of *or* result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

6. include completed operations coverage:

a. Such insurance shall remain in effect for two years after final payment.

b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 Owner's Liability Insurance

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability *insurance* as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 Property Insurance

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or *Laws* and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or *renewal* refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this *Paragraph* 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 Waiver of Rights- Omitted

5.08 Receipt and Application of Insurance Proceeds

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 Acceptance of Bonds and Insurance; Option to Replace

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and *maintained* by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide

to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 Partial Utilization, Acknowledgment of Property Insurer

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property *insurance* pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 Supervision and Superintendence

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, *methods*, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced *without* written notice to Owner and Engineer except under extraordinary circumstances.

6.02 Labor; Working Hours

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform *construction* as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or *protection* of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 Services, Materials, and Equipment

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility *for* all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. *All materials and equipment shall be stored, applied, installed*, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 Progress Schedule

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments

will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 Substitutes and "Or-Equals"

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and

3) it has a proven record of performance and availability of responsive service.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute *Items:*

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,

b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services; and

4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, *technique*, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made *pursuant* to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at *Contractor's* expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by *Contractor* pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date *indicated* for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor

2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The *divisions* and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement *between* Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 Patent Fees and Royalties

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 Permits

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and

licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are *applicable* at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 Laws and Regulations

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the *Work*. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in *Contract* Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 Taxes

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and *Regulations* of the place of the Project which are applicable during the performance of the Work.

6.11 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas:

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted

2. by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 Record Documents

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field

Orders, and written interpretations and clarifications in good order and annotated to show changes made during *construction*. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in *connection* with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific *requirements* of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 Safety Representative

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and *responsibilities* shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 Hazard Communication Programs

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 Emergencies

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract *Documents* have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 Shop Drawings and Samples

A. Contractor shall submit Shop Drawings and Samples to *Engineer* for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings:

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. Samples*:*

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work *performed* prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Submittal Procedures:

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation

thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 Continuing the Work

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

1. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 Delegation of Professional Design Services

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 Related Work at Site

A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so

report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 Coordination

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 Legal Relationships

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.

C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 Communications to Contractor

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 Replacement of Engineer

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 Furnish Data

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 Pay When Due

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 Lands and Easements; Reports and Tests

A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 Insurance

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 Change Orders

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 Inspections, Tests, and Approvals

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 Limitations on Owner's Responsibilities

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 Undisclosed Hazardous Environmental Condition

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 Evidence of Financial Arrangements

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 Compliance with Safety Program

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 Owner's Representative

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 Visits to Site

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 Project Representative

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 Authorized Variations in Work

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 Rejecting Defective Work

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 Shop Drawings, Change Orders and Payments

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 Determinations for Unit Price Work

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 Decisions on Requirements of Contract Documents and Acceptability of Work

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 14 days of the event giving rise to the question.

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 Limitations on Engineer's Authority and Responsibilities

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 Compliance with Safety Program

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 Authorized Changes in the Work

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 Unauthorized Changes in the Work

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 Execution of Change Orders

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 Notification to Surety

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 Claims

A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part;

2. approve the Claim; or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 Cost of the Work

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers,

which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash* Allowances*:*

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency* Allowance*:*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be *deemed* to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. *Determinations* of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit *price* will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the *Contract* Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any *Claim* for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be *determined* as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for

overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 Change of Contract Times

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times *shall* be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 Delays

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a *Claim* is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or *progress* of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the *fault* of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the *control* of Contractor. Delays attributable to and

within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

A. Prompt notice of all defective Work of which Owner or *Engineer* has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

13.03 Tests and Inspections

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be *inspected*, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the *Work*; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without *written* concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.

F. Uncovering Work as provided in Paragraph 13.03.E *shall* be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 Uncovering Work

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

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, *expose*, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of *repair* or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 Owner May Stop the Work

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or *fails* to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 Correction or Removal of Defective Work

A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not *defective*. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no *action* that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 Correction Period

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or

2. correct such defective Work; or

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not *promptly* comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of *equipment* is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended *for* an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The *provisions* of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including

but not limited to *all* fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 Owner May Correct Defective Work

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such *corrective* or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work *attributable* to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 Progress Payments

A. Applications for Payments:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to

the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

c. there are other items entitling Owner to a set-off against the amount recommended; or

d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of *Substantial* Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and *Contractor* a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 Partial Utilization

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been

identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and *usable* part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 Final Inspection

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 Final Payment

A. Application for Payment:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;

b. consent of the surety, if any, to final payment;

c. a list of all Claims against Owner that Contractor believes are unsettled; and

d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. Engineer's Review of Application and Acceptance:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give

written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due:

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 Final Completion Delayed

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 Waiver of Claims- Omitted

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 Owner May Suspend Work

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 Owner May Terminate for Cause

A. The *occurrence* of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's repeated disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges *of* engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a *performance* bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 Owner May Terminate For Convenience

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other *right* or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of *anticipated* profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer *fails* to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven *days* after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 Methods and Procedures

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the

American Arbitration *Association* in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or

2. agrees with the other party to submit the Claim to another dispute resolution process; or

3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been *validly* given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 Computation of Times

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period *falls* on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with *the* Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 Headings

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General *Conditions.*

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

Hancock County Port & Harbor Commission
14054 Fred & Al Key Road
Kiln, Mississippi 39556

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SUPPLEMENTARY CONDITIONS

Prepared for Hancock County Port and Harbor Commission

GENERAL

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. C-700, 2007 Edition) and other provisions of the Contract Documents as indicated below. All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the same meanings stated below, which are applicable to both the singular and plural thereof.

The Contractor's attention is directed to Division 1, GENERAL REQUIREMENTS, which contains other directions pertinent to the project.

SPECIFIC COMMENTS

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01.A.19. *Engineer* -- ADD the following language at the end of the last sentence in Paragraph 1.01.A.19:

Wherever in these Contract Documents the word “Architect”, "Engineer", "E/A" or "A/E" appears, it shall be understood to mean the Architect or Engineer, RCL Architecture, PLLC, and their authorized representatives, acting either directly or indirectly as authorized agents of the Owner.

SC-1.01.A.29. *Owner* -- ADD the following language at the end of the last sentence in Paragraph 1.01.A.29:

Whenever in these Contract Documents the word "Owner" appears, it shall be understood to mean the Hancock County Port and Harbor Commission and their authorized representatives.

SC-1.01.A.44. *Substantial Completion* – AMEND the language in the first sentence of Paragraph 1.01.A.44 to read as follows:

CHANGE the language from “in the opinion of Engineer,” to “in the opinion of the Engineer and Owner,”

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.02 *Copies of Documents* AMEND the language in the first sentence in Paragraph 2.02.A to read as follows:

CHANGE the language from “up to ten” to “up to three unless otherwise noted in Article 4”.

SC-2.03 *Commencement of Contract Times; Notice to Proceed* AMEND the language in the third sentence in Paragraph 2.03.A to read as follows:

CHANGE the language from “later than the sixtieth day” to “later than the ninetieth day”.

SC-2.07 *Initial Acceptance of Schedules* ADD the following new language at the end of Paragraph 2.07.A.2:

The requirements for specification Section 01300 - Submittals During Construction shall also be met prior to accepting the Schedule of Submittals.

SC-2.08 ***Narrative Report Outline*** ADD the following new paragraph immediately following Paragraph 2.07:

SC-2.08 A narrative report as outlined in Specification section 01311 shall be required and shall accompany all Payment Applications prior to approval.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.03.B ***Resolving Discrepancies*** ADD the following new language at the end of this section:

d. Whenever the Contract Documents contain contradictions or discrepancies within the document, the most costly means or method shall be applied.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

SC-4.02 ***Subsurface and Physical Conditions*** DELETE Paragraphs 4.02.A and 4.02.B in their entirety and INSERT the following in their place:

A. No reports or explorations or tests of subsurface conditions at or contiguous to the Site are known to the Owner or Engineer.

B. Not Used.

SC-4.02.C ***Site Surveys*** ADD the following new paragraph immediately after Paragraph 4.02.B:

C. *Site Surveys:* Site survey information has been compiled from past records and limited field investigations and although stated with as much accuracy as possible, may contain errors or discrepancies. Contractor shall perform investigations as necessary to accomplish the Work. Any unknown item encountered that impacts the Work shall be handled under Article 4.03.

SC-4.03 ***Differing Subsurface or Physical Conditions*** DELETE Paragraphs 4.03.A.4 and 4.03.C.2.a in their entirety and INSERT the following in their place:

A.4 is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

Then Contractor shall, promptly and no later than twenty-one (21) days after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

C.2.a Contractor knew or should have known of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

SC-4.05 ***Reference Points*** AMEND the language in the second sentence of Paragraph 4.05.A to read as follows:

CHANGE the language from “without prior written approval of Owner” to “without prior written approval of Owner and Engineer”.

SC-4.06 ***Hazardous Environmental Conditions at Site*** DELETE Paragraphs 4.06.A and 4.06.B in their entirety and INSERT the following in their place:

A. No reports or drawings of hazardous conditions at the site are known to the Owner or Engineer.

B. Not used.

SC-4.07 *Site Investigation and Representation* ADD the following new paragraph immediately after Paragraph 4.06:

SC-4.07 *Site Investigation and Representation*

The Contractor acknowledges that he has satisfied himself as to the nature and location of the Work; the general and local conditions, particularly those bearing upon availability of transportation, disposal, handling and storage of materials; availability of labor, water, electric power, and roads; uncertainties of weather, river stages, or similar physical conditions at the site; the conformation and conditions of the ground; the character of equipment and facilities needed preliminary to and during the prosecution of the work; and all other matters which can in any affect the Work or the cost thereof under this Contract. The Contractor further acknowledges that he has satisfied himself as to the character, quality, and quantity of surface and subsurface materials and groundwater to be encountered from inspecting the site. Any failure by the Contractor to acquaint himself with all the available information will not relieve him from responsibility for properly estimating the difficulty or cost of successfully performing the Work. Neither the Owner nor the Engineer assumes responsibility for any conclusion or interpretation made by the Contractor.

ARTICLE 5 – BONDS AND INSURANCE

SC-5.03 *Certificates of Insurance* ADD the following new paragraph immediately after Paragraph 5.03.E:

F. The Contractor shall be required to submit a Certificate of Insurance with every pay application; or, no later than every thirty (30) days for the term of contract. If an approved Certificate of Insurance is not included with the pay application, then it will be considered non-compliant with the contract documents and returned to the Contractor.

SC-5.04 *Contractor's Liability Insurance* ADD the following new paragraph immediately after Paragraph 5.04.B:

C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverages for not less than the following amounts or greater where required by Laws and Regulations:

1. Worker's Compensation, and related coverage under Paragraph 5.04.A.1 and A.2 of the General Conditions:

a.	State:	Statutory
b.	Applicable Federal:	Statutory (e.g. Longshoreman's)
c.	Employer's Liability:	$100,000 or Statutory

2. Contractor's General Liability under Paragraph 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor:

a.	General Aggregate:	$ 1,000,000.00
b.	Products- Completed Operations Aggregate	$ 1,000,000.00
c.	Personal and Advertising Injury	$ 1,000,000.00
d.	Each Occurrence (Bodily Injury and Property Damage)	$ 1,000,000.00

e. Property Damage liability insurance will provide Explosion, Collapse and Under-ground coverages where applicable.

f. Excess or Umbrella Liability

1) General Aggregate $ 1,000,000.00

2) Each Occurrence $ 1,000,000.00

3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:

a. Bodily Injury:
Each Person $ 1,000,000.00
Each Accident $ 1,000,000.00

b. Property Damage:
Each Accident $ 1,000,000.00

c. Combined Single:
Limit of $ 1,000,000.00

4. The Contractual Liability coverage required by Paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:

a. Bodily Injury:
Each Person $ 1,000,000.00
Annual Aggregate $ 1,000,000.00

b. Property Damage:
Each Accident $ 1,000,000.00
Annual Aggregate $ 1,000,000.00

5. The list of names, other persons, or entities to be included on the policy as additional insured are as per Paragraph 5.11.

SC-5.06.A *Property Insurance* DELETE Paragraph 5.06.A in its entirety and INSERT the following in its place:

A. When available, Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof.

1. This insurance shall:

a. include the interests of Owner, Contractor, Subcontractors, Engineer and any other individuals or entities identified herein, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

b. in addition to the individuals and entities specified, include additional insured per Paragraph 5.11.

c. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework, and materials and equipment in transit and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and

such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

d. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

e. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

f. allow for partial utilization of the Work by Owner;

g. include testing and startup; and

h. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

2. Contractor shall be responsible for any deductible or self-insured retention.

3. The policies of insurance required to be purchased and maintained by Contractor in accordance with this Paragraph SC-5.06.A shall comply with the requirements of paragraph 5.06.C of the General Conditions.

SC-5.06.B DELETE this article in its entirety.

SC-5.06.E DELETE this Paragraph in its entirety.

SC-5.11 ***Additional Insured*** ADD the following new paragraph immediately after Paragraph 5.10.

SC- 5.11 *Additional Insured*

A. Where applicable, all insurance policies shall name the Owner and Engineer as herein before defined as additional insured.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITY

SC-6.06 ***Concerning Subcontractor's, Suppliers, and Others*** ADD a new paragraph immediately after Paragraph 6.06.G:

H. Owner or Engineer may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on Work performed for Contractor by a particular Subcontractor or Supplier.

SC-6.12 ***Record Documents*** ADD a new paragraph immediately after Paragraph 6.12.A:

B. Owner may withhold progress payments until record documents are properly updated. Final payment may not be made until all record documents are accepted in writing by Owner.

SC-6.17 ***Shop Drawings and Samples*** ADD the following new paragraphs immediately after Paragraph 6.17.E:

F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, samples or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.

G. In the event that Contractor requests a substitution for a previously approved item, Contractor shall reimburse

Owner for Engineer's charges for such time unless the need for such substitution is beyond the control of Contractor.

SC-6.17.D *Engineer's Review* DELETE Paragraph 6.17.D.1 in its entirety and INSERT the following in its place:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contact Documents. Differences between any approved shop drawings and the contract documents, design, drawings or specifications shall not relieve Contractor of its obligation to the Contract Documents, design, drawings and specifications without written approval by Owner.

SC-6.19 *Contractor's General Warranty and Guarantee* ADD the following new paragraph immediately after Paragraph 6.19.C:

D. Unless additional warranties are included in the technical specifications, the Contractor shall guarantee all Work for a period of one-year following Substantial Completion.

ARTICLE 7 – OTHER WORK AT SITE

SC-7.04 *Claims Between Contractors* ADD a new paragraph immediately after Paragraph 7.03:

SC-7.04 *Claims Between Contractors*

A. Should Contractor cause damage to the work or property of any other contractor at the Site, or should any claim arising out of Contractor's performance of the Work at the Site be made by any other contractor against Contractor, Owner, Engineer, or the construction coordinator, Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by mediation or at law.

B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner, Engineer, the construction coordinator and the officers, directors, partners, employees, agents and other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages (including, but not limited to, fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any other contractor against Owner, Engineer, Engineer's Consultants, or the construction coordinator to the extent said claim is based on or arises out of Contractor's performance of the Work. Should another contractor cause damage to the Work or property of Contractor or should the performance of work by any other contractor at the Site give rise to any other Claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, or the construction coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, or the construction coordinator on account of any such damage or Claim.

C. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of another contractor, and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a Claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, and construction coordinator for any delay, disruption, interference, or hindrance caused by any other contractor. This paragraph does not prevent recovery from Owner, Engineer, or construction coordinator for activities that are their respective responsibilities.

ARTICLE 8 – OWNER'S RESPONSIBLITIES

SC-8.11 *Evidence of Financial Arrangements* Add the following new paragraph immediately after Paragraph 8.11.A:

B. On request of Contractor prior to the execution of any Change Order involving a significant increase in the Contract Price, Owner shall furnish to Contractor reasonable evidence that adequate financial arrangements have been made by Owner to enable Owner to fulfill the increased financial obligations to be undertaken by Owner as a result of such Change Order.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.03 ***Project Representative*** AMEND the language in the second sentence of Paragraph 9.03.A to read as follows:

DELETE the language "the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in".

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

SC-10.05.B ***Claims*** DELETE Paragraph 10.05.B in its entirety and INSERT the following in its place:

B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 21 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing part shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time)/

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-11.03.D ***Unit Price Work*** DELETE Paragraph 11.03.D in its entirety and INSERT the following in its place:

D. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

1. if the Bid price of a particular item of Unit Price Work amounts to five percent (5%) or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than twenty-five percent (25%) from the estimated quantity of such item indicated in the Agreement; and

2. if there is no corresponding adjustment with respect to any other item of Work; and
3. if Contractor believes that Contractor has incurred additional expense as a result thereof or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Article 10 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC-12.03 **Rain Days** ADD the following new paragraphs immediately after Paragraph 12.03.E:

F. The Engineer's number of calendar days estimated to complete the project includes the number of rain days

shown for each month listed below.

January	8 days
February	8 days
March	7 days
April	7 days
May	7 days
June	7 days
July	9 days
August	8 days
September	9 days
October	6 days
November	6 days
December	9 days

G. The Engineer will grant a time extension for every workday when:

- Precipitation amount ½" or more exceeds the number of days on the above chart, weather reduces production to less than 5 hours on times of work on the critical path, and,
- Contractor documents that only exterior work with no interior work was delayed due to the rain.

Requests for rain days must be submitted with the pay application for that time period.

H. A requested rain day must be taken from Contractor furnished rain gauge located on the construction site. It is the Contractor's responsibility to record the daily amount of rain.

I. As part of the current and approved schedule from Contractor, schedules that are not current, updated, and/or approved by Engineer will be reason for refusal of any additional time extension.

J. Rain days provided in the above chart, which are not used during the time period established by the pay application, will be available for later use.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTIONS, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-13.03.A ADD the following new sentence immediately after the first sentence of Paragraph 13.03.A:

Timely notice shall be as stated in the appropriate specification and no less than 24 hours prior to scheduling the Work.

SC-13.03.D Change 13.03.D to read as follows:

> Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

SC-14.02.A.3 ***Applications for Payments*** DELETE Paragraph 14.02.A.3 in its entirety and INSERT the following in its place:

3. The Owner will retain 5% of the amount of each estimate until final completion of the project. On monthly estimates subsequent to the first estimate submitted that includes invoices for stored materials for which payment to the Contractor has been made, there shall be a signed statement that the invoices have been paid by the Contractor.

The statement shall read as follows:

This is to certify that payment has been made for invoiced materials included in previous monthly estimate no._____ thru _____.

Signed: _____

In the event that such statement is not furnished or the manufacturers or material suppliers notify the Owner in writing that they have not been paid for materials included on previous estimates, the Owner may reduce payment in accordance with Paragraph 14.02.

SC-14.02.B.2.c *Review of Applications* DELETE Paragraph 14.02.B.2.c in its entirety and INSERT the following in its place:

3. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work, and Contractor's work retains sufficient funds for completion of all Work.

SC-14.02.C *Payment Becomes Due* AMEND the language in the first sentence of Paragraph 14.02.C.1 to read as follows:

CHANGE the language from "Ten days after presentation of the Application for Payment to Owner," to "Ten days after approval of the Application for Payment by Owner".

SC-14.07.C.1 *Payment Becomes Due* AMEND the language in the first sentence of Paragraph 14.07.C.1 to read as follows:

CHANGE the language from "Thirty days" to "Sixty days"

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

No comment.

ARTICLE 16 – DISPUTE RESOLUTION

SC-16.01 Delete Paragraph 16.01 in its entirety and insert the following in its place:

SC-16.01 Meet to Confer and Negotiate

A. Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after receipt of written notice of Engineer's action or decision unless, within that time period, Owner or Contractor gives to the other party written notice of intent to submit the Claim to a process of bilateral negotiations as set forth below.

B. Within 30 days of the delivery of such notice, Owner and Contractor shall meet and confer regarding the Claim. A good-faith effort to negotiate resolution shall be made by both parties.

C. If the negotiations contemplated by Paragraph SC-16.01.B are unsuccessful, management representatives of Owner and Contractor at least one tier above the individuals who met under SC-16.01.B shall meet, confer, and negotiate within 30 days of the closure of the unsuccessful negotiations.

D. Notwithstanding any applicable statute of limitations, a party giving notice under Paragraph SC-16.01.D.1 shall commence an action on the Claim within one year of giving such notice.

ARTICLE 17 – MISCELLANEOUS

SC-17.05 *Controlling Law* DELETE Paragraph 17.05.A in its entirety and INSERT the following in its place:

A. The terms and conditions of this Contract shall be construed and interpreted under, and all respective rights and duties shall be governed by, the laws of the State of Mississippi. Wherever applicable, each provision of these Contract Documents shall be interpreted in such a manner as to be effective and valid under applicable law, but if any provision of these Contract Documents shall be prohibited by or invalid under applicable law, such provisions shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions of these Contract Documents.

B. This Contract shall not be construed more strictly against one party than the other merely by virtue of the fact that it may have been prepared by one of the parties.

SECTION 00801

SPECIAL CONDITIONS

1. **CONTRACTOR SHALL MAKE EVERY EFFORT TO ADHERE TO SECTION 3 REQUIREMENTS AND TO UTILIZE LOCAL SUBCONTRACTORS, LABOR, VENDORS, AND SUPPLIERS, WITH CONSIDERATION GIVE IN ORDER TO BUSINESSES LOCATED IN HANCOCK COUNTY, COASTAL COUNTIES AND THE STATE OF MISSISSIPPI.**

2. **DOCUMENTS REQUIRED WITH THE BID:**

    1. Bid Bond
    2. Signed Section 00870
    3. Required bidders current certificate of responsibility issued by the state of Mississippi and if the bidder is a non-resident contractor, a copy of the bidder's current state bidder preference law pertaining to that states treatment of non-resident contractors pursuant to Miss. Code Ann. 8 31-3-21(3) or a statement on letterhead and signed by the same person who signs the bid form stating that no preference laws exist in that state.

    The below sections are not applicable to this project.

4. ~~Section 00946 Documents including:~~
    - ~~a. U.S. WHD Employee Roster~~
    - ~~b. E-Verify screenshot~~
    - ~~c. E-Verify Compliance letter~~
    - ~~d. Certified employment plan for certain public works projects~~
5. ~~CDBG Certifications for prime bidder, including:~~
    - ~~a. Certification of Contractor regarding Equal Employment Opportunity.~~
    - ~~b. Certification of Contractor regarding segregated facilities~~
    - ~~c. Section 3 Project Plan~~
    - ~~d. Section 3 Business Concert Certification~~
    - ~~e. Section 3 Resident Certification; Hancock, Harrison, Jackson & Pearl River County~~
    - ~~f. Certification of contractor regarding executive order 12989 E-Verify~~
    - ~~g. Certification regarding debarment, suspension, ineligibility and voluntary exclusion~~
6. ~~CDBG Certifications for Sub-Contractors including:~~
    - ~~a. Certification of Sub-Contractor regarding Equal Employment Opportunity.~~
    - ~~b. Certification of Sub-Contractor regarding segregated facilities~~
    - ~~c. Certification of Sub-contractor regarding executive order 12989 E-Verify~~
    - ~~d. Certification regarding debarment, suspension, ineligibility and voluntary exclusion~~

SECTION 00870

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, NON-COLLUSION AND OTHER RESPONSIBILITY MATTERS

Under Executive Order 12549 individuals or organizations debarred from participation in Federal Assistance Programs may not receive an assistance award under a federal program or subagreement there under for $25,000 or more. Accordingly, each recipient of a Federally-Funded contract or subcontract exceeding $25,000 must complete the following certification (see 40 CFR 32.510). The prime bidder shall attach the copies of this certification to his bid.

The prospective participant certifies to the best of their knowledge and belief that it and its principals:

(a) Have 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 officials, partners, employees or principal owners;

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

(c) 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;

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

(e) 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.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 U.S.C. Subsection 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

_____

Title of Project or Subcontract

_____

Prime or Subcontractor's Name Signature/Date

( ) I am unable to certify to the above statements. Attached is my explanation.

SECTION 00880

CONTRACTOR CERTIFICATION STATEMENT
STANDARD TERMS AND CONDITIONS AND FEDERAL ASSURANCES

Contractor Name: _____

Contract Number #: _____

The CONTRACTOR, by and through the undersigned authorized representative, further assures and certifies that: 1) it is familiar with, 2) it is complying with, and 3) it will continue to comply with all state and federal laws that apply to Contractor's activities or that impose restrictions on the Contractor's use of federal funding or grants, including, but not limited to, the following:

EQUAL EMPLOYMENT OPPORTUNITY: If the contract is in excess of $10,000, contractor or subrecipient shall be prohibited from discrimination in all construction contracts and subcontracts. (Executive Order 11246, as amended by Executive Order 11375; 41 CFR, Part 60)

COPELAND "ANTI-KICKBACK" ACT: If the contract is in excess of $2,000, contractor or subrecipient shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public works, to give up any part of the compensation to which he/she is otherwise entitled. (18 U.S.C. § 874; 29 CFR, Part 3)

SECTION 102 AND 107 OF THE CONTRACT WORK HOURS AND SAFETY STANDARDS ACT: If the contract is a construction contract in excess of $2,000 or other contract which involves mechanics or laborers in excess of $2,500, contractor shall be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than 1-1/2 times the basic rate of pay for all hours worked in excess of 40 hours in the work week. (40 U.S.C. § 327 - 330; 29 CFR, Part 5)

> Section 107 of the Contract Work Hours and Safety Standards Act is applicable to construction work and provides that no laborer or mechanic shall be required to work in surroundings or under working conditions, which are unsanitary, hazardous, or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

DAVIS-BACON ACT: If the contract is a construction or repair contract in excess of $2,000, contractors shall be required to pay wages to laborers and mechanics at a rate not less than the minimum wages specified in a wage determination made by the Secretary of Labor. In addition, contractors shall be required to pay wages not less often than once a week. The award of a contract shall be conditioned upon the acceptance of the wage determination. (40 U.S.C. § 276a through a-7; 29 CFR, Part 5)

AUTHORIZED ACCESS TO DOCUMENTS: The contractor agrees that the Recipient (Owner), Hancock County, the Office of Inspector General, the Comptroller General of the United States, or any of their duly authorized representatives, shall have access for the purpose of audit and examination to any books, documents, papers, and records of the contractor which are directly pertinent to that specific contract.

DOCUMENTS OF RECORD: The contractor agrees to maintain all required records for five (5) years after the Recipient (Owner) makes final payments and all other pending matters are closed.

FEDERAL CLEAN AIR ACT (42 U.S.C. § 7401 *et seq.*) and FEDERAL WATER POLLUTION CONTROL ACT (33 U.S.C. §1251 *et seq.*): If the contract in excess of $100,000, contractors shall be required to comply with all applicable standards, orders, or regulations issued pursuant to the aforementioned Acts. Violations shall be reported to the regional office of Environmental Protection Agency (EPA).

Certification of compliance with the above-identified provisions is a material representation of fact upon which the STATE relies in contracting with the CONTRACTOR. The failure to comply with any of said provisions is grounds for corrective action, suspension, and/or termination of this contract.

_____ _____

CONTRACTOR'S Authorized Representative (Signature) Date

_____

CONTRACTOR'S Authorized Representative (Please Print)

_____

Title (Please Print)

SECTION 00943-01
CHANGE ORDER NO. 1

Date of Issuance: _____ Effective Date: _____

Project:	Owner:	Funding Agent's Contract No.:
Contract:		Date of Contract:
Contractor:		HCPHC Project No.:

The Contract Documents are modified as follows upon execution of this Change Order:

Description: See Attachment No. 1 to Change Order No. 1

Attachments: Attachment No. 1 to Change Order No. 1

CHANGE IN CONTRACT PRICE:

Original Contract Price:

Contract Price prior to this Change Order:

Increase as of this Change Order:

Contract Price incorporating this Change Order:

CHANGE IN CONTRACT TIMES:

Original Contract Times: ☐ Working days ■ Calendar days

Substantial completion (date): _____

Ready for final payment (date): _____

Contract Times prior to this Change Order:

Substantial completion (date): _____

Ready for final payment (date): _____

Change of this Change Order:

Substantial completion (days): _____

Ready for final payment (days): _____

Contract Times with all approved Change Orders:

Substantial completion (date): _____

Ready for final payment (date): _____

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____	By: _____	By: _____
Engineer (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Date: _____	Date: _____	Date: _____

This Change Order (CO) constitutes full and mutual accord and satisfaction for all time and costs related to this change. By acceptance of this CO, the contractor hereby agrees that the modification is an equitable adjustment to the contract, and waives all right to file any future claims arising out of this change.

To be effective, this CO must be approved by the Funding Agency if it changes the scope or objective of the PROJECT, or as may otherwise be required by the SUPPLEMENTARY GENERAL CONDITIONS.

MEMORANDUM OF JUSTIFICATION AND NEGOTIATION
*** PROJECT ***
CHANGE ORDER NUMBER 1

A change order is requested on the referenced project in order to incorporate extra work requested to be performed under this contract. Prices on proposed extra work negotiated with Contractor include:

Certification of Responsibility for Document Preparation

TECHNOLOGY BUILDING SUITE 100 (B) INTERIOR OFFICE RENOVATIONS
Hancock County Port and Harbor Commission
Stennis International Airport
7250 Stennis Airport Road
Kiln, Mississippi 39556

Architectural Specifications:

THE FOLLOWING SPECIFICATION SECTIONS INCLUDED IN THIS PROJECT MANUAL WERE PREPARED BY OR UNDER THE RESPONSIBLE SUPERVISION OF THE COMPANY LISTED BELOW:

Division 01 – General Requirements

011000	Summary of Work	011000 - 1-4
011000.01	Control of Work	011000.01 - 1-4
012300	Alternates	012300 - 1-2
012600	Payment, Modification, and Completion Procedures	012600 - 1-6
013100	Project Coordination	013100 - 1-2
013200	Progress Documentation and Procedures	013200 - 1-4
013300	Submittals	013300 - 1-6
013500	Cad File Policy	013500 – 1 2
014100	Regulatory Requirements	014100 - 1
014200	Reference Standards	014200 - 1-6
014500	Quality Control Procedures	014500 - 1-5
015000	Construction Facilities and Temporary Controls	015000 - 1-4
016000	Product Requirements	016000 - 1-6
016000.01	Substitution Request Form	016000.01 - 1-2
017300	Construction Procedures	017300 - 1-6
017400	Cleaning	017400 - 1-2
017839	Project Record Documents	017839 - 1-4

Division 05 – Metals

054000	Cold Formed Metal Framing	054000 – 1-6

Division 06 – Wood, Plastics, and Composites

061000	Rough Carpentry	061000 – 1-2
064000	Architectural Woodwork	064000 – 1-8

Division 07 – Thermal and Moisture Protection

072100	Building Insulation	072100 - 1-4
079200	Joint Sealers	079200 – 1-6

Division 08 – Openings

081113	Hollow Metal Doors and Frames	081113 - 1-8
081416	Architectural Wood Doors	081416 - 1-5
084213	Impact Resistant Glazed Aluminum Entrances	084213 - 1-6

084300	Impact Resistant Glazed Aluminum Storefronts	084300 - 1-8
087100	Door Hardware	087100 - 1-27
088000	Glazing	088000 - 1-4
Division 09 – Finishes		
092900	Gypsum Board	092900 – 1-3
095113	Acoustical Panel Ceiling	095113 – 1-6
096519	Resilient Flooring and Base	096519 – 1-5
096813	Carpet Tile	096813 – 1-6
099100	Interior, Exterior and High-Performance Paints and Coatings	099100 – 1-5
Division 10 – Specialties		
104413	Fire Extinguishers and Accessories	104413 - 1-2
Division 32 - Exterior Improvements		
321313	Cast-In-Place Concrete	321313 – 1-10
321313.10	Concrete Formwork	321313 – 1-5

Paul F. Dimitrios, AIA. 5/1/26

Paul F. Dimitrios, AIA, NCARB Date
RCL Architecture, P.L.L.C.

SECTION 011000 – SUMMARY

PART 1 GENERAL

1.1 PROJECT INFORMATION

A. Project Identification: Technology Building Suite 100 (B) – Interior Office Renovations, 7225 Stennis Airport Road, Kiln, MS 39535.

B Owner: Hancock County Port and Harbor Commission

C. Architect: RCL Architecture, P.L.L.C.

D. Architect's Consultants:

The Architect has retained the following design professionals who have prepared designated portions of the Contract Documents:

1. Creative Engineering Group, LLC – Electrical Consultant
2. Ritter Consulting Engineers, LLC - Mechanical Consultant

1.2 WORK COVERED BY CONTRACT DOCUMENTS/REQUIREMENTS:

A. Includes the furnishings of all labor, equipment, and materials necessary for the **reconfiguration of the Technology Building** tenant space to 2 office spaces.

B. The work includes the following: The project involves a renovation of portion of the existing building (approx.. 9,087 sf) to create an additional tenant space. Scope includes the construction of a new fire-rated demising wall at the north end to isolate mechanical, electrical, and data infrastructure from the north wing. The interior build-out creates new private offices, a conference room, and storage within the former open-office area. Updated floor and ceiling finishes will be installed throughout as specified. Associated electrical and mechanical work is included.

ALTERNATE #1: Provide pricing for the five new office buildouts in Suite #2. This includes walls, doors and frames, painting and electrical work.

D. The Contractor shall furnish all labor, materials, equipment, tools, services, and incidentals to complete all work required by these Specifications and as shown on the Drawings.

E. The Contractor shall perform the work completely and shall include repairs, replacements, and restoration required as a result of damages caused during this construction.

F. The Contractor shall provide a full-time Superintendent on site during all construction activities.

G. Furnish and install all materials, equipment, and labor which is reasonably and properly inferable and necessary for the proper completion of the work, whether specifically indicated in the Contract Documents or not.

H. Refer to the drawings for tie-ins to existing site utilities and services.

1.3 COORDINATION WITH OCCUPANTS

A. Owner will occupy the building during portions of the construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.

1.4 ACCESS TO SITE

A. General: Contractor shall have use of Project site and building for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B Use of Site: Limit use of Project site to areas of work as indicated on the Construction Documents. Do not disturb portions of the building or project site beyond areas in which the Work is indicated.
1. Limits: Confine construction operations to areas of work as indicated on the Construction Documents
2. Driveways, Walkways and Entrances: Keep driveways, loading areas and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
   a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
   b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
3. Staging areas shall be kept secure and separated from the school grounds.

C. Condition of Existing building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations with similar materials, systems and finishes.

1.5 WORK RESTRICTIONS

A. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B On-Site Work Hours: Limit work inside the existing building to normal business working hours, unless written permission is received from the Owner. The work shall not disrupt normal office operations, activities or events. Final working hours will be discussed in the Preconstruction Meeting.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify the Owner and Architect not less than 72 hours in advance of utility interruptions.
2. Obtain Owner and Architects written permission before proceeding with utility interruptions.

D. Noise, Vibration and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

E. Controlled Substances: Use of tobacco, vaping products and other controlled substances on the Project site is not permitted.

1.6 CONTRACTOR'S DUTIES

A. Contractor shall verify all field and job conditions prior to preparing his bid. Any conditions not described in these drawings and specifications shall be brought to the attention of the Design Professional prior to bid date. Failure to do so shall render the Contractor responsible for correction of this condition should he be awarded the contract.

B. Visit and examine the job site, and with all authorities concerned in order to become familiar with all existing conditions pertinent to the work to be performed thereon. No additional compensation will be allowed for failure to be so informed. Pay all costs and fees for utility connections.

C. Check all specifications and all drawings and bring to attention any conflicts or variations as shown or noted.

D. For any points which are not clear, or from items and/or details which the Contractor feels are in need of clarification, consult the Design Professional before submission of a Bid proposal in writing. The Design Professional will answer all questions in writing by Addendum to the Contract Documents prior to Bid.

E. In case of discrepancies and/or ambiguities in the drawings and/or in the specifications, the Design Professional shall be consulted prior to submission of a Bid proposal. Failure to do so on the part of the successful bidder shall be construed as explicit agreement on his part to abide by the Design Professional's decision in such matters.

F. Except as specifically noted, provide and pay for:
   1. Labor, materials and equipment
   2. Tools, construction equipment and machinery.
   3. Temporary facilities required for construction.
   4. Other facilities and services necessary for proper execution and completion of work.
   5. Pay legally required sales, consumer, and use taxes.

G. Secure and pay for, as necessary for proper execution and completion of Work, and as applicable at time of receipt of bids:
   1. Permits.
   2. Government Fees.
   3. Licenses.

H. Give required notices.

I. Comply with codes, ordinances, rules, regulations, and other legal requirements of public authorities which bear on performance of Work.

J. Promptly submit written notice to Design Professional of observed variance of Contract Documents from legal requirements.
   1. Appropriate Modifications to Contract Documents will adjust necessary changes.

K. Enforce strict discipline and good order among employees. Do not employ on Work:
   1. Unfit persons.
   2. Persons not skilled in assigned task.

L. Contractor use of Premises:

   1. Confine operations at site to areas permitted by:
      a. Law

b. Ordinance
c. Permits
d. Contract Documents
e. Design Professional
f. Owner

M. Do not unreasonably encumber site with materials or equipment.

N. Assume full responsibility for protection and safekeeping of products stored on premises.

O. Move any stored products which interfere with operations of Owner or other Contractors.

P. Do not load structures with weight that will endanger structures.

Q. Maintain “As-Built” Records of all work documenting any changes, revisions or varying field conditions.

1.7 CONTRACTS

A. Construct the Work under a single lump sum or unit price contract as stated for each item in the bid form.

1.8 WORK SEQUENCE

A. All work to be done under this Contract shall be done with minimum inconvenience to the private property owners adjacent to this project.

B. Construct Work in stages to accommodate the Owner's use of the premises during the construction period; coordinate the construction schedule and operations with the Owner's Representative.

C. Construct work per Phases indicated in this section.

D. Construct the Work in stages to provide for owner and public convenience.

E. Assume full responsibility for the protection and safekeeping of Products under this Contract, stored on the site.

F. Move any stored products, under Contractor's control, which interfere with operations of the Owner or separate contractor.

G. Obtain and pay for the use of additional storage or work areas needed for operations.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION

SECTION 011000.01 – CONTROL OF WORK

PART 1: GENERAL

1.1 WORK PROGRESS

The Contractor shall furnish personnel and equipment which will be efficient, appropriate, and large enough to secure a satisfactory quality of work and a rate of progress which will ensure the completion of the work within the time stipulated in the Proposal. If at any time such personnel or equipment appears to the Design Professional to be inefficient, inappropriate, or insufficient for securing the quality of work required for producing the rate of progress aforesaid, he may order the Contractor to increase the efficiency, change the character, or increase the personnel and equipment, and the Contractor shall conform to such order. Failure of the Design Professional to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.

1.2 PRIVATE LAND

The Contractor shall be aware that his work will be performed within the property of an operating facility.

1.3 WORK LOCATIONS

Work shall be located substantially as indicated on the Drawings, but the Design Professional reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required.

1.4 OPEN EXCAVATIONS

A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property.

B. Contractor shall be responsible for supplying materials, services, and labor necessary to provide sheeting, shoring and bracing or supports as required to provide a safe working condition for Contractor’s personnel and to provide for protection of utilities, buildings, and structures. It shall be the sole responsibility of the Contractor to comply with these requirements.

C. Where excavation is required adjacent to existing power poles or other structures, the Contractor has the responsibility to maintain the integrity of the structure by bracing or other means subject to the approval of the Project Design professional.

1.5 DISTRIBUTION SYSTEMS AND SERVICES

A. The Contractor shall not interrupt telephone, Cable TV, or other related utility services and disrupt the normal functioning of the system as little as possible. He shall notify the Design Professional well in advance of any requirement for dewatering, isolating, or relocating a section of a utility, so that necessary arrangements may be made with the appropriate agency.

B. If it appears that utility service will be interrupted for an extended period, the Design Professional may order the Contractor to provide temporary service lines. Inconvenience of the users shall be the minimum, consistent with existing conditions. The safety and

integrity of the system is of prime importance in scheduling work.

C. Private utilities located on public right-of-way which are required to be permanently relocated at the job site or removed entirely from the jobsite to accommodate the project will be indicated on the plans and will be done so at the expense of the utility owner.

D. Private utilities located on public right-of-way which the contractor requests to be temporarily relocated, disconnected or de-energized for the convenience of construction or for safety reasons shall be done so at the contractor's expense.

E. Disposition of Utilities: Follow rules and regulations of the authority having jurisdiction in executing all Work under this article. Adequately protect active utilities shown on the Drawings from damage and remove or relocate only as indicated or specified. Where active utilities are encountered, but are not shown on the Drawings, advise the Design Professional. Adequately protect, support, or relocate the Work as directed. Remove, plug or cap inactive and abandoned utilities encountered in excavating and grading operations.

1.6 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to building utilities, in the street gas pipes, hydrants, sewers, drains and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the contractor’s operation shall be repaired by him at his expense.

B. The Contractor shall bear full responsibility for obtaining locations of all underground structures and utilities (including existing water services, drain lines and sewers). Services to buildings shall be maintained and all costs or charges resulting from damage thereto shall be paid by the Contractor.

C. Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the unit prices established in the Proposal.

D. If, in the opinion of the Design Professional, permanent relocation of a utility owned by the parish or City is required, he may direct the Contractor in writing, to perform the work. Work so ordered will be paid for at the Contract unit prices, if applicable, or as extra work under Article 10 of the General Conditions. If relocation of a privately owned utility is required, the Contract will notify the Utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the Parish, City and Utility and shall have no claim for delay due to such relocation. The Contractor shall notify public utility companies in writing at least 48 hours (excluding Saturdays, Sundays and legal holidays) before excavating near their utilities. Cost of relocation utilities shall be included in the various unit pries of the work to be done or as otherwise provided in these contract documents.

1.7 CARE AND PROTECTION OF PROPERTY

A. The Contractor shall be responsible for the preservation of all public and private property and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of this Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make

good the damage in another manner acceptable to the Design Professional.

B. The protection, removal, and replacement of existing physical features along the line of work shall be a part of the work under the Contract, and all costs in connection therewith shall be included in the unit and/or lump sum prices established under the items in the Proposal.

1.8 DRAINAGE

A. Contractor shall impede drainage only in the event such impediment is necessary for the implementation of the work. When impeding drainage is necessary, Contractor shall take the necessary steps to protect life and property.

1.9 WATER FOR CONSTRUCTION PURPOSES

A. In locations where public water supply is available, the Contractor may purchase water for all construction purposes.

B. The express approval of the Water Utility Company shall be obtained in writing. Hydrants shall only be operated under the supervision of the Water Utilities personnel.

1.10 MAINTENANCE OF FLOW

A. The Contractor shall at his own cost, provide for the flow of sewers, drains, and water courses interrupted during the progress of the Work, and shall immediately cart away and remove all offensive matter. The entire procedure of maintaining existing flow shall be fully discussed with the Design Professional well in advance of the interruption of any flow. Pavement removal and replacement which, in the opinion of the Contractor, is necessitated by placement of temporary flow control facilities shall be considered as an item for convenience to the Contractor. Such costs for pavement removal and replacement shall, therefore, be borne by the Contractor at his own cost as required for other flow control measures. The intent of this Specification is that pavement removal be limited to the least amount possible and the Contractor shall investigate alternate methods for flow control which require the least amount of pavement removal.

1.11 CLEANUP

A. During the course of the Work, the Contractor shall keep the site of his operations in as clean and neat a condition as is possible. He shall dispose of all residue resulting from the construction work and, at the conclusion of the work, he shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction operations, and shall leave the entire site of the Work in a neat and orderly condition.

1.12 COOPERATION WITHIN THIS CONTRACT

A. All firms or persons authorized to perform any work under this Contract shall cooperate with the Building General Contractor and his subcontractors or trades.

B. Cutting and patching, drilling, and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the Design Professional.

1.13 PROTECTION OF CONSTRUCTION AND EQUIPMENT

A. All newly constructed work shall be carefully protected from injury in any way.

B. It is the responsibility of the contractor to provide protection of all structures. Should any of the work become heaved, cracked, or otherwise damaged, all such damaged portions of the work shall be completely repaired and made good by this Contractor at his own expense and to the satisfaction of the Design Professional. If in the final inspection of the Work any defects, faults, or omissions are found, this Contractor shall cause the same workmanship without extra compensation for the materials and labor required. Further the Contractor shall be fully responsible for the satisfactory maintenance and repair of the construction and other work undertaken herein for at least the guarantee period described in the Contract.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Add Alternate No. 1: Furnish all materials, labor and installation for the following work:

1. Buildout offices in Suite #2 – includes all walls, doors and frames, finishes and associated electrical work. (Base Bid includes finish ceiling, lights, and floor finish).

END OF SECTION

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SECTION 012600 - PAYMENT, MODIFICATION, AND COMPLETION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Schedule of values.
2. Payment procedures.
3. Modification procedures.
4. Completion procedures.

1.2 CONTRACT CONDITIONS

A. The Total Bid Price shall cover all work required by the Contract Documents. All costs in connection with the proper and successful completion of the work, including furnishing all materials, sheeting, bracing, bedding, backfill equipment, supplies, and appurtenances; providing all construction equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in the lump sum prices bid.

B. See the conditions of the contract for additional requirements.

C. Progress payments will be made monthly.

D. The Architect will act upon the contractor's application for payment within 10 business days after receipt.

E. The Owner shall make payment to the contractor within 30 days after receipt of the certificate for payment.

F. The Owner will retain from each progress payment an amount equal to (5) five percent of the value of the work covered by the progress payment.
1. If the work is 50 percent complete and the character and progress of the work have been satisfactory, the owner may determine that as long as the character and progress of the work remain satisfactory no additional retainage will be withheld.
2. At substantial completion the contractor may bill for 95 percent of the contract sum, less those amounts that are withheld to cover incomplete or incorrect work and unsettled claims, as defined elsewhere.

G. No payment will be made for materials or equipment stored off site.

H. Payments may be withheld if the contractor fails to make dated submittals within the time periods specified.

1.3 DEFINITIONS

A. Change Proposal Request: Any written request from the owner or architect to the contractor for a quotation, price, or breakdown on a change proposed but not ordered.

B. Final Completion: The stage at which all incomplete and incorrect work has been completed or corrected in accordance with the contract documents.

C. List of Incomplete Work: A comprehensive list prepared by the contractor, of items to be completed and/or corrected for the purpose of obtaining certification of substantial completion. The Contractor’s punch list will be reviewed by the Design Professional and

elaborated upon if necessary.

D. Modifications: Written amendments to the contract signed by both the Owner and the contractor, change orders, construction change directives, and written orders for a minor change in the work issued by the architect.

E. Schedule of Values: A detailed breakdown of the contract sum into individual cost items, materials and labor which will serve as the basis for evaluation of applications for progress payments during construction. The format for the schedule of values is to follow attached Owner prepared document.

F. Substantial Completion: The time at which the work, or a portion of the work which the owner agrees to accept separately, is sufficiently complete in accordance with the contract documents so that the owner can occupy or use the work for its intended purpose.

G. Time and Material Work: Work which will be paid for on the basis of the actual cost of the work, including materials, labor, equipment, and other costs as defined elsewhere, as documented by detailed records. This basis is also referred to using the terms "cost-plus," "cost of the work," "force account," and similar terms.

1.4 SUBMITTALS

A. Schedule of Values: First application for payment will not be reviewed without schedule of values. Use AIA G702 / 703 - Application & Certificate for Payment document.
1. Submit in size not larger than 8-1/2 by 11 inches.
2. Submit 1 Digital Copy.
3. Identify with:
   a. Project name.
   b. Project number.
   c. Architect's name.
   d. Owner's name.
   e. Contractor's name and address.
   f. Submittal date.

B. Applications for Progress Payments: Submit sufficiently in advance of date established for the progress payment to allow for the processing indicated.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SCHEDULE OF VALUES

A. Prepare a schedule of values prior to the first application for payment on attached document. Provide separate schedule for each building.

B. Schedule of Values: Break costs down into line items which will be comparable with line items in applications for payment.
1. Coordinate line items in the schedule of values with portions of the contract documents which identify units or subdivisions of work; provide cross-referencing if necessary, to clarify.

   a. Specifically, correlate with the project manual table of contents.

2. Divide major subcontracts into individual cost items.
3. Where applications for payment are likely to include products purchased or fabricated but not yet installed, provide individual line items for material cost, installation cost, and other applicable phases of completion.
4. Include in each line item its proportional share of overhead and profit.
5. Include the following information for each line item, using A detailed schedule of values that includes, at a minimum, a line item for each all-major components of General Conditions, a line item for each trade section of the Project Manual (Divisions 2 thru 33) and for each separately identifiable activity or project component within each trade section.
   a. Item name.
   b. Applicable specification section.
   c. Dollar value, rounded off to the nearest whole dollar (with the total equal to the contract sum).
   d. Proportion of the contract sum represented by this item, to the nearest one-hundredth percent (with the total adjusted to 100 percent).
6. Provide the following supporting data for each line item:
   a. Subcontractor's name.
   b. Manufacturer or fabricator's name.
   c. Supplier's name.

C. Submit schedule of values with post bid documents. Any revisions need to be submitted to the Architect 30 business days prior to submittal of first application for payment.

D. The architect will notify the contractor if schedule is not satisfactory; revise and resubmit acceptable schedule.

E. Submit a revised schedule of values when modifications change the contract sum or change individual line items.
   1. Make each modification a new line item.
   2. Show the following information for each line item:
      a. All information required for original submittal.
      b. Identification of modifications which have affected its value.
   3. Submit prior to next application for payment.

3.2 APPLICATIONS FOR PAYMENT

A. Application for Payment Forms: Use AIA original current editions of G702, Application and Certificate for Payment, and AIA G703, Continuation Sheet.

B. Preparation of Applications for Payment: Complete form entirely.
   1. Make current application consistent with previous applications, certificates for payment, and payments made.
   2. Base application on current schedule of values and contractor's construction schedule.
   3. Include amounts of modifications issued before the end of the construction period covered by the application.
   4. Include signature by person authorized by the contractor to sign legal documents.
   5. Notarize each copy.
   6. Submit one (1) digital copy.
   7. Attach waivers of lien.
   8. Attach revised schedule of values, if changes have occurred, unless application forms already show entire schedule of values.

9. Also attach:
   a. Receipts for bond payments
   b. Updated contractor's construction schedule.
   c. Certificate of Liability Insurance
   d. Time Extension Report
   e. As-built Record Drawings Certificate
   f. Subcontractor Listing Form
   g. Compliance Certificates
   h. Project Narrative Report

C. Provide the following information with every application for payment which involves work completed on a time and material basis:
   1. Detailed records of work done, including:
      a. Dates and times work was performed, and by whom.
      b. Time records and wage rates paid.
      c. Invoices and receipts for products.
   2. Provide similar detailed records for subcontracts.

D. Transmit application for payment with a transmittal form itemizing supporting documents attached.
   1. Transmit to the architect.

3.3 WAIVERS OF LIEN

A. Submit, with each application for payment, a waiver of lien from the contractor covering the work performed during the period covered by the previous application for payment.

B. With final application for payment, submit complete waivers of lien from every entity who may be legally entitled to file a mechanic's or other lien against the work.

C. Waiver of Lien Forms: Use forms acceptable to the owner.

3.4 FIRST PAYMENT PROCEDURE

A. The first application for payment will not be reviewed until the following submittals have been received:
   1. Certificates of insurance.
   2. Performance and payment bonds.
   3. Schedule of values.
   4. List of subcontractors, principal suppliers, and fabricators.
   5. Contractor's construction schedule.
   6. Submittal schedule.
   7. Schedule of products.
   8. Copies of building permit and other authorizations from governing authorities.
   9. All submittals specified to occur prior to first application for payment or prior to first payment.

3.5 MODIFICATION PROCEDURES

A. Designate a single individual authorized to receive change documents and who will be responsible for informing others of changes to the work.

B. Changes in cost resulting from modifications shall include only those costs not specified elsewhere in the contract documents.

C. When requested in writing, the contractor shall provide sufficient information for evaluation of proposed changes within 14 calendar days.

D. Provide the following information for every change proposal request:
1. The amount of change in the contract sum, if any.
2. The amount of change in the contract time, if any, with explanation.
3. Cost breakdown, using schedule of values line items, separated into material and labor costs, additions and deletions, and with overhead and profit handled in the same manner as specified for the schedule of values.
4. The period of time within which the proposed changes in contract sum or time will be valid.
5. A statement describing the effect the change may have on the work of other prime contractors.
6. Upon request, provide the following information:
   a. Quantities and unit costs of products, labor, and equipment.
   b. Taxes, insurance, and bonds.
   c. Overhead and profit.

E. When changes are performed on a time and material basis, identify the applicable modification on the application for payment.

F. Provide the following information with every claim for additional costs:
1. Origin and date of claim.
2. Detailed records as specified for time and material work.

G. The contractor may propose changes.
1. Do not use change order form.
2. Provide the information required for change proposal requests.
3. Describe reasons for change.
4. Document proposed substitutions as specified elsewhere

3.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Request for inspection and application for payment may coincide.

B. The architect will perform one inspection for substantial completion, upon request by the contractor.
1. If the architect is unable to issue the certificate of substantial completion because the work is not considered to be substantially complete, the contractor shall pay all subsequent inspection costs, including compensation for the architect's services and expenses.
2. Only one certificate of substantial completion will be issued, for the entire project.

C. Submit the following with application for payment following substantial completion:
1. Contractor's affidavit of release of liens.
2. Request for reduction or release of retainage.
3. Consent of surety to reduction in or partial release of retainage.
4. Final list of incomplete work.
5. Other data required by the contract documents.

3.7 FINAL COMPLETION PROCEDURES

A. Request for final inspection and final application for payment may coincide.

B. The Architect will perform one inspection for final completion, upon request of the

contractor.

1. Submit the following with request for inspection:
   a. Previous inspection lists indicating completion of all items.
   b. If any items cannot be completed, obtain prior approval of such delay.
2. If the architect is unable to issue the certificate for final payment because the work is not complete, the contractor shall pay all subsequent inspection costs, including compensation for the architect's services and expenses.

C. Submit the following with the final application for payment:
1. Certified copy of the previous list of items to be completed or corrected, stating that each has been completed or otherwise resolved for acceptance.
2. Updated final statement, accounting for final changes to the contract sum.
3. Consent of surety to final payment.
4. Certification that financial obligations to governing authorities and public utilities have been fulfilled.
5. Description of unsettled claims.
6. Other data required by the contract documents.

END OF SECTION

SECTION 013100 – PROJECT COORDINATION

PART 1 – GENERAL

1.1 REQUIREMENTS

Contractor shall plan, schedule, and coordinate his operations in a manner that will facilitate the simultaneous progress of the work included under other contracts outside the scope of these Contract Documents. Contractor shall plan, schedule and coordinate with all utilities in a manner conducive to timely and efficient progress in the execution of the contract.

1.2 NOTICES TO OWNERS AND AUTHORITIES

Contractor shall, as provided in the General Conditions, notify owners of adjacent property and utilities when prosecution of the Work may affect them.

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

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

1.3 NOTICE TO POWER AND LIGHT COMPANY

The Contractor shall review with the Power and Light Company the construction methods to be used in the vicinity of power lines. This review shall establish which lines, if any, need temporary relocation or de-energizing work being required. The Contractor shall be responsible for notifying and coordinating with the Power and Light Company officials prior to and during the construction of all facilities within the project limits. The Contractor shall schedule work activities in cooperation with Power and Light personnel to ensure uninterrupted electrical service to the public. The Contractor shall coordinate construction activities which impact Power and Light facilities through the local representative of the local Power and Light Company. There will no direct compensation for any of this work.

1.4 NOTICE TO GAS COMPANY

The Contractor shall review with the Gas Company any work to be done in the vicinity of gas lines. Where temporary relocation of gas lines or reinforcement of coating is required, the Contractor shall meet with the Gas Company as soon as possible, but no less than thirty (30) days in advance of when relocation is required. For the temporary shutdown of gas mains and notification as required by the company when working in the vicinity of gas mains at least 48 hours notice is required.

1.5 CONNECTIONS TO EXISTING FACILITIES

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

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

1.6 OPERATION OF EXISTING FACILITIES

All existing facilities must be kept in continuous operation throughout the construction period. No interruption will be permitted which adversely affects the degree of service provided. Provided permission is obtained from Owner in advance, portions of the existing facilities may be taken out of service for short periods corresponding with periods of minimum service demands.

Contractor shall provide temporary facilities and make temporary modifications as necessary to keep the existing facilities in operation during the construction period.

1.7 MECHANICAL AND ELECTRICAL

Contractor shall coordinate all details of the equipment with other related parts of the Work, including verification that all structures, piping, wiring, and equipment components are compatible. Contractor shall be responsible for all structural and other alterations in the Work required to accommodate equipment differing in dimension or other characteristics from that contemplated in the Contract Documents or Specifications.

1.8 COOPERATION WITHIN THIS CONTRACT

All firms or persons authorized to perform any Work under this Contract shall cooperate with the General Contractor and his subcontractors or trades, and shall assist in incorporating the Work of other trades where necessary or required.

Cutting and patching, drilling, and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the Engineer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - (NOT USED)

END OF SECTION

SECTION 013200 - PROGRESS DOCUMENTATION AND PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Progress documentation requirements:
      a. Contractor's construction schedule.
      b. Progress photographs.
   2. Progress procedures:
      a. Progress meetings.

B. Contract time is indicated elsewhere.

1.2 SUBMITTALS

A. Contractor's Construction Schedule.
   1. Submit within 10 days of completed contract signing.
   2. Submit revised schedule with application for payment.
   3. Submit schedule for each construction phase.

B. Progress Photographs: Submit with each application for payment.

C. Minutes of Progress Meetings.

1.3 FORM OF SUBMITTALS

A. Schedules - General:
   1. Provide legend of symbols and abbreviations for each schedule.
   2. Use the same terminology as that used in the contract documents.
   3. Submit a minimum of 3 hard copies or 1 electronic copy via email to the architect.

B. CPM:
   1. Provide individual horizontal bars representing the duration of each major activity.
   2. Coordinate each element on the schedule with other construction activities.
   3. Show activities in proper sequence.
   4. Show percentage of completion of each activity.
   5. Include cost bar at top of chart, showing estimated and actual costs of work performed at the date of each application for payment.
   6. Use vertical lines to mark the time scale at not more than one week intervals.
   7. Use sheets of sufficient number and width to show the full schedule clearly.

C. Reports - General:
   1. Submit 1 electronic copy via email to the architect.

D. Photographs: Digital copies of photographs.
   1. Size: Min. 2400 dpi for selected views as identified in paragraph 3.2.A.4.a.
   2. JPG format
   3. Identify each digital file with project name and date taken
   4. Take photographs for each application for payment as follows, but not limited to:
      a. Existing site conditions prior to construction.:
      b Existing Interior.
      c Existing Exterior.

d Existing roof deck.
e Phases of building envelope.
f Interior framing.
g Interior finishing.
h Final completion.

1.4 COORDINATION

A. In preparation of schedules, take into account the time allowed or required for the architect's administrative procedures.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Prepare and submit a construction schedule. The work shall be executed with such progress as may be required to prevent any delay to the general completion of the work. The work shall be executed at such times and in or on such parts of the project, and with such forces, materials and equipment to assure completion of the work in the time established by the Contractor within the limits designated in the Contract Documents.

B. Provide construction schedule in the form of CPM:
1. Where related activities must be performed in sequence, show relationship graphically.
2. Incorporate the submittal schedule specified elsewhere.
3. Incorporate the quality control activities schedule specified elsewhere.
4. Show dates of:
a. Each activity that influences the construction time.
b. Substantial and final completion, with time frames for the architect's completion procedures.
c. Show projected percentage of completion for each item, as of the first day of each month.

C. The architect will notify the contractor if schedule is not satisfactory in detail; revise and resubmit.
1. Resubmit within 7 days.

D. Make and distribute copies of schedule to the architect, to the owner, to subcontractors, and to other entities whose work will be influenced by schedule dates.
1. Hang a copy of the schedule up in each field office or meeting room.

E. Provide a narrative report as needed to define:
1. Problem areas, anticipated delays, and the impact on the schedule.
2. Corrective action recommended, and its effect.

F. Update the schedule whenever changes occur or are made, or when new information is received, but not less often than at the same intervals at which applications for payment are made.
1. Indicate changes made since last issue; show actual dates for activities completed.
2. Submit updated schedule with application for payment.
3. Issue updated schedule with report of meeting at which revisions are made.
4. Issue updated schedule in same manner as original schedule.

3.2 PROGRESS REPORTS

A. Progress Photographs:
   1. Take a minimum of 10 photos of site before start of construction.
   2. Take a minimum of 10 photos of the work for each submission of progress payments.
   3. Take photos not more than one week prior to submittal of application for payment.
   4. Take photos from positions chosen to show the current status of completion and progress since previous photos were taken.
      a. Select 2 views which will show overall status during entire construction period; take photographs of these views each time through completion.

3.3 PROGRESS MEETINGS

A. Schedule and conduct periodic progress meetings during construction period.
   1. Have meetings at least monthly.
   2. Notify the architect and the owner at least one week in advance of date of meeting; the architect and the owner may attend.

B. The following are required to attend:
   1. Project superintendent.
   2. Major subcontractors and suppliers.
   3. Others who have an interest in the agenda.

C. Prepare and distribute agenda prior to meetings; cover the following topics when applicable:
   1. Review minutes of previous meeting.
   2. Status of submittals and impending submittals.
   3. Actual progress of activities in relation to the schedule.
   4. Actual and anticipated delays, their impact on the schedule, and corrective actions taken or proposed.
   5. Actual and potential problems.
   6. Status of corrective work ordered by the architect.
   7. Progress expected to be made during the next period.
   8. Coordination and requests for Owner provided equipment.

D. Record minutes and distribute copies within 5 days to the architect, to the owner, to all participants, and to all entities affected by decisions made.

END OF SECTION

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SECTION 013300 - SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Preparing and processing of submittals for review and action.
2. Preparing and processing of informational submittals.

B. Submit the following for the architect's review and action:
1. Shop drawings.
2. Product data.
3. Samples.
4. Submittals for which procedures are not defined elsewhere.

C. Submit the following as informational submittals:
1. Structural design information required by the contract documents.
2. Certificates.
3. Coordination drawings.
4. Reports.
5. Qualification statements for manufacturers/installers.

D. Specific submittals required are described in individual sections.

1.2 DEFINITIONS

A. Shop Drawings: See General Conditions.

B. Product Data: See General Conditions.
1. Product data submittals also include:
   a. Performance curves, when issued by the manufacturer for all products of that type.
   b. Selection data showing standard colors.
   c. Wiring diagrams, when standard for all products of that type.

C. Samples: See General Conditions.

D. Informational Submittals: Submittals identified in the contract documents as to be submitted for information only.

1.3 FORM OF SUBMITTALS

A. Sheets Larger Than 8-1/2 by 14 inches:
1. Maximum sheet size: 36 by 48 inches.
   a. Exception: Full size pattern or template drawings.
2. Number of copies:
   a. Submittals for review:
      1. One electronic copy
      2. Electronic copy will be marked-up and returned via email.
   b. Informational submittals:
      1. One electronic copy
      2. Electronic copy will be marked-up and returned via email.

B. Small Sheets or Pages:
   1. Minimum sheet size: 8-1/2 by 11 inches.

C Submittals maybe be submitted electronically in high quality.pdf format in lieu of paper copies and will be returned electronically.

D. Samples: 2 sets of each.
   1. 1 set will be returned.
   2. Submit actual sample of material to be provided following initial selection if required.

E. If additional sets are needed by other entities involved in work represented by the samples, submit with original submittal.

1.4 COORDINATION OF SUBMITTALS

A. Coordinate submittals and activities that must be performed in sequence, so that the architect has enough information to properly review the submittals.

B. Coordinate submittals of different types for the same product or system so that the architect has enough information to properly review each submittal.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 TIMING OF SUBMITTALS

A. Transmit each submittal at or before the time indicated on the approved schedule of submittals.
   1. Prepare and submit for approval a schedule showing the required dates of submittal of all submittals.
   2. Organize the schedule by the applicable specification section number.
   3. Incorporate the contractor's construction schedule specified elsewhere.
   4. Incorporate the quality control activities schedule specified elsewhere.
   5. Submit within 45 days after commencement of the work.
   6. Revise and resubmit the schedule for approval when requested.
   7. Submit items requiring State Fire Marshal review as soon as possible to avoid delays while waiting on required agency reviews.

B. Deliver each submittal requiring approval in time to allow for adequate review and processing time, including re-submittals if necessary; failure of the contractor in this respect will not be considered as grounds for an extension of the contract time.

C. Deliver each informational submittal prior to start of the work involved, unless the submittal is of a type which cannot be prepared until after completion of the work; submit promptly.

D. If a submittal must be processed within a certain time in order to maintain the progress of the work, state so clearly on the submittal.

E. If a submittal must be delayed for coordination with other submittals not yet submitted, the architect may at his option either return the submittal with no action or notify the contractor of the other submittals which must be received before the submittal can be reviewed.

3.2 SUBMITTAL PROCEDURES - GENERAL

A. Notify the architect, in writing and at time of submittal, of all points upon which the submittal does not conform to the requirements of the contract documents, if any.

B. Do not commence work which requires review of any submittals until receipt of returned submittals with an acceptable action.

C. Do not allow submittals without an acceptable action marking to be used for the project.

D. Do not submit substitute items that have not been approved by means of the procedure specified elsewhere.

E. Do not include requests for substitution (either direct or indirect) on submittals; comply with procedures for substitutions specified elsewhere.

F. Preparation of Submittals:
1. Label each copy of each submittal, with the following information:
   a. Project name.
   b. Date of submittal.
   c. Contractor's name and address.
   d. Architect's name and address.
   e. Subcontractor's name and address.
   f. Supplier's name and address.
   g. Manufacturer's name.
   h. Specification section and article where the submittal is specified.
   i. Numbers of applicable drawings and details.
   j. Other necessary identifying information.
   k. Indicate whether manufacturer or other source is listed on the owner's preferred vendor list.
   l. Contractor’s review stamp with wording as approved by the architect and their insurer.
2. Pack submittals suitably for shipment.
3. Submittals to receive architect's action marking: Provide blank space on the label or on the submittal itself for action marking; minimum 4 inches wide by 5 inches high adjacent to Contractor’s stamp.
4. Contractor to coordinate electrical requirements (wire size, voltage, disconnect switches, breaker sizes, etc.) for mechanical and electrical items at time of submittal to ensure the equipment will be ordered properly.

G. Transmittal of Submittals:
1. Submit all submittals to the architect.
2. Submittals will be accepted from the contractor only. Submittals received from other entities will be returned without review or action.
3. Submittals received without a transmittal form will be returned without review or action.
   a. Project name.
   b. Submittal date.
   c. Transmittal number.
   d. Specification section number.
   e. To:
   f. From:

g. Contractor's name.
h. Subcontractor's and supplier's names.
i. Manufacturer's name.
j. Submittal type (shop drawing, product data, sample, informational submittal).
k. Description of submittal.
l. Records of distribution.
m. Action marking.
n. Comments.

4. Fill out a separate transmittal form for each submittal; also include the following:
   a. Other relevant information.
   b. Requests for additional information.
5. Submit required submittals of each specification section in their entirety at one time.
   a. Incomplete submittals for a specific section will be grounds for delaying review by the Architect until all required information is obtained for the given specification section.

3.3 SHOP DRAWINGS

A. Content: Include the following information:
1. Dimensions, at accurate scale.
2. All field measurements that have been taken, at accurate scale.
3. Names of specific products and materials used.
4. Details identified by contract document sheet and detail numbers.
5. Show compliance with the specific standards referenced.
6. Coordination requirements; show relationship to adjacent or critical work.
7. Name of preparing firm.
8. Contractor's review stamp with wording as approved by the architect.

B. Preparation:
1. Reproductions of contract documents are not acceptable as shop drawings.
2. Copies of standard printed documents are not acceptable as shop drawings.
3. Identify as indicated for all submittals.
4. Space for architect's action marking shall be adjacent to the title block.

3.4 PRODUCT DATA

A. Submit all product data submittals for each system or unit of work as one submittal.

B. Content:
1. Submit manufacturer's standard printed data sheets.
2. Identify the product being submitted; submit only pertinent pages.
3. Show compliance with properties specified.
4. Identify which options and accessories are applicable.
5. Include recommendations for application and use.
6. Show compliance with the specific standards referenced.
7. Show compliance with specified testing agency listings; show the limitations of their labels or seals, if any.
8. Identify dimensions which have been verified by field measurement.
9. Show special coordination requirements for the product.

3.5 SAMPLES

A. Samples:

1. Provide samples that are the same as proposed product.

B. Preparation:
1. Attach a description to each sample.

2. Attach name of manufacturer or source to each sample.
3. Where compliance with specified properties is required, attach documentation showing compliance.
4. Where there are limitations in availability, delivery, or other similar characteristics, attach description of such limitations.
5. Where selection is required, the first submittal may be a single set of all options; after return of submittal with selection indicated, submit standard number of sets of selected items.

C. Keep final sample set(s) at the project site, available for use during progress of the work.

3.6 REVIEW OF SUBMITTALS

A. Submittals for approval will be reviewed, marked with appropriate action, and returned.

B. Informational submittals: Submittals will be reviewed.
1. “Approved”: No action required
2. "Approved as Noted": Make corrections, resubmittal not required.
3. "Not Approved": Revise the submittal and resubmit. or prepare a new submittal
4. “Revise and Resubmit”: Revise the submittal complying with the comments made.
5. Transmittal form, only, will be returned if submittal is unsatisfactory.

3.7 RETURN, RE-SUBMITTAL, AND DISTRIBUTION

A. Submittals will be returned to the contractor electronically.

B. Perform re-submittals in the same manner as original submittals; indicate all changes other than those requested by the architect., and review revision number.

C. Distribution:
1. Distribute returned submittals to all subcontractors and suppliers involved in work covered by the submittal.
2. Make one copy for project record documents.
3. Record distribution on transmittal form with copy to the architect.

END OF SECTION

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SECTION 013500 – CAD FILE POLICY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for using CAD Files from the Professionals of Record (POR), including the following:
1. Agreement between POR and Contractor for transfer of Computer Aided Drafting (CAD) files on electronic media.

1.3 DEFINITIONS

A. The policy was developed to provide a clear understanding of the contractual implications for the Contractor using the POR's CAD files for the Shop Drawing Process. The POR has no obligation to provide their CAD files to the Contractor.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

CADD / ELECTRONIC FILE/ TRANSFER AGREEMENT BETWEEN PROFESSIONAL OF RECORD AND CONTRACTOR

Dear _____:

At your request, we will provide electronic files for your convenience and use in the preparation of shop drawings related to _____, subject to the following terms and conditions:

Our electronic files are compatible with: AutoCAD. We make no representation as to the compatibility of these files with your hardware or your software beyond the specified release of the referenced specifications. The user of these files and related data is advised that any translation of AutoCad® or data from one computer system, platform or environment to another may result in the loss of data or the internal structure of data, including line weights, data attributes, layering, etc.. The POR makes no representations as to the usability of the information contained within these files, irregardless of the system, platform, or environment.

Data contained on these electronic files are part of our instruments of service and shall not be used by you or anyone else receiving these data through or from you for any purpose other than as a convenience in the preparation of shop drawings for the referenced project. Any other use or reuse by you or by others will be at your sole risk and without liability or legal exposure to us in any way. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against us, our officers, directors, employees, agents or sub consultants that may arise out of or in connection with your use of the electronic files.

These electronic files are not construction documents. Differences may exist between these electronic files and corresponding hard-copy construction documents. We make no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between

the signed or sealed hard-copy construction documents prepared by us and the electronic files, the signed or sealed hard-copy construction documents shall govern. You are responsible for determining if any conflict exists. By your use of these electronic files, you are not relieved of your duty to fully comply with the Contract Documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other Contractors for the project.

Because information presented on the electronic files can be modified, unintentionally or otherwise, we reserve the right to remove all indications of ownership and/or involvement from each electronic display.

We will furnish you electronic files of the following drawing sheets:_____

_____

Under no circumstances shall delivery of the electronic files for use by you be deemed a sale by us, and we make no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall we be liable for any loss of profit or any consequential damages as a result of your use or reuse of these electronic files.

Use of drawings, CAD files, etc. are for the express use for purpose of construction of the contract scope of work. They are not to be utilized or shared by contractor, sub-contractor, or vendors for any other purpose, per La RS 44:1(A)(2)(c).

This agreement shall be governed by the laws of the principal place of business of the POR and Owner.

_____	_____
_____, POR Project Manager	**_____, GC Project Manager**
_____, POR Company	**_____, General Contractor**
_____, **Date**	**_____, Date**

END OF SECTION

SECTION 014100 - REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 The Contractor shall, without additional expense to the Owner, be responsible for obtaining any necessary licenses and permits, and for complying with any applicable Federal, State and municipal laws, codes and regulations, in connection with the prosecution of the Work. He shall take proper safety and health precautions to protect the Work, the workers, the public and the property of others. He shall also be responsible for all materials delivered and work performed until completion and acceptance of the Work.

1.02 The Contractor is hereby advised that any delay in the project as a result of review of any regulatory authority will not be a cause for additional compensation except for possible extension of project time.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 014200 – REFERENCE STANDARDS

PART I GENERAL

1.1 SECTION INCLUDES

A. Quality assurance.

B. Schedule of references.

1.2 RELATED SECTIONS

A. Document GC - General Conditions: Reference Standards.

1.3 QUALITY ASSURANCE

A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents.

C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 SCHEDULE OF REFERENCES

AA	Aluminum Association 818 Connecticut Avenue, N.W. Washington, DC 20006
AABC	Associated Air Balance Council 1000 Vermont Avenue, N.W. Washington, DC 20005
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001
ACI	American Concrete Institute Box 19150 Redford Station Detroit, MI 48219
ADC	Air Diffusion Council 230 North Michigan Avenue Chicago, IL 60601
AGC	Associated General Contractors of America 1957 E Street, N.W. Washington, DC 20006
AI	Asphalt Institute Asphalt Institute Building College Park, MD 20740

AIA	American Institute of Architects 1735 New York Avenue, N.W. Washington, DC 20006
AISC	American Institute of Steel Construction 400 North Michigan Avenue Eighth Floor Chicago, IL 60611
AISI	American Iron and Steel Institute 1000 16th Street, N.W. Washington, DC 20036
AITC	American Institute of Timber Construction 333 W. Hampden Avenue Englewood, CO 801 1 0
AMCA	Air Movement and Control Association 30 West University Drive Arlington Heights, IL 60004
ANSI	American National Standards Institute 1430 Broadway New York, NY 1001 8
APA	American Plywood Association Box 11700 Tacoma, WA 98411
ARI	Air-Conditioning and Refrigeration Institute 1501 Wilson Boulevard Arlington, VA 22209
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tuilie Circle, N.E. Atlanta, GA 30329
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 1001 7
ASPA	American Sod Producers Association 4415 West Harrison Street Hillside, IL 60162
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWI	Architectural Woodwork Institute 2310 South Walter Reed Drive Arlington, VA 22206
AWPA	American Wood-Preservers' Association 7735 Old Georgetown Road

Bethesda, MD 20014

AWS — American Welding Society
550 LeJeune Road, N.W.
Miami, FL 33135

AWWA — American Water Works Association
6666 West Quincy Avenue
Denver, CO 80235

BIA — Brick Institute of America
11490 Commerce Park Drive
Reston, VA 22091

CDA — Copper Development Association
57th Floor, Chrysler Building
405 Lexington Avenue
New York, NY 10174

CLFMI — Chain Link Fence Manufacturers Institute
1101 Connecticut Avenue, N.W.
Washington, DC 20036

CRSI — Concrete Reinforcing Steel Institute
933 Plum Grove Road
Schaumburg, IL 60195

CSI — Cast Stone Institute
813 Chestnut Street, PO Box 68
Lebanon, PA 17042

DHI — Door and Hardware Institute
7711 Old Springhouse Road
McLean, VA 22102

EJCDC Engineers' Joint Contract Documents Committee
American Consulting Engineers Council
1015 15th Street, N.W.
Washington, DC 20005

EJMA — Expansion Joint Manufacturers Association
25 North Broadway
Tarrytown, NY 10591

FGMA — Flat Glass Marketing Association
3310 Harrison
White Lakes Professional Building
Topeka, KS 66611

FM — Factory Mutual System
1151 Boston-Providence Turnpike
P.O. Box 688
Norwood, MA 02062

FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, DC 20407
GA	Gypsum Association 1603 Orrington Avenue Evanston, IL 60201
ICBO	International Conference of Building Officials 5360 S. Workman Mill Road Whittier, CA 90601
IEEE	Institute of Electrical and Electronics Engineers 345 East 47th Street New York, NY 1001 7
IMIAC	International Masonry Industry All-Weather Council International Masonry Institute 815 15th Street, N.W. Washington, DC 20005
MBMA	Metal Building Manufacturees Association 1230 Keith Building Cleveland, OH 44115
MUSFA	Metal Lath/Steel Framing Association 221 North LaSalle Street Chicago, IL 60601
NAAMM	National Association of Architectural Metal Manufacturers 221 North LaSalle Street Chicago, IL 60601
NCMA	National Concrete Masony Association P.O. Box 781 Herndon, VA 22070
NEBB	National Environmental Balancing Bureau 8224 Old Courthouse Road Vienna, VA 22180
NEMA	National Electrical Manufacturers' Association 2101 'L' Street, N.W. Washington, DC 20037
NFPA	National Fire Protection Association Battery March Park Quincy, MA 02269

NFPA	National Forest Products Association 161 9 Massachusetts Avenue, N.W. Washington, DC 20036
NSWMA	National Solid Wastes Management Association 1730 Rhode Island Ave., N.W. Washington, DC 20036
NWMA	National Woodwork Manufacturers Association 205 W. Touhy Avenue Park Ridge, IL 60068
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077
PS	Product Standard U. S. Department of Commerce Washington, DC 20203
SDI	Steel Deck Institute P.O. Box 9506 Canton, OH 44711
SDI	Steel Door Institute 712 Lakewood Center North 14600 Detroit Avenue Cleveland, OH 44107
SIGMA	Sealed Insulating Glass Manufacturers Association 111 East Wacker Drive Chicago, IL 60601
Sil	Steel Joist Institute 1205 48th Avenue North Suite A Myrtle Beach, SC 29577
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 8224 Old Court House Road Vienna, VA 22180
SSPC	Steel Structures Painting Council 4400 Fifth Avenue Pittsburgh, PA 15213
TCA	Tile Council of America, Inc. Box 326 Princeton, NJ 08540
UL	Underwriters' Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062
WCLIB	West Coast Lumber Inspection Bureau

6980 S.W. Varns Road
Box 23145
Portland, OR 97223

WWPA Western Wood Products Association
1500 Yeon Building
Portland, OR 97204

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

SECTION 014500 - QUALITY CONTROL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. General quality control activities.
   2. Procedures for the following:
      a. Preparation and maintenance of schedule of quality control activities.
      b. Design performed by contractor.
      c. Testing and evaluation of test results.
      d. Inspections.
      e. Manufacturers' field services.
   3. Procedures for quality control activities performed by:
      a. Independent testing agencies.
      b. Contractor.
      c. Manufacturers' representatives.
   4. Procedures for submittal of quality control documentation.

B. Quality control activities required are specified in other sections.

C. See General Conditions for additional requirements for testing, inspections, and approvals.

D. The cost of quality control activities specified to be paid for by the owner is not to be included in the contract sum.

1.2 CONTRACT CONDITIONS

A. Independent testing agencies, whether employed by the owner or the contractor, may not change the requirements of the contract documents and may not approve any portion of the work.

B. Employment of testing agencies, by the contractor or the owner, shall not relieve the contractor of his obligation to perform the work in accordance with the contract documents.

1.3 DEFINITIONS

A. Certificate: A written statement that a portion of the work as accomplished or a particular product conforms to the requirements of the contract documents.

B. Installer: Any entity who performs a construction activity, whether an employee, subcontractor, or sub-subcontractor of the contractor.

C. Testing Agency: Approved independent testing and inspection agency employed by the contractor and approved by the Owner to perform certain quality control activities.

D. Reference Standard: Any document incorporated into the specification by reference rather than by inclusion of complete text; including, but not limited to, voluntary specifications prepared by standards organizations and industry organizations.

1.4 REFERENCE STANDARDS

A. Reference Standards - General:

1. Comply with edition of standard in effect as of:
   a. Date of contract documents.
2. Compliance with standards which are revised or reissued after that date will not be required unless incorporated into the contract documents by modification.
3. Where applicable codes, laws, or regulations require editions of different dates, obtain instructions from the governing authorities as to which edition is required.

B. The requirements of reference standards are binding on the contractor, just as if they were copied into the contract documents, but no provisions of reference standards shall alter the contractual relationship of the parties to the contract.

1.5 SUBMITTALS

A. Schedule of Quality Control Activities:
1. Submit as part of the contractor's construction schedule.
2. Revise as required by the owner, to coordinate with the testing agency activities.
3. Distribute to:
   a. The Owner.
   b. The Architect.
   c. Each entity performing work for which quality control activities are specified.

B. Design Data: As specified in individual sections.
1. Unless otherwise indicated, submit for information only.

C. Reports: Provide certified copies of reports.
1. Unless otherwise indicated, submit for information only.
2. Submit reports not later than the date of application for payment for the work to which the quality control activity relates.
3. Reports shall be prepared by the entity performing the quality control activity.
4. Submit copies directly to governing authorities when so directed.
5. When the contractor employs an independent testing agency, submit copies directly to the architect.
6. Include the following information in all types of reports:
   a. Date of report.
   b. Project name (and number, if applicable).
   c. Description of the quality control activity.
   d. Name, address, and telephone number of entity performing activity.
   e. Date quality control activity was performed.
   f. Specification section(s) involved.
   g. Basis for evaluation (test method, etc.).
   h. Results or conclusions, including evaluations and interpretations.
   i. Title, name, and signature of person performing activity.
7. Include the following information in all test reports:
   a. Locations from which samples were taken, if any.
   b. Ambient conditions at time of activity.
   c. Recommendations for retesting, if any.

D. Certificates: Submit for information only, unless otherwise indicated.
1. Certificates shall be signed by the product manufacturer, unless otherwise specified or not applicable.
2. Include the following information:
   a. Date of certificate.
   b. Project name (and number, if applicable).
   c. Description of the product or system certified.
   d. Specification section(s) involved.

e. When actual materials to be used are to be certified, include lot identification markings, destination or shipment, and quantity in shipment.
f. Title, name, and signature of person authorized to make certification.

E. Qualification Statements: Submit for information only, unless otherwise indicated.

F. Manufacturers' Instructions: Submit for information only, unless otherwise indicated; identify conflicts with contract documents.

1.6 QUALITY ASSURANCE

A. Qualifications of Structural Design Personnel: As indicated in individual sections; if not indicated, provide services of a professional engineer licensed in the state in which the project is located for required services.
B. Qualifications of Manufacturers: As indicated in individual sections.

C. Qualifications of Installers: As indicated in individual sections.

D. Qualifications of Manufacturers' Field Personnel: Employed directly by the manufacturer and normally performing the activities specified.

E. Qualifications of Testing and Inspection Personnel:
1. As indicated in individual sections.

F. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either the National Bureau of Standards (NBS) standards or to accepted values of natural physical constants.

1.7 COORDINATION WITH OTHER ENTITIES

A. Cooperate with other entities performing quality control activities.

B. Provide samples of materials and design criteria as indicated and when requested.

C. Provide other assistance, equipment, tools, and storage facilities as specified.

D. If desired, make arrangements with those entities and pay for additional similar or related testing or inspection required for the contractor's use or convenience.

1.8 SEQUENCING AND SCHEDULING

A. Prepare a schedule of quality control activities required.
1. Include activities of the contractor's testing agencies.
2. Provide the following information for each activity:
a. Specification section number.
b. Description of the activity.
c. Identification of test or inspection methods.
d. Enumeration of results required.
e. Number of tests required.
f. Number and type of samples to be taken, if any.
g. Starting time of activity.
h. The date that the work will be ready for the testing agency access.
i. Elapsed time required for activity.
j. Entity responsible.
k. Special requirements for activity.

B. Coordinate quality control activities to avoid delay and to make it unnecessary to uncover work for testing or inspection.

C. Notify the testing agencies 5 working days prior to commencement or completion of work which is to be tested or inspected, whichever is applicable.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

A. Provide work of the specified quality; where quality level is not indicated, provide work of quality customary in similar types of work.
   1. Where codes, laws, or regulations require work of higher quality or performance, provide work complying with those codes, laws, and regulations.
   2. Where two or more quality provisions of the contract documents conflict, comply with the most stringent requirement; where requirements are different but apparently equal, and where it is uncertain which requirement is most stringent, obtain clarification from the architect before proceeding.
   3. Actual quality may exceed the specified quality; verify that such differences are acceptable to the owner (other criteria may make excessive quality undesirable).

B. Where the contractor is required to complete the design, use accepted methods and procedures resulting in work of the specified quality.

C. Control products, suppliers, manufacturers, site conditions, installers, and workmanship in such a manner as to produce work of the specified quality.

D. Comply with manufacturers' instructions and recommendations.
   1. Keep a record of instructions and recommendations which supplement or conflict with the manufacturer's written instructions.
   2. When manufacturers' instructions and recommendations conflict with the contract documents, obtain clarification from the architect before proceeding.

E. Use installers who are capable of producing work of the specified quality.

F. Perform all quality control activities specified unless indicated to be performed by other entities.

3.2 TESTING

A. Perform tests specified.

B. When results of tests are unsatisfactory, make whatever changes or repairs are necessary and retest.

C. Submit written report of each original test and of each retest.

3.3 INSPECTING

A. Perform inspections specified.

B. When inspections reveal unsatisfactory work, make whatever changes or repairs are necessary and reinspect.

C. Submit written report of each original inspection and each reinspection.

3.4 MANUFACTURERS' FIELD SERVICES

A. Manufacturers' field services required are specified in other sections.

B. Give the architect timely notice of site visits so that the architect may be present.

C. Submit a report of each site visit, including records of:
1. Site conditions, installer procedures, and related activities which are not as recommended by the manufacturer.
2. Instructions and recommendations given which differ from the manufacturer's standard printed instructions.

3.5 PROTECTION AND REPAIR

A. When work is uncovered during quality control activities, provide protection from damage.

B. Correct work damaged by quality control activities; where repair is indicated as an unacceptable method, replace the work.

END OF SECTION

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SECTION 015000 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1. GENERAL

1.1 SECTION INCLUDES

A. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone service, water, and sanitary facilities.

B. Temporary Controls: Barriers, enclosures and fencing, protection of the Work, and water control.

C. Construction Facilities: Access roads and parking.

D. Progress cleaning.

E. Field Office and temporary buildings.

1.2 RELATED SECTIONS

A. Section 017300 – Construction Procedures: Final cleaning.

1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain incandescent lighting for construction operations to achieve a minimum lighting level of 5 watt/sq ft.

B. Provide and maintain 1 watt/sq ft lighting to exterior staging and storage areas after dark for security purposes.

C. Provide and maintain 0.25 watt/sq ft H.I.D. lighting to interior work areas after dark for security purposes.

D. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

E. Maintain lighting and provide routine repairs.

F. Permanent building lighting may not be utilized during construction until Substantial Completion.

1.4 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
B. At end of construction, return facilities to same or better condition as originally found.

1.5 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas.

B. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.6 WATER CONTROL

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain

pumping equipment.

B. Protect site from puddling or running water.

1.7 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

1.8 SECURITY

A. Provide security and facilities to protect work, and from unauthorized entry, vandalism, or theft.

1.9 ACCESS ROADS

A. Construct and maintain temporary roads accessing public thoroughfares to serve construction area.

B. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic flow.

C. Provide and maintain access to fire hydrants, free of obstructions.

D. Provide means of removing mud from vehicle wheels before entering streets.

E. Existing on-site roads may be used for construction traffic.

F. Maintain public access to parking lots to remain and public ways.

1.10 PARKING

A. Temporarily maintain hard surface parking areas sufficient to support automobile and truck traffic, and to accommodate construction personnel.

B. When site space is not adequate, provide additional off-site parking.

C. Do not allow vehicle parking on new pavement.

1.11 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from site weekly and dispose off-site.

E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.12 FIELD OFFICES AND SHEDS

A. Construction Field Office: Weather tight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture, drawing rack, and drawing display table, and a space for meetings

B. Locate offices and sheds a minimum distance of 30 feet from existing and new structures.

C. Maintain field offices until temporary power is available in newly constructed buildings. Contractor has the option of relocating facilities to permanent structure thereafter.

1.13 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Final Application for Payment inspection.

B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2. PRODUCTS

This Section Not Used.

PART 3. EXECUTION

This Section Not Used.

END OF SECTION

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SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. General product requirements, including:
      a. General specification requirements for all products.
      b. Product options; Prior Approvals; Substitutions.
   2. General requirements for product documentation, including:
      a. Requirements and procedures for schedule of products.
      b. General requirements for operation and maintenance data.
      c. General requirements for warranties.

1.2 SUBMITTALS

A. Schedule of Products: Submit for approval.

B. Final Schedule of Products: Submit for project record.

C. Operation and Maintenance Data: Submit for information only.

D. Warranties: Submit for project record.

PART 2 - PRODUCTS

2.1 GENERAL

A. Components required to be supplied in quantity within a specification section shall be identical, interchangeable, and made by the same manufacturer.

B. Do not use products removed from existing construction, unless specifically permitted by the contract documents or approved by the owner.

C. PRIOR APPROVALS**:** The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality but do not restrict bidders to the specific brand, manufacturer, or specification named. No substitution will be considered unless written request of approval has been submitted at least 10 days prior to bid date in proper format. See Substitution Request Form Section 01631. The burden of proof of the merit of the proposed substitute is upon the proposer. Approval by the Design Professional will not modify or lessen the requirements of the specifications. The Design Professional's decision of approval or disapproval shall be final. If the Design Professional approves any proposed substitution, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

PART 3 - EXECUTION

3.1 PRODUCT OPTIONS

A. It is the contractor's responsibility to select products which comply with the contract documents and which are compatible with one another, with existing work, and with products selected by other contractors.

1. Verify that electrical characteristics of products are compatible with electrical systems; notify architect of all discrepancies.
2. Where visual matching to an established physical sample is required, the architect's decision will be final.

B. Do not use any substitute products which have not been prior approved in accordance with the requirements of the contract documents; formal substitution request is required.

C. Definition of Substitute Product: Any product or manufacturer not listed in the individual specification section is to be considered a substitute.

D. Product Options: Where products are specified using more than one method, such as description with a manufacturer list, use a product meeting the requirements of both specification methods.

E. Products Specified by Reference Standard: Use any product meeting the specification. Provisions of reference standards shall not modify the responsibilities of the owner or architect as defined in the contract documents.

F. Products Specified by Description: Use any product meeting the specification.

G. Products Specified by Performance Requirements: Use any product meeting the specification.

H. Products Covered by an Allowance Included in the Contract Documents: Provide products of types and in quantity as directed by the architect.
1. At the earliest possible date after execution of the contract, inform the architect of the latest date by which the final selection of the product is required in order to avoid delay of the work.
2. When requested, provide information for use in making selections.

I. Products Specified to Match a Physical Sample: Use any product that matches; obtain the architect's approval.

J. Products Specified by Listing a Brand Name Product as the "Basis of Design": Provide a product equivalent to the product specified within the limits of variation specified; submit substitution request for all products other than that listed in specifications.

K. Products Specified by Listing Brand Name(s): Provide a product at least equal to the brand name product, or products, listed; submit substitution request for any brand name product not listed.

L. Products Specified by Listing Manufacturer(s): Provide a product meeting the specification; submit substitution request for any manufacturer not listed.

3.2 SUBSTITUTIONS AFTER AWARD OF THE CONTRACT

A. Substitutions after award of the contract will only be considered under one or more of the following conditions;
1. Required for compliance with interpretation of code requirements or insurance regulations then existing;
2. Unavailability of specified products through no fault of the Contractor;
3. Subsequent information discloses inability of specified products to perform properly or to fit in designated space;
4. Or manufacturers/ fabricator refuses to certify or guarantee performance of specified

product as required.

B. The contractor will be notified in writing within a reasonable time; verbal acceptance will not be valid.

C. Acceptable substitutions will be added to the contract documents by change order.

3.3 SUBSTITUTION PROCEDURE

A. Submission of request for substitution shall constitute a representation by the contractor that he:
1. Has investigated the proposed product and determined that it is equal to or better than the specified product. Absence of an explicit comparison of any characteristic of the proposed product to the specified product shall constitute a representation that the proposed product is equal to or better than the specified product with regard to that characteristic.
2. Will provide the same warranty for the proposed product as for the specified product.
3. Will coordinate the installation and make other changes which may be required for the work to be complete in all respects, including:
   a. Redesign.
   b. Additional components and capacity required by other work affected by the change.
4. Waives all claims for additional costs and time extensions which subsequently may become apparent and which are caused by the change.

B. Substitution Request Procedure: Submit written request with complete data substantiating compliance of the proposed product with the requirements of the contract documents.
1. Submit substitution request at least 10 days prior to date when the product needs to be ordered for review by the Architect.
2. Properly complete Form in Section 016000.10, Substitution Request Form.
3. Form is to be submitted through the General Contractor.

C. Data Required with Substitution Request: Provide at least the following data:
1. Identify product by specification section and paragraph number.
2. Manufacturer's name and address, trade name and model number of product (if applicable), and name of fabricator or supplier (if applicable).
3. Complete product data.
4. Description of changes that will be required in other work or products if the substitute product is approved.

D. When the proposed substitution is not accepted, provide the product (or one of the products) specified.

3.4 SCHEDULE OF PRODUCTS

A. Prepare a complete schedule of products used, including the following for each product:
1. Manufacturer's name.
2. Brand or trade name.
3. Model number, if applicable.
4. Reference standard, if more than one is applicable.
5. Arrange products in the schedule by specification sections; indicate paragraph where specified.

B. Prepare and submit a preliminary schedule within 30 days after award of contract; resubmit when revised; submit final schedule prior to final payment.

C. Schedule of products shall not be used to obtain approval of substitute products; make separate request for substitutions.

3.5 OPERATION AND MAINTENANCE DATA

A. Provide operation and maintenance data as specified in individual product sections.
   1. Provide data sufficient for operation and maintenance by owner without further assistance from the manufacturer.
   2. Provide completed data in time for use during owner instruction.

B. Data Required For Products - General:
   1. Name of manufacturer and product.
   2. Name, address, and telephone number of subcontractor or supplier.
   3. Local source of replacements.
   4. Local source of replaceable parts and supplies.

C. Product Data: Where product data is specified for inclusion in operation and maintenance data provide manufacturer's data sheets marked to indicate specific product and product options actually installed; delete inapplicable data.

D. Finish Materials: Manufacturer's product data, color/texture designations, and manufacturer's instructions for care, cleaning, and maintenance.

E. Equipment: Provide at least the following information:
   1. Product data giving equipment and function description, with normal operating characteristics and limiting conditions.
   2. Starting, operating, and troubleshooting procedures.
   3. Cleaning and maintenance requirements and procedures.
   4. External finish maintenance requirements.
   5. List of maintenance materials required.
   6. List of special tools required.
   7. Parts list: List all replaceable parts, with ordering data.
   8. Recommended quantity of spare parts to be maintained in storage.

F. Systems: Provide overall function description, with diagrams, prepared especially for this project.

G. Form of Data: Prepare data in the form of an instructional manual.
   1. Arrange content logically, using section numbers and sequence of sections indicated on the table of contents of this project manual.
   2. When multiple volumes are used, arrange by related subjects; identify contents in cover title.
   3. Assemble into 3-ring binders with maximum 2-inch ring size.
      a. Hardback, cleanable plastic covers.
      b. Identify each book with title "Operation and Maintenance Instructions" and project name.
      c. Page size 8-1/2 by 11 inches, maximum.
      d. Prepare special typewritten data on minimum 20-pound paper.
      e. Provide tabbed divider for each product and system.
      f. Drawings: Bind in with other data; provide reinforced binding edge; fold larger drawings to size of pages.
         1. Do not use pockets or loose drawings.
   4. Provide table of contents for each volume listing:

a. Name of the project.
b. Name, address, telephone number, and contact name of:
    1. Architect.
    2. Contractor.
c. Index of products and systems included in volume.

5. Provide digital copy of all Data on a flash drive or CD media.

3.6 WARRANTIES

A. Provide warranties as specified in individual product sections. At time of submittal provide sample warranty filled out for this specific project with all information required and label “Sample Warranty”.

B. Manufacturer Warranties: Manufacturer's standard product warranty running for the manufacturer's standard term, unless otherwise indicated.
    1. Submit copies of all manufacturer warranties which extend beyond the end of the contract correction period.

C. Special Project Warranties: Written warranty commencing at date of substantial completion, running for the term indicated, and signed by the entities specified.
    1. Where completion of warranty item is materially delayed beyond the date of substantial completion, provide warranty commencing on date of acceptance.
    2. Submit each special project warranty.

D. Provide 2 notarized copies of each executed warranty.

E. Show actual date of commencement on each warranty.

END OF SECTION

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SECTION 16000.10 - SUBSTITUTION REQUEST FORM

TO: RCL Architecture, PLLC
900 West Causeway Approach
Mandeville, LA 70471

PROJECT: Technology Building Suite 100 (B)
Interior Office Renovations
7225 Stennis Airport Road, Kiln, MS 39535
HCPHC #AP2602 / RCLA Project No. 22535B

SPECIFIED ITEM:

DWG/ Specification Section _____ Paragraph _____

Product Description _____

The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION:

Upon submitting this Request for Substitution, the undersigned certified that the following paragraphs are correct, unless otherwise modified on attachments:

1. Contractor has investigated the proposed substitution and believes that it is equal to or superior in all respects to specified item and will conform to design requirements and artistic effect.

2. Cost saving to Owner for accepting substitution: None _____ $ _____
3. Contractor will pay the Architect and/or Engineers for additional studies, investigations, submittal reviews, redesign and/or analysis caused by the requested substitution and at not additional cost to Owner.

4. Substitution requires dimensional changes or redesign of Structural:
No. _____ Yes _____ (If yes, attach complete data).

5. Substitution requires dimensional changes or redesign of Mechanical:
No. _____ Yes _____ (If yes, attach complete data).

6. Substitution requires dimensional changes or redesign of Electrical:
No. _____ Yes _____ (If yes, attach complete data).

7. Substitution requires dimensional changes or redesign of Plumbing:
No. _____ Yes _____ (If yes, attach complete data).

8. Contractor will waive future claims for added cost to Contract caused by substitution.

9. Changes in contract time caused by substitution: No _____ Yes _____ Add/Deduct days.

10. Adverse affect on other Trades caused by substitution:
None _____ Yes _____ (If yes, explain on attachment).

11. Contractor will modify other parts of the work as may be required to make all parts of work complete and functioning.
Not Required _____ Yes _____ (If yes, explain on an attached page if necessary).

12. Same type of warranty for specified product or system will be furnished for proposed substitution.
No _____ Yes _____ (If no, explain on an attached page).

13. Maintenance Service Available:
No _____ Yes _____ (If no, explain on an attached page).
Where? _____ Spare Parts Source:_____

14. Contractor has complied with requirements of Division 01, General Conditions and Contract Documents as part of the request for substitution, and has completely filled-in this form.
No _____ Yes _____

REASON FOR NOT GIVING PRIORITY TO SPECIFIED ITEM:

See attached _____ Not required _____

Submitted by:

Signature: _____

Firm: _____

Address: _____

_____

For use by Architect:

_____ Approved _____ Approved as Noted (Correct & resubmit for record)

_____ Revise & Resubmit _____ Rejected

Reviewed only for conformance with Design Concept of project and with information given in Contract Documents.

Signature: _____

Date: _____

ATTACHMENTS TO THIS FORM:

1. Manufacturer's Product Data for Specified Item: Clearly marked to indicate full compliance with spec section and Contract Documents:_____Attached

2. Manufacturer's Product Data for Substitution: Clearly marked for adequate evaluation and comparison with data submitted for specified item: _____Attached

3. Samples: Attached _____ Not Required _____

4. Cost Data and Implications of Substitution: Attached _____ Not Required _____
5. Contractor's Comments:Attached _____ Not Required _____
6. Other: _____

SECTION 017300 - CONSTRUCTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. General construction and installation procedures.
2. Cleaning during construction.
3. Instruction of the owner's personnel.
4. Project completion procedures.

1.2 DEFINITIONS

A. Concealed Spaces: Spaces which are not accessible after completion of construction.

B. Cutting: Removal of material by cutting, sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation.

C. Damage: Any sort of deterioration whether due to weather, normal wear and tear, accident, or abuse, resulting in soiling, marring, breakage, corrosion, rotting, or impairment of function.

D. Debris: Rubbish, waste materials, litter, volatile wastes, and similar materials, with the exception of surplus materials which are to become the property of the owner.

E. Patching: Restoration to completed condition by patching, repairing, refinishing, finishing, filling, closing up, and similar operations.

1.3 SUBMITTALS

A. Instruction Reports:
1. Submit within 7 days after each instruction period.
2. Include the following information:
   a. Description of instruction provided, cross-referenced to the contract documents.
   b. Date(s) and duration of instruction.
   c. Names and titles of persons performing instruction.
   d. Names, titles, and signatures of persons receiving instruction.

1.4 QUALITY ASSURANCE

A. Cleaning: Perform cleaning in accordance with the recommendations of the manufacturer or fabricator of the product or system. Use only cleaning materials and tools which are specifically recommended, which are not hazardous to health or property, and which will not damage finishes.

1.5 PROJECT CONDITIONS

A. Take precautions to prevent fires and to facilitate fire-fighting operations.
1. Keep flammable materials in non-combustible containers; store away from potential fire sources; remove flammable waste regularly.
2. Keep temporary and permanent fire fighting facilities readily accessible; keep fire fighting routes open.
3. Do not allow smoking in areas where highly combustible or explosive materials are

present.
4. Carefully supervise the operation of potential fire sources, including heating units.
5. Conduct welding operations in manner to prevent fire; comply with local regulations.

B. Take precautions to prevent accidents due to physical hazards:
1. Provide barricades, warning lights, or signs as required to inform personnel and the public of the hazard being protected against.
2. Safety barricades: Comply with regulations.
3. Provide temporary walkways where walking surfaces are hazardous.
4. Notify the owner before beginning work that involves hazardous operations, including use of explosives and the like.

C. Take care to prevent pollution of air, water, and soil.
1. Comply with environmental protection regulations.
2. Limit effluent and rainwater runoff into waterways as required by regulations.
3. Do not dump contaminants in areas that will result in contamination of waterways.

D. Minimize discharge of effluent and rainwater runoff into sewers.
1. Control sediment discharge into sewers; filter out construction debris, soil, and contaminants.
2. Comply with regulations and orders of public utilities regarding use of sewers.
3. Where disposal of effluent or rainwater by means of sewers is not lawful or is not possible, provide alternative methods of disposal.

E. Prevent erosion due to rainwater runoff.

F. Control windblown dust; prevent erosion to site and nuisance to neighbors.

G. Prevent flooding of excavations, below-grade construction, and adjacent properties due to rainwater runoff.

H. Protect existing property indicated to remain, including:
1. Plants and trees, as indicated on the drawings.
2. Existing property, as indicated on the drawings.

I. Do not use tools or equipment which produce harmful levels of noise.

J. Keep the site and adjacent public ways free of hazardous and unsanitary conditions and public nuisances.

K. Control rodents and other pests; prevent infestation of adjacent sites and buildings due to pests on this site.

L. Keep public streets free of debris due to this work.

M. Provide adequate traffic control by means of signs, signals, and flagmen, as necessary.

N. Provide temporary means of draining roofs where required.

O. Conduct construction operations so that no part of the work is subjected to damaging operations or influences which are in excess of those to be expected during normal occupancy conditions.

P. Conduct construction operations so that waste of power, water, and fuel is avoided.

Q. Provide temporary supports as required to prevent movement and structural failure.

R. Install products only during environmental conditions which will ensure the best possible results.

1.6 SEQUENCING AND SCHEDULING

A. Install products only at the time and in the sequence, which will ensure the best possible results.

B. Coordinate required administrative activities with related construction activities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Patching Materials: Identical to the materials of the work to be cut, unless indicated as specific materials specified in other sections.

PART 3 - EXECUTION

3.1 GENERAL EXAMINATION REQUIREMENTS

A. Prior to performing work, examine the applicable substrates and the conditions under which the work is to be performed.

B. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding.

C. Conditions which could have been discovered by examination will not be allowed as cause for claims for extra work.
   1. In particular, verify the following:
      a. Underground utilities.
      b. Other underground construction.
      c. Location and invert elevation of points of connection to piped utilities.

D. Verify that utility requirements of operating equipment are compatible with building utilities.

E. Verify space requirements of items which are shown diagrammatically on the drawings.

3.2 GENERAL PREPARATION REQUIREMENTS

A. Take field measurements as required to fit the work properly.

B. Recheck measurements prior to installing each product.

3.3 GENERAL INSTALLATION PROCEDURES

A. Accurately locate the work and components of the work; make vertical work plumb; make horizontal work level.

B. See sections describing specific parts of the work for additional requirements.

C. Where space is limited, install components to maximize space available for maintenance and to maximize ease of removal for replacement.

D. In finished areas, conceal pipes, ducts, and wiring within the construction, unless otherwise indicated.

E. Coordinate exact locations of fixtures and outlets with finish elements.

F. Install work in such manner and sequence as to preclude, if possible, or at least to minimize, cutting and patching.

3.4 CLEANING AND PROTECTION

A. Remove debris from concealed spaces prior to enclosing the space.

B. Keep the site and the work free of waste materials and debris.
1. Remove waste from site periodically.
2. When temperature exceeds or is expected to exceed 80 degrees F, remove waste at frequency necessary to prevent development of health hazards and nuisance odors.
3. Keep hazardous and unsanitary materials in containers separate from other waste.

C. Clean areas in which work is to be done to level of cleanliness necessary for proper execution of that work.
1. Where dust would impair execution of work, broom- and vacuum-clean the entire interior area and keep clean.

D. Keep installed work clean, and clean again when soiled by other operations.
1. Provide periodic cleaning as required to prevent damage due to soiling.
2. Remove liquid spills promptly.

E. Protect installed work from soiling and damage.
1. Provide protective coverings as required.
2. Provide protective coverings for work which may be damaged by subsequent operations.
3. Where heavy abuse is expected, use minimum of plywood for protection.
4. Maintain protective coverings until substantial completion.

3.5 INSTALLATION OF COMPONENTS

A. Install all products in accordance with manufacturer's instructions and recommendations, whether conveyed in writing or not.

B. Mounting Heights: Where mounting heights are not indicated, mount at heights directed by the architect.

C. Separate incompatible materials with suitable materials or spacing.
1. Prevent cathodic corrosion.

D. Provide all anchors and fasteners required and use methods necessary to securely fasten work.

1. Allow for thermal expansion and contraction, and for building movement.

E. Joints in Exposed Work:
   1. Make joints of uniform widths.
   2. Where joint locations are not indicated, arrange joints for the best visual effect.
      a. When in doubt, obtain the architect's instructions.

F. After installation, adjust operating components to proper operation.

3.6 INSTRUCTION OF THE OWNER'S PERSONNEL

A. Instruct personnel designated by the owner in the operation and maintenance of equipment and systems, prior to substantial completion.
   1. Explain all modes of operation and types of maintenance required.
   2. Demonstrate all functions, including startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown.
   3. Review terms of warranties and procedures for obtaining warranty service.
   4. Review maintenance agreements and other similar commitments which extend past final completion.
   5. Have operating and maintenance data available for use during instruction.
      a. Review contents in detail.
      b. Prepare and insert additional data when need for such becomes apparent during instruction.

B. Arrange times and places of instruction with the owner.

C. Provide instruction by qualified personnel of the contractor, unless otherwise specified.

D. For equipment and systems which have different operation at different seasons, provide instruction during subsequent seasons until all modes of operation have been covered.

3.7 FINAL CLEANING

A. Dispose of debris in a lawful manner.
   1. Do not burn debris on the site.
   2. Inorganic debris may be buried on the site in a location designated by the owner.
   3. Do not dispose of volatile wastes in storm or sanitary drains.

3.8 PROJECT COMPLETION PROCEDURES

A. Complete the work, prior to substantial completion, as required to obtain consent to occupancy from the governing authorities.

B. Arrange for final inspections by governing authorities to be accomplished prior to substantial completion.

C. If temporary locking systems differ from permanent locking systems, change over to permanent systems prior to substantial completion.

END OF SECTION

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SECTION 017400 - CLEANING

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

Execute cleaning, during progress of the work, and at completion of the work, as required by General conditions.

1.02 RELATED REQUIREMENTS

A. Conditions of the Contract.

B. Each Specification Section: Cleaning for specific products or work.

1.03 DISPOSAL REQUIREMENTS

Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.

B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.01 DURING CONSTRUCTION

A. Execute periodic cleaning to keep the work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.

B. Provide on-site containers for the collection of waste materials, debris and rubbish.

C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.02 FINAL CLEANING

A. Employ skilled, workmen for final cleaning.

B. Rake the surfaces of the grounds clean.

C. Prior to final completion, or Owner occupancy, Contractor shall conduct an inspection of sight-exposed exterior surfaces, and all work areas, to verify that the entire work is clean.

END OF SECTION

SECTION 017836 – WARRANTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.
   1. Refer to the Owner's Contract / General Conditions for terms of the Contractor's period for correction of the Work.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Division 1 Section "Submittals" specifies procedures for submitting warranties.
   2. Division 1 Section "Contract Closeout" specifies contract closeout procedures.
   3. Divisions 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.
   4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor. Manufacturer's disclaimers and limitations on product warranties do not alter the Contractor's requirements of the Contract Documents.

D. Separate Prime Contracts: Each prime Contractor is responsible for warranties related to its own Contract.

1.3 DEFINITIONS

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A. Standard products warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
B. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.
   1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

E. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTALS

A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
   1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within 15 days of completion of that designated portion of the Work.

B. When the Contract Documents require the Contractor, or the Contractor and a Subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Architect, for approval prior to final execution.

C. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Submit a draft to the Owner, through the Architect, for approval prior to final execution.
   1. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.

D. Form of Submittal: At Final Completion compile 2 copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual as described in Div 01600, Product Requirements.

E. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (115-by-280-mm) paper.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.
2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
3. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used – see individual Specification Section for warranty Requirements)

END OF SECTION

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SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Project record documents consisting of:
a. Record drawings.
b. Record project manual (specifications).
c. Record submittals:
1. Shop drawings.
2. Product data.
3. Samples.
4. All other submittals.
2. Exceptions: The following are not required as project record documents:
a. Informational submittals, and manufacturers' and installers' qualifications statements.

B. Related Sections:
1. Operation and maintenance data: Elsewhere in Division 1.
2. Warranties: Elsewhere in Division 1.

1.2 SUBMITTALS

A. Project Record Documents: Submit after substantial completion, but prior to final completion.
1. Record drawings: Submit in form of opaque prints and scanned .pdf files on CD or flash drive.
a. Sets shall include all drawings and specifications, whether changed or not.
2. Other record documents: Submit 1 set of originals or good quality photocopies and digital copy on CD or flash drive.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 MAINTENANCE OF PROJECT RECORD DOCUMENTS

A. Do not use record documents of any type for construction purposes.

B. Maintain record documents in a secure location at the site while providing for access by the contractor and the architect during normal working hours; store in a fire-resistive room or container outside of normal working hours.

C. Record information as soon as possible after it is obtained.
D. Assign a person or persons responsible for maintaining record documents.

E. Record the following types of information on all applicable record documents:
1. Dimensional changes.
2. New and revised details.
3. Depths of foundations.
4. Locations and depths of underground utilities.
5. Actual routings of piping and conduits.
6. Revisions to electrical circuits.

7. Actual equipment locations.
8. Sizes and routings of ducts.
9. Locations of utilities concealed in construction.
10. Particulars on concealed products which will not be easy to identify later.
11. Changes made by modifications to the contract; note identification numbers if applicable.
12. New information which may be useful to the owner, but which was not shown in either the contract documents or submittals.

3.2 RECORD DRAWINGS

A. Maintain a complete set of opaque prints of the contract drawings, marked to show changes.

B. Where the actual work differs from that shown on the drawings, mark this set to show the actual work.
1. Mark location of concealed items before they are covered by other work.
2. Mark either record contract drawings or shop drawings, whichever are best suited to show the change.
3. Where changes are marked on record shop drawings, mark cross-reference on the applicable contract drawing.

C. When the contractor is required by a provision of a modification to prepare a new drawing, rather than to revise existing drawings, obtain instructions from the architect as to the drawing scale and information required.

D. Keep drawings in labeled, bound sets.
1. Mark with red pencil.
2. Mark work of separate contracts with different colors of pencils.
3. Incorporate new drawings into existing sets, as they are issued.

E. Where record drawings are also required as part of operation and maintenance data submittals, copy marks to another opaque print obtained from the architect.

3.3 RECORD PROJECT MANUAL

A. Maintain a complete copy of the project manual, marked to show changes.

B. Where the actual work differs from that shown in the project manual, mark the record copy to show the actual work.
1. Include a copy of each addendum and modification to the contract.

3.4 RECORD SUBMITTALS

A. Maintain a complete set of all submittals made during construction, marked to show changes.
1. Maintain submittals in cardboard file boxes, labeled to show contents.
2. Sort submittals by applicable specification section and file in order of submittal identification number.
3. Include manufacturer’s recommended maintenance instructions by applicable specification section and file in order of submittal identification number with each section.

B. Record Shop Drawings: Record the types of information specified for all record documents.
1. Mark changes on record shop drawings only when contract drawing would not be capable of showing the change clearly or completely.
2. Mark changes in manner specified for record drawings.

C. Record Product Data Submittals: Record the types of information specified for all record documents.
   1. In addition, record the following types of information:
      a. Changes in the products as delivered to the site.
      b. Changes in manufacturer's instructions or recommendations for installation.

3.5 TRANSMITTAL TO OWNER

A. Collect, organize, label, and package ready for reference.
   1. Provide cardboard file boxes for submittals.
   2. Bind print sets with durable paper covers.
   3. Label each document (and each sheet of drawings) with "PROJECT RECORD DOCUMENTS - This document has been prepared using information furnished by _____" [insert the contractor's name], and the date of preparation.

B. Submit to the Architect for transmittal to the owner, unless otherwise indicated.

END OF SECTION

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SECTION 054000

COLD FORMED METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 General Requirements, apply to work of this section.

1.2 DESCRIPTION OF WORK:

A. Extent of cold formed metal framing is shown on drawings which includes; Formed steel stud interior wall framing and formed steel joists.

1.3 REFERENCE STANDARDS

A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)

B. ASTM A 153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2005.

C. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007.

D. ASTM C 955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases; 2007.

E. AWS D1.1 - Structural Welding Code - Steel; American Welding Society; 2006 and Errata.

F. AWS D1.3 - Structural Welding Code - Sheet Steel; American Welding Society; 2007.

G. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2004).

H. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).

1.4 QUALITY ASSURANCE:

A. Component Design: Calculate structural properties of studs and joists in accordance with American Iron and Steel Institute (AISI) "Specification for Design of Cold-Formed Steel Structural Members".

B. Welding: Use qualified welders and comply with AWS "Structural Welding Code - Sheet Steel" Fire-Rated Assemblies: Where framing units are components of assemblies indicated for a fire-

resistance rating, including those required for compliance with governing regulations, provide units which have been approved by governing authorities having jurisdiction.

C. Fire-Rated Assemblies: Where framing units are components of assemblies indicated for a fire-resistance rating, including those required for compliance with governing regulations, provide units which have been approved by governing authorities having jurisdiction.

D. Pre-Installation Conference: Prior to start of installation of metal framing systems, meet at project site with installers of other work including door and window frames and mechanical and electrical work. Review areas of potential interference and conflicts, and coordinate layout and support provisions for interfacing work.

1.5 SUBMITTALS:

A. Product Data: Provide data on standard framing members; describe materials and finish, and product criteria.

B. Product Data: Provide manufacturer’s data on factory-made framing connectors, showing compliance with requirements.

1.6 DELIVERY AND STORAGE:

A. Protect metal framing units from rusting and damage. Deliver to project site in manufacturer's unopened containers or bundles, fully identified with name, brand, type and grade. Store off ground in a dry ventilated space or protect with suitable waterproof coverings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Metal Framing, Connectors, and Accessories:

Alabama Metal Industries Corp.
Dale Industries, Inc.
Dietrich Industries, Inc.
Marino Industries, Inc.
Superior Steel Studs, Inc.
USG Industries
United States Steel
Clark Steel Framing Systems
The Steel Network, Inc.

1. Substitutions: See Section 016000 – Product Requirements

2.2 FRAMING MATERIALS

A. System Components: With each type of metal framing required, provide manufacturer’s standard steel runners (tracks), blocking, lintels, clip angles, shoes, reinforcements, fasteners,

and accessories as recommended by manufacturer for applications indicated, as needed to provide a complete metal framing system.

B. Studs, Track, Joists and Rafters: ASTM C955; studs formed to channel, “C”, or “Sigma” shape with punched web; U-shaped track in matching nominal width.

1. Type, gage, width and depth of the exterior metal stud walls are shown on the structural drawings. The depth of the non-load bearing walls and framing are shown on the architectural drawings. The non-load bearing framing shall have a flange width of 1.625” and a minimum 22 gauge thickness. The exterior metal stud furring for non-loading bearing architectural features shall have a depth of 3.625”, flange width of 1.625” and a minimum 18 gauge thickness.

    a. For 16-gage and heavier units, fabricate metal framing components of structural quality steel sheet with a minimum yield point of 50,000 psi.
    b. For 18-gage and lighter units, fabricate metal framing components of commercial quality steel sheet with a minimum yield point of 33,000 psi.
    c. Galvanized in accordance with ASTM A 653 G60 coating.

C. Framing Connectors: Factory-made formed steel sheet, ASTM A 563 Grade 50, with G60 hot dipped galvanized coating and factory punched holes.

    a. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, screws and anti-friction bushings, while maintaining structural performance of framing. Provide movement connections as indicated on below:

        1) Where the top of the stud wall terminates below the roof joists, connect the studs to the structure in manner allowing vertical movement of the roof joists without affecting the studs; allow for a minimum movement of ¾ inch.

        2) Provide top track preassembled with connection devices spaced to fit stud spacing indicated on drawings.

        3) Acceptable Products: VertiClip® or DriftClip™ manufactured by the Steel Network Inc.

    b. Provide non-movement connections for tie-down to foundation, joist hangers, gusset plates, and stiffeners.

2.3 ACCESSORIES

A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.

B. Plates, Gussets, Clips: Formed Sheet Steel, thickness determined for conditions encountered; finish to match framing components.

C. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

D. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type 1, Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.4 FASTENERS

A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A 153.

B. Anchorage Devices: Powder actuated.

C. Welding: In conformance with AWS D1.1.

2.5 FABRICATION:

A. General: Framing components may be prefabricated into panels prior to erection. Fabricate panels plumb, square, true to line and braced against racking with joints welded. Perform lifting of prefabricated panels in a manner to prevent damage or distortion.

B. Fastenings: Attach similar components by welding. Attach dissimilar components by welding, bolting, or screw fasteners, as standard with manufacturer.

C. Wire tying of framing components is not permitted.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Manufacturer's Instructions: Install metal framing systems in accordance with manufacturer's printed or written instructions and recommendations, unless otherwise indicated.

B. Runner Tracks: Install continuous tracks sized to match studs. Align tracks accurately to layout at base and tops at studs. Secure bottom tracks to slab as indicated on the drawings. Secure top of track as indicated on the drawings and do not exceed 24” o.c. spacing for powder-driven fasteners or 16” o.c. for other types of attachments. Provide fasteners at corners and ends of tracks.

C. Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar requirements.

D. Where stud system abuts structural columns or walls, including masonry walls, anchor ends of stiffeners to supporting structure.

E. Install supplementary framing, blocking and bracing in metal framing system wherever walls or partitions are indicated to support fixtures, equipment, services, casework, heavy trim and furnishings, and similar work requiring attachment to the wall or partition. Where type of supplementary support is not otherwise indicated, comply with stud manufacturer's recommendations and industry standards in each case, considering weight or loading resulting from item supported.

F. Installation of Wall Stud System: Secure studs to top and bottom runner tracks by either welding or screw fastening at both inside and outside flanges.

1. Frame wall openings larger than 2'-0" square with double stud at each jamb of frame except where more than 2 are either shown or indicated in manufacturer's instructions. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with stud shoes or by welding, and space jack studs same as full-height studs of wall. Secure stud system wall opening frame in manner indicated.

2. Frame both sides of expansion and control joints, with separate studs; do not bridge the joint with components of stud system.

3. Install horizontal stiffeners in stud system, spaced (vertical distance) at not more than 4'-0" o.c. Weld at each intersection.

G. Field Painting: Touch-up shop-applied protective coatings damaged during handling and installation. Use compatible primer for prime coated surfaces; use galvanizing repair paint for galvanized surfaces.

END OF SECTION

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SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Carpentry work not specified as part of other sections and which generally is not exposed, except as otherwise indicated.
   2. Rough carpentry for:
      a. Miscellaneous lumber for attachment and support of other work.

1.2 QUALITY ASSURANCE

A. Lumber: Comply with NIST PS 20 and approved grading rules and inspection agencies.

B. Grade Stamps for Concealed Lumber: Each piece of lumber, applied by inspection agency and showing compliance with each specified requirement.

1.3 DELIVERY STORAGE AND HANDLING

A. Protect wood products against moisture and dimensional changes. Support stacks at several uniformly spaced points to prevent deformation. Store stacks raised above ground. Cover to protect from rain and snow. Select and arrange cover to allow air circulation under and all around stacks to prevent condensation. Maintain and restore displaced coverings. Remove from the site any wood products that have been subjected to moisture or that do not comply with the specified moisture requirements.

PART 2 - PRODUCTS

2.1 DIMENSION LUMBER

A. Size: Provide nominal sizes indicated, complying with NIST PS 20 except where actual sizes are specifically required.

B. Miscellaneous Lumber: Provide dimension lumber and boards necessary for the support of work specified in other sections, whether or not specifically indicated, and including but not limited to blocking, nailers, etc.
   1. Moisture content: 19 percent maximum (S-dry) lumber; 18 percent maximum plywood.
   2. Lumber: S4S, No. 2 or standard grade.
   3. Boards: Construction, 2 common, or No. 2 grade.

2.2 MISCELLANEOUS MATERIALS

A. Fasteners: Provide as required by applicable codes and as otherwise indicated.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

A. Arrange work to use full length pieces except where lengths would exceed commercially

available lengths. Discard pieces with defects that would lower the required strength or appearance of the work.

B. Cut and fit members accurately. Install plumb and true to line and level.

C. Fasten carpentry in accordance with applicable codes and recognized standards.

D. Where exposed, countersink nails and fill flush with suitable wood filler.

E. Use fasteners of appropriate type and length. Predrill members when necessary to avoid splitting wood.

3.2 MISCELLANEOUS CARPENTRY

A. Provide miscellaneous blocking, nailers, grounds, and framing as shown and as required for support of facing materials, fixtures, specialty items, and trim. Cut and shape to the required size. Provide in locations required by other work.

B. Use countersunk fasteners appropriate to applied loading.

END OF SECTION

SECTION 064000 - ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.2 REFERENCES:

A. Architectural Woodwork Quality Standards; Architectural Woodwork Institute; 1997.

1.3 DESCRIPTION OF WORK:

A. Definition: Finish carpentry includes carpentry work which is exposed to view, is non-structural, and which is not specified as part of other sections. Types of finish carpentry work is in this section include:
   1. Interior architectural woodwork.
   2. Plastic laminate covered architectural counter tops.
   3. Plastic laminate covered architectural cabinets and drawers.
   4. Cabinet hardware.
      a. Rough carpentry is specified in another section within Division 6.
      b. Wood Doors are specified in sections within Division 8.
      c. Painting for field finishing of interior architectural woodwork and shop finishing of cabinetry is specified in another section within Division 9

.

1.4 QUALITY ASSURANCE:

A Quality of Materials and Workmanship: Provide woodwork that complies with requirements of Architectural Woodwork Quality Standards, published by Architectural Woodwork Institute (AWI) (hereinafter referred to woodworking standard).

B Where Contract Documents indicate deviations from the woodworking standard, the Contract Documents shall govern.

C Factory-mark each piece of lumber and plywood with type, grade, mill and grading agency identification; except omit marking from surfaces to receive transparent finish, and submit mill certificate that material has been inspected and graded in accordance with requirements if it cannot be marked on a concealed surface.

1 Fabricator Qualifications: Firm experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units without delaying the Work.

2 Single-Source Responsibility for Fabrication and Installation: Arrange for installation of architectural woodwork by engaging a qualified woodworking firm or individuals to assume undivided responsibility for fabricating, finishing, and installing woodwork specified in this Section, and that can demonstrate successful experience in installing finish carpentry items similar in type and quality of those required for this Project.

3 Source of Cabinet Accessories: Provide accessories obtained from one single source for each type of hardware and accessories so that finishes match.

4 Fire-retardant Wood: Comply with AWPA standards with a flame spread rating of 25 or less. Provide UL label for each piece of lumber or plywood.

1.5 SUBMITTALS:

A Product data for each type of product and process specified and incorporated into items of architectural during fabrication, finishing, and installation.

B Shop drawings showing locations of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
1 Show details full size.
2 Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcing specified in other Sections.
3 Show location and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, and other item installed in architectural woodwork.

C Samples for Initial Selection: Manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available for each type of material indicated:
1 Plastic Laminates
2 Sealant Color
3 Lumber and panel products for transparent finish, for each species and cut, finished on one side and one edge.
4 Lumber and panel products with shop-applied transparent finish, for each finish sheen and color, with exposed surface finished.

D Work shall meet AWI Quality Certification Program standards.

E Indication of materials, profiles, project specific assembly methods, accessories, hardware and local code compliance.

F Provide samples of hardware, including pulls, slides, hinges etc.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING:

A Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B Do not deliver woodwork until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified for installation areas.

1.7 PROJECT CONDITIONS:

A Conditioning: Installer shall advise Contractor of temperature and humidity requirements for finish carpentry installation areas. Do not install finish carpentry until wet-work is completed, and required temperature and relative humidity have been stabilized and will be maintained in installation areas.

B Maintain temperature and humidity in installation areas as required to maintain moisture content of installed finish carpentry within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. The fabricator of woodwork shall determine optimum moisture content and required temperature and humidity conditions.

C Field Measurements: Where woodwork is indicated to be fitted to other construction,

check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1 Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings.

2 Where field measurements cannot be made without delaying the Work, guarantee dimensions for accurate fit and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site and coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions.

1.8 COORDINATION:

A Coordinate sizes and locations of framing, blocking, furring, reinforcements, anchors, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

B Coordinate installation of woodwork with other work to avoid damage.

C Hardware Coordination: Distribute copies of approved hardware schedule for cabinet hardware to fabricator of architectural woodwork; coordinate cabinet shop drawings and fabrication with hardware requirements.

PART 2 - PRODUCTS

2.1 WOOD PRODUCT QUALITY STANDARDS:

A Softwood Lumber Standards: Comply with PS 20 and with applicable grading rules of the respective grading and inspecting agency for the species and product indicated.

B Plywood Standard: Comply with PS 1.

C Hardwood Lumber Standard: Comply with National Hardwood Lumber Association (NHLA) rules.

D Hardwood Plywood Standard: Comply with PS 51.

E Woodworking Standard: Where indicated for a specific product comply with specified provision of the following:

1 Architectural Woodwork Institute (AWI) "Quality Standards".
   a. Architectural Cabinets, Wood Cabinets: Comply with AWI Section 400 and its Division 400A (custom grade)
   b. Architectural Cabinet Tops: Comply with AWI Section 400 and its Division 400C (custom grade)

F Glued-Up Lumber Standard: Comply with PS 56.

2.2 MATERIALS:

A General: Provide materials that comply with requirements of AWI quality standard for each type of woodwork and quality grade indicated and, where the following products are part in interior woodwork, with requirements of referenced product standards that apply to product characteristics:

1 Hardboard: AHA A135.4

2 Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1 made with

adhesive containing no urea formaldehyde.

3 Medium Density Fiberboard: ANSI A208.1, Grade M2, or better; Exterior Glue when used in counters with sinks. Made with binder containing no urea formaldehyde.

B High-Pressure Decorative Plastic Laminate: NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.

1 Colors to be selected by architect from manufacturer's standard color range.

2 Approved Manufacturers: Provide high-pressure laminates by each of the following as called for:

a. Laminart
b. Formica Corporation
c. Wilsonart International
d. Nevamar Corporation

C Thermoset Decorative Overlay: Particleboard complying with ANSI A208.1, Grade M-2, with surface of thermally fused, melamine-impregnated decorative paper bonded to substrate. Color: All cabinet interiors: Off-white.

D Adhesive for bonding Plastic Laminate: Unpigmented waterbase contact cement.

2.3 CABINET HARDWARE AND ACCESSORIES:

A General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 8 Section Door Hardware. Where manufacturer or product names are indicated, other products will be considered for substitution. Architectural woodwork supplier shall review each hardware application as it applies to this project and shall make recommendations relative to additional hardware and revisions to hardware as is necessary for a complete and accurate hardware installation. Additional minor hardware and revisions to listed hardware types shall be included in base bid with no additional cost being considered.

B Hardware Standard: Comply with BHMA A156.9 for items indicated by referencing BHMA numbers or items referenced to this standard.

C Frameless Concealed Hinges: Comply with BHMA A156.9, B01602, 100 degrees of opening.

D Pulls:

1 On cabinets and drawers: wire style, 4" (min) center to center spacing on screws, back mounted, complying with the Americans with Disabilities Act (ADA);

2 Finish: Brushed Nickel

3 Provide Berenson Advantage Wire Pull Mod # 6246-2BPN-P or equal.

E Catches: Heavy duty magnetic catches, 5-pound pull, BHMA A156.9, B03141

F Adjustable Shelf Standards and Supports: Injection molded transparent polycarbonate friction fit into cabinet end panels and vertical dividers, adjustable on 32mm centers. Each shelf support has 2 integral support pins, 5mm diameter, to interface pre-drilled holes, and to prevent accidental rotation of support. The support automatically adapts to 3/4-inch or 1-inch thick shelving and provides non-tip feature for shelving. Structural load to 1200 pounds (300 pounds per support) without failure. BHMA A156.9, B04071; with shelf rests, B04081

G Drawer Slides: Side-mounted, full-extension, zinc-plated steel drawer slides with steel ball bearings, BHMA A156.9, B05091. Positive stop both directions with self-closing

feature, and rated for the following load capacities:
1 Box Drawer Slides: 6” deep, 100 pounds
2 Box Drawer Slides: 6” deep, 200 pounds

H Hardware Quantities:
1 Hinges: Two per door up to 36 inches high; three per door over 48 inches high.
2 Pulls: One per door, drawer.
3 Catches: One per door where indicated.

M Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
1. Satin Stainless Steel: BHMA A 630.

2.4 INSTALLATION MATERIALS:

A Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15% moisture content.

B Screws: Select material, type, size, and finish required for each use. Comply with ASME B18.6.1 for applicable requirements. For finish work, use finishing screws designed for attaching to metal studs.

C Nails: Select material, type, size, and finish required for each use. Comply with FS FF-N-105 for applicable requirements.

D Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.5 FABRICATION, GENERAL:

A Interior Woodwork Grade: Provide indicated grade interior woodwork complying with the referenced quality standard: Custom.

B Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

C Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
1 Edges of Solid-Wood (Lumber) Members 1 inch or less nominal thickness: 1/16 inch
2 Edges of Rails and Similar Members more than 1 inch nominal thickness: 1/8 inch

D Complete fabrication, including assembly, and hardware application, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

E Shop cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand and smooth edges of cutouts to remove splinters and burrs.
1 Seal edges of openings in countertops with a coat of water-resistant varnish coating.

F Fabricate rigid cast plastic sheets in accordance with manufacturer's instructions; make hairline, rigid joints.

G Prepare for finishing in accordance with woodworking standard.

H Furnish and deliver to the building all hardware items not shop installed, complete with templates, keys, screws and hardware manufacturer's installation directions.

2.6 PLASTIC LAMINATE-CLAD CABINETS:

A Quality Standard: Comply with AWI Section 400 requirements for laminate cabinets.

B Grade: Custom

C AWI Type of Cabinet Construction: Flush overlay

D Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
1 Horizontal Surfaces: GP-50
2 Vertical Surfaces: GP-28
3 Edges: GP-28

E Materials for Semi-exposed Surfaces: Provide surface materials indicated below:
1 Surfaces other than drawer bodies: High-pressure decorative laminate, Grade CL-20
2 Drawer sides and backs: Thermoset decorative overlay
3 Drawer Bottoms: Hardwood plywood

F Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following basis of design product selections:
1 Provide Architect's selections from laminate manufacturer's standard range of colors and finishes in the following categories: solids, wood grains, and patterns.

2.7 PLASTIC LAMINATE-CLAD COUNTERTOPS:

A Quality Standard: Comply with AWI Section 400 requirements for high-pressure decorative laminate countertops.

B Grade: Custom

C High-Pressure Decorative Laminate Grade: GP-50

D Colors, Patterns and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following basis of design product selections:
1 Provide Architect's selections from laminate manufacturer's full range of colors and finishes in the following categories: solids, wood grains, stone finishes and patterns.

E Edge Treatment: Bullnose

F Core Material: Plywood

G Core Material at Sinks: Exterior-grade plywood.

PART 3 - EXECUTION

3.1 PREPARATION:

A Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.

B Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

C Backprime lumber for painted finish exposed on the exterior or, where indicated, to moisture and high relative humidities on the interior. Comply with requirements of section on painting within Division 9 for primers and their application.

3.2 INSTALLATION:

A Quality Standard: Install woodwork to comply with AWI Section 1700 for the same grade specified in Part 2 of this Section for type of woodwork involved.

B Install woodwork plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 96" for plumb and level countertops; and with 1/16" maximum offset in flush adjoining 1/8" maximum offsets in revealed adjoining surfaces.

C Edges of all plywood shall be edgebanded with 1/4" thick, full width edgeband of same wood species as plywood, glued and nailed. Dovetail to provide mitered corner at non-shelving areas.

D Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

E Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to the greatest extent possible. Do not use pieces less than 36 inches long, except where necessary. Stagger joints in adjacent and related members. Cope at returns, miter at corners, to produce tight fitting joints with full surface contact throughout length of joint. Use scarf joints for end-to-end joints. Fill gaps, if any, between top and base and wall with plastic wood filler, sand smooth, and finish same as wood base, if finished. Match color and grain pattern across joints.
1 Install trim after drywall joint finishing operations are completed.

F Drill pilot holes in hardwood prior to nailing or fastening to prevent splitting. Fasten to prevent movements or warping. Countersink nail heads on exposed carpentry work and fill holes.

G Anchor woodwork to anchorage devices or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nail for exposed nailings, countersunk and filled flush with finished surface, and matching final finish where transparent is indicated. Conceal all shims.

H Plastic Laminate shall be clad to all indicated surfaces in accordance with manufacturer’s directions and industry standards.
1 Cabinets: Install without distortion so that doors and drawers fit opening properly and are accurately aligned. Adjust hardware to center doors and drawers in openings

and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16" o.c. with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.

2 Complete finishing as per Specification Section 099100 – Interior, Exterior and High-Performance Paints and Coatings, prior to delivery to project site.

3.3 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION:

A Repair damaged and defective architectural woodwork wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.

B Clean architectural woodwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.

C Clean, lubricate, and adjust hardware for smooth operation.

D Refer to Division 9 sections for final finishing of installed finish carpentry work.

E Protection: Installer of architectural woodwork shall advise Contractor of final protection and maintained conditions necessary to ensure that work will be without damage or deterioration at time of acceptance.

END OF SECTION

SECTION 072100 - BUILDING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Glass fiber blanket/batt – walls
2. Glass fiber blanket/batt – above ceiling

1.2 DEFINITIONS

A. Thermal Resistance (R-value): The temperature difference in degrees F between the two surfaces of a material of given thickness, required to make 1 Btu of energy flow through 1 square foot of the material in 1 hour.

1.3 SUBMITTALS

A. Product Data: Submit for each product specified in this section.

B. Installation Instructions for each product specified in this section.

C. Installer's Qualifications Statement: Submit statement indicating compliance with qualifications requirements specified under "Quality Assurance."

1.4 QUALITY ASSURANCE

A. Installer's Qualifications: Firm regularly engaged in installation of products specified in this section, with minimum 5 years' experience.

PART 2 - PRODUCTS

2.1 GLASS-FIBER BLANKET INSULATION:

A. Provide products complying with requirements of the contract documents and made by one of the following:
1. CertainTeed Corporation.
2. Manville Roofing Systems, a Division of Schuller International, Inc.
3. Owens-Corning Fiberglas Corporation.
4. Prior-approved Equal.

B. Provide manufacturer's standard preformed insulation units, sized for proper fit in indicated applications.

C. R-values or thicknesses of insulation are indicated on drawings.

D. Glass Fiber Insulation-Blanket/Batt (Admin area roof and walls):
1. Unfaced blanket/batt: Type I (ASTM C 665), passing ASTM E 136 combustion test requirements.
2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.

E. Batts and Blankets:
1. Type: Unfaced glass fiber insulation complying with ASTM C 665, Type I and ASTM E136. Batt Insulation.
   a. Manufacturer: Ownes Corning (Basis of Design)
   b. Others, with prior approval of Architect, prior to bid, in accordance with Division 01 requirements.
2. Size: 3 ½", 6": or as required to fill entire stud cavity.
   10" batts above ceiling
3. Surface Burning Characteristics:
   a. Maximum flame spread: 10
   b. Maximum smoke developed: 10
   When tested in accordance with ASTM E 84.
4. Combustion Characteristics: Passes ASTM E 136
5. Fire Resistance Ratings: Passes ASTM E 119 as part of a complete fire tested wall assembly.
6. Dimensional Stability: Linear Shrinkage less than 0.1%

2.2 ACCESSORIES

A. Provide accessories as necessary to properly install specified products.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that conditions conform to requirements of contract documents.

B. Verify that related work to be performed within indicated spaces before installation of insulation has been completed.

C. Verify that substrates are in satisfactory condition to receive insulation.
1. Masonry substrates: Verify that masonry materials have dried sufficiently and have attained optimum moisture content.

D. Do not proceed until unsatisfactory conditions have been corrected. Commencement of installation indicates acceptance of conditions.

3.2 PREPARATION

A. Clean substrates of any substances which might damage materials to be installed.

3.3 INSTALLATION

A. Do not install insulation which is damaged, wet, soiled, or which has been covered at any time with ice or snow.

B. Comply with insulation manufacturer's recommendations and installation sequence. Provide permanent placement and support of insulation.

C. Install materials in a manner which will maximize continuity of thermal envelope. Use a single layer of insulation wherever possible to achieve indicated requirements, unless otherwise indicated.

D. Insulation Blankets/Batts:

1. Install properly sized blankets/batts conforming to indicated spacings of framing members.

2. Cut insulation neatly as required to fit tightly around obstructions.

3. Application: Metal-framed construction:
   Friction-fit insulation between studs after cover material has been installed on one side of the cavity. For Unfaced insulation, and in applications without a cover material or where the stud depth is larger than the insulation thickness, use wire or metal straps to hold insulation in place.
   a. Provide supplementary support to hold the product in place until finish surface is applied when insulation is installed in heights over 8 feet.

3.4 PROTECTION

A. Protect installed materials from damage until permanent concealing work is completed.

B. Where concealing work is not performed immediately after installation work of this section is completed, erect suitable temporary coverings or enclosures to prevent damage.

END OF SECTION

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SECTION 079200 - JOINT SEALERS

PART 1: GENERAL

1.1 SUMMARY

A. Section Includes:
1. The sealing of joints indicated on schedule at the end of this section.
2. The sealing of joints in floors, and pedestrian paving.
3. The sealing of penetrations through exterior walls, and roofs by pipes, ducts and conduit.
4. The sealing of other joints indicated on drawings.

B. Joints of a nature similar to that of joints indicated on the schedule shall be sealed with same sealer, whether indicated on drawings to be sealed or not.

1.2 REFERENCES

A. ASTM C834 – Latex Sealing Compounds.

B. ASTM C919 – Practice for Use of Sealants in Acoustical Applications.

C. ASTM C920 – Elastomeric Joint Sealants.

D. ASTM C1193 – Guide for Use of Joint Sealants.

E. ASTM D1056 – Flexible Cellular Materials – Sponge or Expanded Rubber.

F. ASTM D1565 – Flexible Cellular Materials – Vinyl Chloride Polymers and Copolymers (Open-Cell Foam).

G. ASTM D1667 – Flexible Cellular Materials – Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).

H. ASTM D2628 – Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements.

1.3 DEFINITIONS

A. Substrates:
1. M-type substrates: Concrete, concrete masonry units, brick, mortar, natural stone. The term "masonry" means brick, stone, and concrete masonry work.
2. G-type substrates: Glass and transparent plastic glazing sheets.
3. A-type substrates: Metals, porcelain, glazed tile, and smooth plastics.
4. O-type substrates: Wood, unglazed tile; substrates not included under other categories.

1.4 SUBMITTALS

A. Product Data: Manufacturer's data on each joint sealer, with instructions for substrate preparation and installation.

B. Samples for Color Selection: Cured samples of actual products showing manufacturer's full range of colors. (Products exposed to view only.)

C. Samples for Color Verification: Cured samples of each color of each product used, prepared

to simulate actual joints minimum 3 inches long; use substrates similar in appearance to actual substrates. (Products exposed to view only.)

D. Substrate Test Report for Each Sealer.

E. Field Installation Test Reports.

F. Installer's Preconstruction Inspection Report: List all conditions detrimental to performance of joint sealer work.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:
1. Execution of at least 50 sealer installations of similar size and scope.
2. Similar installations completed within 5 years before start of this project.
3. Lead mechanic assigned from among those experienced on previous similar projects.

B. Substrate Tests: Have samples of actual substrate materials tested by manufacturer(s) of sealer products.
1. Test to determine what preparation procedures (if any) are necessary to make sealers adhere properly under environmental conditions that may occur during installation.
2. Test to determine compatibility with substrates, backers, and secondary seals, if any.
3. Use manufacturer's standard test methods.
4. Report the sealer manufacturer's recommendations for substrate preparation and sealer installation and identify specific primer(s) required.
5. The requirement for testing for this project will be waived if test reports based on previous testing of the products and substrates to be used are acceptable to the Architect.

C. Field Installation Tests: Before installation, test the adhesion of all sealers to actual substrates.
1. Seal at least 5-foot lengths of joints and cure properly. Try to pull sealer out of joint by hand, by method recommended by sealer manufacturer.
2. Select test joints representative of joints to be sealed by the product to be tested.
3. Perform tests for each type of sealer used on exterior.
4. Do tests in the presence of the Architect and the technical representative of sealer manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original containers or bundles with labels showing manufacturer, product name or designation, color, shelf life, and installation instructions.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install sealers if any of the following conditions exist:
1. Air or substrate temperature exceeds the range recommended by sealer manufacturer or is below 40 degrees F (4.4 degrees C).
2. Substrate is wet, damp, or covered with snow, ice, or frost.

B. Dimensional Limitations: Do not install sealers if joint dimensions are less than or greater than that recommended by sealer manufacturer; notify the Architect and get sealer manufacturer's recommendations for alternative procedures.

1.8 WARRANTY

A. Submit written warranty signed by Contractor and installer guaranteeing to correct failures in sealer work that occur within 5 years after substantial completion, without reducing or otherwise limiting any other rights to correction which the Owner may have under the Contract Documents. Failure is defined as failure to remain weathertight due to faulty materials or workmanship. Correction is limited to replacement of sealers.

PART 2: PRODUCTS

2.1 MATERIALS - GENERAL

A. General: Provide only products which are recommended and approved by their manufacturer for the specific use to which they are put and which comply with all requirements of the Contract Documents.
1. For each generic product, use only materials from one manufacturer.
2. Provide only materials which are compatible with each other and with joint substrates.
3. Colors of exposed sealers: As selected by the Architect from manufacturer's standard colors.

B. Manufacturers: Provide products complying with requirements of the Contract Documents and made by one of the manufacturers listed.
1. Silicone sealants:
   a. Dow Corning Corporation.
   b. Pecora Corporation.
   c. Tremco, Inc.
2. Butyl sealants:
   a. Pecora Corporation.
   b. Koch Protective Treatments, Inc.
   c. Tremco, Inc.
3. Acrylic-latex emulsion sealant:
   a. Bostik Inc.
   b. Pecora Corporation.
   c. Sonneborn Building Products Division/ChemRex, Inc.

2.2 ELASTOMERIC SEALANTS

A. Elastomeric Sealants - General: Chemically curing elastomeric sealants of types indicated, complying with ASTM C 920, including specific Type, Grade, Class, and Uses indicated, as well as all other requirements specified.
1. Where movement capability exceeding that measured by ASTM C 920 is specified, sealant shall withstand the total movement indicated while remaining in compliance with the other requirements specified, when tested in accord with ASTM C 719, with base joint width measured at the time of application.
2. For M-type substrates: Comply with requirements for Use M.
3. For G-type substrates: Comply with requirements for Use G.
4. For A-type substrates: Comply with requirements for Use A.
5. For O-type substrates: Comply with requirements for Use M (minimum) and Use O for the particular substrate.

B. High Movement Silicone Sealant: One- or two-part, non-acid-curing, Grade NS, Class 25, Use NT, plus movement capability of at least 50 percent in both extension and compression.

C. Mildew-Resistant Silicone Sealant: One-part, Type S, Grade NS, Class 25, Use NT,

formulated with fungicide, for interior use on nonporous substrates.

D. Silicone Sealant for Use T: One-part, non-acid curing, Type S, Grade NS, Class 25, Use T, Use M, plus movement capability of 50 percent in both extension and compression.

2.3 SOLVENT-RELEASE-CURING SEALANTS

A. Butyl Sealant: Nonsag, one part, solvent-release-curing; complying with FS A-A-272, Type III; nonstaining; paintable.

2.4 LATEX SEALANTS

A. Acrylic-Latex Emulsion Sealant: One-part, nonsag, mildew-resistant, paintable; complying with ASTM C 834.

2.5 SEALANT BACKERS

A. Backers - General: Nonstaining; recommended or approved by sealant manufacturer for specific use.

B. Backer Rods: Flexible, nonabsorbent, compressible polyurethane foam, either open-cell or non-gassing closed-cell, unless otherwise restricted by sealant manufacturer; preformed to appropriate size and shape.

C. Bond-Breaker Tape: Self-adhesive, polyethylene or other plastic tape, unless otherwise restricted by sealant manufacturer; suitable for preventing sealant adhesion.

2.6 MISCELLANEOUS MATERIALS

A. Primers: Use primers determined to be required by substrate tests.

B. Cleaners: As recommended by sealer manufacturer and not damaging to substrates.

C. Masking Tape: Nonabsorbent, nonstaining.

D. Tooling Agents: Approved by sealant manufacturer; nonstaining to sealant and substrate.

PART 3: EXECUTION

3.1 EXAMINATION

A. Examine joints for characteristics that may affect sealer performance, including configuration and dimensions.

B. Do not begin joint sealer work until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Cleaning: Just before starting sealer installation, clean out joints in accord with recommendations of sealer manufacturers and as follows:
1. Remove all material that could impair adhesion, including dust, dirt, coatings, paint, oil, and grease. Exception: Materials tested to show acceptable adhesion and compatibility.
2. Dry out damp and wet substrates thoroughly.
3. Clean M-type and O-type substrates by suitable mechanical or chemical methods.
4. Remove loose particles by vacuuming or by blowing with oil-free compressed air.

5. Concrete: Remove laitance and form-release coatings.
6. Clean A-type and G-type substrates by chemical or other methods which will not damage the substrate.
7. Use methods which will not leave residues that will impair adhesion.

B. Priming: Prime substrates as recommended by sealer manufacturer.

C. Masking Tape: Use masking tape to keep primers and sealers off of adjacent surfaces which would be damaged by contact or by cleanup. Remove tape as soon as practical.

D. Install fillers where needed to provide proper joint depth or support for sealant backers.

3.3 INSTALLATION

A. Comply with sealer manufacturers' installation instructions and recommendations, except where more restrictive requirements are specified.

B. Gunnable and Pourable Sealants: Comply with recommendations of ASTM C 1193.

C. Backers:
1. Install backers at depth required to result in shape and depth of installed sealant which allows the most joint movement without failure.
   a. Make backers continuous, without gaps, tears, or punctures.
   b. Do not stretch or twist backers.
2. Use bond-breaker tape where indicated and wherever it is necessary to keep sealant from adhering to back or third side of joint.
3. If backers become wet or damp before installation of sealant, dry out thoroughly before proceeding.
4. For Precast concrete at office building, equipment rooms, and occupiable spaces, repeat above process and provide (2), two continuous layers of sealant and backers from exterior side of panel consecutively. First layer to inside of building is to have (2) backer rods placed at about 25 percent of the panel depth behind the first .

D. Sealants: Use methods recommended by manufacturer; completely fill the joint; make full contact with bond surfaces; tool nonsag sealants to smooth surface eliminating air pockets.
1. Use concave joint shape shown in Figure 5A in ASTM C 1193, where not otherwise indicated.
2. Use flush joint shape shown in Figure 5B in ASTM C 1193, where indicated.

3.4 PROTECTION AND CLEANING

A. Clean surfaces adjacent to joints as work progresses and before sealants set using methods and materials approved by manufacturers of sealers and of surfaces to be cleaned.

B. Protect joint sealers from contamination and damage.

C. Remove and replace damaged sealers.

3.5 SCHEDULE OF JOINT SEALERS

A. Interior Joints for Which No Other Sealer Is Indicated:
1. Use one of the following sealants:

a. Acrylic-emulsion latex sealant.

2. Backer: Backer rod as recommended by mfg...
3. Joint shape: Concave joint configuration.

B. Joints around Pipes, Ducts, and Conduit Penetrating Exterior Walls and Roofs:
1. Use one of the following sealants:
a. Same as used for adjacent substrates.

END OF SECTION

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Standard and custom hollow metal doors and frames.
2. Steel sidelight, borrowed lite and transom frames.
3. Louvers installed in hollow metal doors.
4. Light frames and glazing installed in hollow metal doors.

B. Related Sections:

1. Division 01 Section "General Conditions”.
2. Division 06 Section “Rough Carpentry”.
3. Division 08 Section “Flush Wood Doors”.
4. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.
5. Division 08 Section "Glazing".
6. Division 08 Section "Door Hardware”.
7. Division 09 Sections "Painting".
8. Division 26 Section "Electrical”

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
8. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
9. SDI-113 Standard Practice for Determining the Steady-State Thermal Transmittance of Steel Door & Frame Assemblies.
10. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
11. ASTM C1199 - Standard Test Method for Measuring the Steady-State Thermal Transmittance of Fenestration Systems Using Hot Box Methods
12. ASTM E1423 - Practice for Determining Steady State Thermal Transmittance of Fenestration Systems.
13. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.
14. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
15. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
16. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.
17. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
18. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
19. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.

B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.

C. Shop Drawings: Include the following:

1. Elevations of each door design.
2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of anchorages, joints, field splices, and connections.
6. Details of accessories.
7. Details of moldings, removable stops, and glazing.
8. Details of conduit and preparations for power, signal, and control systems.

D. Samples for Verification:

1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.

B. Quality Standard: In addition to requirements specified, furnish SDI-Certified manufacturer products that comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".

C. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.

1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Building Information Modeling (BIM) Support: Utilize designated BIM software tools and obtain training needed to successfully participate in the Project BIM processes. All technical disciplines are responsible for the product data integration and data reliability of their Work into the coordinated BIM applications.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames from a SDI Certified manufacturer:

1. CECO Door Products (C).
2. Curries Company (CU).

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.3 HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.

1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
2. Frames: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
3. Manufacturers Basis of Design:

a. CECO Door Products (C) - BU DU Series.
b. CECO Door Products (C) - SU Series.

C. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.

D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.4 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
2. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.
3. Compression Type for Drywall Slip-on (Knock-Down) Frames: Adjustable compression anchors.

B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.

C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.5 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.6 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 thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Frames:

1. Shipping Limitations: 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.
2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.

a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.

3. 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.
4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
8. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
9. Jamb Anchors: Provide number and spacing of anchors as follows:

    a. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. 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 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
        5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
10. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
11. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance with UL 10C and applied to the frame under a 3rd party independent follow-up service procedure.

D. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."

1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

2.7 STEEL FINISHES

A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).

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

3.2 PREPARATION

A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.

C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."

D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

E. Verify tolerances against manufacturers installations instructions for tornado and hurricane storm shelter openings.

3.3 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.

1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.

C. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

3.4 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 and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

3.5 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

END OF SECTION 081113

SECTION 081416 – ARCHITECTURAL WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior flush wood doors.

B. Related Requirements:

1. Section 087100: Door hardware.
2. Section 099100: Interior Paints and Coatings
3. Section 081113: Hollow Metal Frames

1.2 COORDINATION

1.3 PREINSTALLATION MEETINGS

A. Conduct pre-installation meeting at Project site.

B. Discussion Topics:

1. Delivery, storage, and handling.
2. Coordination with hardware and access control installers.
3. Protection of installed doors.

1.4 ACTION SUBMITTALS

A. Product Data: Each type of door and finish.

1. Core and edge construction.
2. Finishes.

B. Shop Drawings and Schedule:

1. Use same unit designations used in Contract Documents.
2. Hardware and wiring chase preparation.
3. Indicate fire protection ratings for fire rated doors.

C. Samples for Selection:

1. Available standard **stain** colors and gloss options. Submit samples in the form of actual materials; printed brochures are not acceptable.

D. Samples for Verification:

1. Each required veneer species and factory finish; corner unit showing construction and finish minimum 8 by 10 inches (200 by 250 mm)

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Manufacturer warranties transferrable to Owner.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer wherever possible.

B. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, latest edition, "Industry Standard for Architectural Wood Flush Doors'.

C. Fire Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing at positive pressure according to NFPA 252 (neutral pressure at 40" above sill) or UL10C.

1. Oversize Fire Rated Door Assemblies: For units exceeding sizes of tested assemblies provide manufacturer's construction label, indicating compliance to independent 3rd party certification agency's procedure, except for size.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Package factory-finished doors individually in manufacturer's standard plastic bags, stretch wrap, or cardboard cartons.

B. Store doors inside building in clean, dry location.

C. Mark each door on top bottom rail with opening number used on Shop Drawings.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weather tight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity at occupancy levels during remainder of construction period.

1.9 MANUFACTURER WARRANTIES

A. Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Warping (bow, cup, or twist) more than 1/4 inch (6 mm) in 42-by-84-inch (1065-by-2130-mm) section.

b. Telegraphing of core construction in face veneers exceeding 0.01 inch in 3-inch (0.25 mm in 76-mm) span.

2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.

B. Warranty Periods:

1. Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 DOOR CONSTRUCTION – GENERAL

A. WDMA I.S.1-A Performance Grade: Extra Heavy Duty; Aesthetic Grade: Premium.

B. Fire Rated Doors: Provide construction and core as needed to provide fire ratings indicated.

1. Category A Edge Construction: Provide fire rated door edge construction with intumescent seals concealed by outer stile (Category A) at 45, 60, and 90 minute rated doors. Comply with specified requirements for exposed edges.

2. Pairs: Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.

a. Provide fire retardant stiles that are listed and labeled for applications indicated without formed steel edges and astragals.

2.2 MANUFACTURERS

A. Basis of Design: Products of Aspiro™ Series by Forte Openings are specified to indicate requirements for quality and appearance.

1. Website: https://www.forteopenings.com/series/aspiro-series

B. Subject to compliance with requirements, equivalent products of the following manufacturers will be acceptable.

1. VT Industries: Heritage Collection

2. Oshkosh Door

3. Request for substitutions, subject to approval of Architect and compliance with product requirements shall be submitted prior to bid in accordance with Division 01 requirements.

C. Source Control: Supply all wood doors from a single manufacturer.

2.3 MANUFACTURING STANDARDS

A. Interior Flush Wood Doors: Window & Door Manufacturers Association publication ANSI/WDMA I.S. 1A “Industry Standard for Interior Architectural Wood Flush Doors”.

2.4 INTERIOR SOLID CORE FLUSH WOOD DOORS FOR TRANSPARENT FINISH – SELECT WOOD VENEER

A. Basis of Design: Aspiro™ Series | Marshfield-Algoma™ by Forte Openings.

B. Solid Core Select Wood Veneer Flush Doors:

1. WDMA Quality grade: **Custom.**
2. WDMA Performance Level: **Heavy Duty.**
3. Faces:
    a. Veneer Grade: **A.**
    b. Veneer Species: **White Birch**
    c. Veneer Cut: **Rotary Cut**
    d. Veneer Leaf Match: **Book match.**
    e. Veneer Face Match/Assembly: **Running**
4. Pair Match: Provide for doors hung in same opening or separated only by mullions.
5. Vertical Edges: Structural composite lumber **Matching**/**Compatible Hardwood lumber that matches face veneer.**
6. Horizontal Edges: Structural composite lumber. Hardwood
7. Core: **Wood-based Particleboard (PC).**
8. Construction: Five Plies; stiles and rails bonded to core, and entire unit is abrasive planed before veneering.
9. Thickness: **1-3/4 inch.**

2.5 DOOR CORE MATERIALS

A. Particleboard: Wood-based particleboard; ANSI A208.4, Grade LD-2 as required to meet WDMA Performance Duty level specified without added blocking.

B. Structural Composite Lumber: Engineered hardwood composite wood products tested in accordance with WDMA I.S.1A, Testing Cellulosic Composite Materials for Use in Fenestration Products containing no added Urea Formaldehyde.

C. Fire Resistant Composite Core Doors:

1. Core: Non-combustible mineral product complying with requirements of referenced quality standard and testing and inspecting agency for fire protection rating indicated.

2. Blocking: As indicated under article “Blocking”.

D. Edge Construction: At hinge stiles, provide laminated edge construction with improved screw holding capability and split resistance. Comply with specified requirements for exposed edges.

2.6 BLOCKING

A. Non-Fire-Rated Doors:

1. Provide blocking as indicated below:

    a. HB1: 5 inch in doors indicated to have closers and overhead stops.

B. Fire Rated Doors:

1. Provide blocking as indicated below:

    a. HB1: 5 inch in doors indicated to have closers and overhead stops.

2.7 FABRICATION

A. Door Pairs:

1. Veneer Matching: **Running match.**

B. Factory Fitting: Fit to frame openings with clearances specified in WDMA I.S. 1A.

1. Undercut: Maximum 3/8 inch (10 mm) above thresholds.
2. Fire-Rated Doors: Comply with NFPA 80.

C. Factory Machining: Machine doors for hardware that is not surface applied.

1. Verify dimensions for hardware mortises in metal frames before machining.

D. Openings:

1. Cut and trim openings at factory.
2. Cut openings and install louvers at factory.

2.8 FINISHES

A. Finish Grade: Match grade of door.

B. Transparent: WDMA TR-8, UV-Cured Acrylated Polyester/Urethane.

1. Staining: **Standard color selected by Architect to match existing doors.**
2. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that door frames are plumb, square, and accurate size.

B. Inspect each door before installation for damage and defects per WDMA Section F-6.

3.2 INSTALLATION

A. Hardware installation is conforming to Section 087100 – Door Hardware.

B. Reference Standards:

1. Wood Doors: **WDMA I.S. 1A**

C. Align doors with uniform vertical and top edge clearance.

3.3 REPAIR

A. Repair of damage or defects is subject to Architect's acceptance, including removal of soiling. Provide new replacement doors for doors that cannot be satisfactorily repaired.

3.4 PROTECTING AND CLEANING

A. Protect installed doors from damage and soiling.

B. Clean doors shortly before inspection for Substantial Completion.

END OF SECTION

SECTION 084213 - ALUMINUM-FRAMED ENTRANCES (EXTERIOR)

PART 1 GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 Summary

A. This Section includes Kawneer Aluminum Entrances, glass and glazing, and door hardware and components. (Basis of Design)
   1. Types of Kawneer Aluminum Entrances include.
      a. 500 IR Swing Door; Wide stile, 5" (127 mm) vertical face dimension, 1-3/4" (44.5) mm depth, high traffic applications.

B. Related Sections.

C. Division 07 “Joint Sealants”.

D. Division 08 "Impact Resistant Glazed Aluminum Storefronts".

E. Division 08 "Door Hardware".

F. Division 08 "Glazing".

1.3 Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufactures Association (AAMA) – AAMA Glossary (AAMA AG).

1.4 Performance Requirements

A. General Performance: Aluminum-framed entrance system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.

B. Aluminum Framed Entrance Performance Requirements.
   1. Wind loads: Refer to drawings for component and cladding chart for wind load design. The design pressures are based on the IBC Building Code; 2018 Edition.
   2. Air Infiltration: For single acting offset pivot or butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 1.57 psf (75 Pa) for single doors and pairs of doors. A single 3'0" x 7'0" (915 mm x 2134 mm) entrance door and frame shall not exceed 1.0 cfm/ft^2. A pair of 6'0" x 7'0" (1830 mm x 2134 mm) entrance doors and frame shall not exceed 1.0 cfm/ft^2.
   3. Water Infiltration: For single acting butt hung or continuous gear hinge entrances in the closed and locked position, the test specimen shall be tested in accordance with TAS-202 of the Florida Building Code to a pressure differential of 10 psf (479 Pa) for single and pairs of doors. No water infiltration shall occur.
   4. Structural Performance: Corner strength shall be tested per the Kawneer dual moment load test procedure and certified by an independent testing laboratory to ensure weld compliance and corner integrity [Testing procedure and certified test results available upon request].
   5. Uniform Load: A static air design load of 85 psf (4070 Pa), (65 psf (3113 Pa) for laminated infill) shall be applied in the positive and negative direction in accordance with Florida Building Code TAS-202 and 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 shall occur.

6. Windborne-Debris-Impact Resistance Performance: Shall be tested in accordance with ASTM E1886, information in ASTM E1996, and TAS 201/203.
   a. Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1m) of grade.
   b. Small-Missile Impact: For aluminum-framed systems located above 30 feet (9.1 m) of grade.
7. Forced Entry: Tested in accordance with AAMA 1304.

C. Environmental Product Declarations (EPD): Shall have a Type III Product-Specific EPD.

1.5 Submittals

A. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.

B. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.

C. Samples for Verification: For aluminum-framed entrance doors and components required.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type of aluminum-framed entrance doors.

E. Fabrication Sample: Corner sample consisting of a door stile and rail, of full-size components and showing details of the following.
   1. Joinery, including welds.
   2. Glazing.

F. Other Action Submittals.
   1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.6 Quality Assurance

A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum-framed entrance doors and storefronts that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.

C. Source Limitations: Obtain aluminum-framed entrance doors through one source from a single manufacturer.

D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum-framed entrance doors and are based on the specific system indicated. Refer to Division 01 Section “Product Requirements”. Do not modify size and dimensional requirements.
   1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Build mockup for type(s) of swing entrance door(s) indicated, in location(s) shown on Drawings.

F. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section “Project Management and Coordination”.

1.7 Project Conditions

A. Field Measurements: Verify actual dimensions of aluminum-framed entrance door openings by field measurements before fabrication and indicate field measurements on Shop Drawings.

1.8 Warranty

A. Manufacturer’s Warranty: Submit, for Owner’s acceptance, manufacturer’s standard warranty.

1.9 Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.

PART 2 PRODUCTS

2.1 Manufacturers

A. Basis-of-Design Product.
   1. Kawneer Company Inc.
   2. The door stile and rail face dimensions of the 350IR/500IR entrance door will be as follows:

Door	**Vertical Stile**	**Top Rail**	**Bottom Rail**
500 IR	Match Existing Door Profiles		

   3. Major portions of the door members to be 0.125" (4) nominal in thickness and glazing molding to be 0.05" (1.5) thick.
   4. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.
   5. Structural silicone sealant to be Dow Corning 983, 995 or Tremco Proglaze SSG.

B. Subject to compliance with requirements, provide a comparable product by the following.
   1. Manufacturer: OldCastle; YKK

C. Substitutions: Refer to Substitutions Section for procedures and submission requirements.
   1. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
   2. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid aluminum-framed entrance door installation and construction delays.
   3. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
   4. Certificates: Submit certificate(s) certifying substitute manufacturer (1) attesting to adherence to specification requirements for storefront system performance criteria, and (2) has been engaged in the design, manufacturer and fabrication of aluminum-

framed entrance doors for a period of not less than ten (10) years. (Company Name)

5. Test Reports: Submit test reports verifying compliance with each test requirement required by the project.
6. Samples: Provide samples of typical product sections and finish samples in manufacturer's standard sizes.

D. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.2 Materials

A. Aluminum Extrusions: Alloy and temper recommended by aluminum-framed entrance door manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.090" wall thickness at any location for the main frame and door leaf members.

B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum-framed entrance door members, trim hardware, anchors, and other components.

C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

1. Weather Seals: Provide weather stripping with integral barrier fin or fins of semi-rigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 701/702.

2.3 Storefront Framing System

A. Storefront Entrance Framing.

1. IR501T.

B. Non-Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposes shall be stainless steel.

D. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action

E. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

F. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after aluminum-framed entrance door installation.

G. Accessory Materials: Framing to support sunshades.

2.4 Glazing

A. Glazing: As specified in Division 08 Section "Glazing".

B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

2.5 Hardware

A. General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum; designed to smoothly operate, tightly close, and securely lock aluminum-framed entrance doors.

B. Hardware: Refer to 087100 for Door Hardware specifications.

2.6 Fabrication

A. Fabricate aluminum-framed glass entrance doors in sizes indicated. Include a complete system for assembling components and anchoring doors.

B. Fabricate aluminum-framed glass doors that are reglazable without dismantling perimeter framing.
1. Door corner construction shall consist of mechanical clip fastening, SIGMA deep penetration plug welds and 1-1/8" (29 mm) long fillet welds inside and outside of all four corners. Glazing stops shall be hook-in type with EPDM glazing gaskets reinforced with non-stretchable cord.
2. Accurately fit and secure joints and corners. Make joints hairline in appearance.
3. Prepare components with internal reinforcement for door hardware.
4. Arrange fasteners and attachments to conceal from view.

C. Weather-stripping: Provide weather-stripping locked into extruded grooves in door panels or frames as indicated on manufacturer's drawings and details.

2.7 Aluminum Finishes

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Factory Finishing.
1. Kawneer Permanodic® AA-M10C21A41 / AA-M45C22A41, AAMA 611, Architectural Class I Clear Anodic Coating (Color #14 Clear)

PART 3 EXECUTION

3.1 Examination

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated installation.
1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets

at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (76.2 mm) of opening.

3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Installation

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum-framed entrance doors, hardware, accessories, and other components.

B. Install aluminum-framed entrance doors level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

C. Set sill threshold in bed of sealant, as indicated, for weather tight construction.

D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 Field Quality Control

A. Manufacturer's Field Services: Upon Owner’s written request, provide periodic site visit by manufacturer’s field service representative.

3.4 Adjusting, Cleaning, and Protection

A. Clean aluminum surfaces immediately after installing aluminum-framed entrance doors. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION

SECTION 084300 – IMPACT-RESISTANT ALUMINUM-FRAMED STOREFRONTS (EXTERIOR)

PART 1 GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 Summary

A. Section Includes: Kawneer Architectural Aluminum Storefront Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.
   1. Types of Kawneer Aluminum Storefront Systems include:
      a. IR 501T Framing – Impact Glazing

B. Related Sections:
   1. Division 07 “Joint Sealants”
   2. Division 08 “Impact Resistant Glazed Aluminum Entrances”
   3. Division 08 “Glazing”

1.3 Definitions

A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

1.4 Performance Requirements

A. Storefront System Performance Requirements:
   1. Wind loads: Refer to structural drawings for wind load design. The design pressures are based on the IBC Building Code; 2018 Edition.
   2. Air Leakage: The test specimen shall be tested in accordance with ASTM E 283. Air Leakage rate shall not exceed 0.06 cfm/ft2 (0.3 l/s · m2) at a static air pressure differential of 6.2 psf (300 Pa) with interior seal, or, rate shall not exceed 0.06 cfm/ft2 (0.3 l/s · m2) at a static air pressure differential of 1.6 psf (75 Pa) without interior seal.
   3. Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 15 psf (720 Pa) as defined in AAMA 501.
   4. Uniform Load: A static air design load of 30 psf (1436 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 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 0.2% of their clear spans shall occur.
   5. Energy Efficiency:
      a. Thermal Transmittance (U-Factor): When tested to AAMA specification 507 or NFRC100 the thermal transmittance (U-Factor) shall not be more than:
         IR 501T:
         1) (With 2-Piece Mullion) Provide aluminum windows simulated for thermal performance according to AAMA 507 and NFRC 100 with a thermal transmittance (U-Factor) of 0.27 to 0.57 BTU/hr/sf/°F. (Based on center of glass U-Factor range 0.10 to 0.48).
         2) (With 3-Piece Mullion) Provide aluminum windows simulated for thermal performance according to AAMA 507 and NFRC 100 with a thermal transmittance (U-Factor) of 0.24 to 0.55 BTU/hr/sf/°F. (Based on center of glass U-Factor range 0.10 to 0.48).
      b. Thermal Transmittance (U-Factor): When tested to AAMA Specification 1503,

AAMA Specification 507 or NFRC 100 the thermal transmittance (U-Factor) shall not be more than;

IR 501T:

a. 1 5/16"" insulating glass:

6. Windborne-Debris-Impact Resistance Performance: Shall be tested in accordance with ASTM E 1886, information in ASTM E 1996 and TAS 201/203.
   a. Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1 m) of grade.
   b. Small-Missile Impact: For aluminum-framed systems located above 30 feet (9.1 m) of grade.
   c. Wind loads: Refer to structural drawings' component and cladding chart for wind load design. The design pressures are based on the IBC Building Code; 2018 Edition.

B. Environmental Product Declaration (EPD): Shall have a Type III Product-Specific EPD created from a Product Category Rule.

1.5 Submittals

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum-framed storefront system indicated.

B. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.

C. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.

D. Samples for Verification: For aluminum-framed storefront system and components required.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type, of aluminum-framed storefront.

F. Fabrication Sample: Of each vertical-to-horizontal intersection of aluminum-framed systems, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:
   1. Joinery, including concealed welds.
   2. Anchorage.
   3. Expansion provisions.
   4. Glazing.
   5. Flashing and drainage.

G. Other Action Submittals:
   1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.6 Quality Assurance

A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications: A manufacturer capable of providing aluminum-framed storefront system that meet or exceed performance requirements indicated and of

documenting this performance by inclusion of test reports, and calculations.

C. Source Limitations: Obtain aluminum-framed storefront system through one source from a single manufacturer.

D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum-framed storefront system and are based on the specific system indicated. Refer to Division 01 Section “Product Requirements”. Do not modify size and dimensional requirements.

E. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

F. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

G. Build mockup for type(s) of storefront elevation(s) indicated, in location(s) shown on Drawings.

H. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section “Project Management and Coordination”.

1.7 Project Conditions

A. Field Measurements: Verify actual dimensions of aluminum-framed storefront openings by field measurements before fabrication and indicate field measurements on Shop Drawings.

1.8 Warranty

A. Manufacturer’s Warranty: Submit, for Owner’s acceptance, manufacturer’s standard warranty.
1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.

PART 2 PRODUCTS

2.1 Manufacturers

A. Basis-of-Design Product:
1. Kawneer Company Inc.
2. IR 501T Framing – Impact Glazing
3. System Dimensions: 2-3/4" x 5" (69.8 mm x 127 mm) and 5” x 5” (base)
4. Glass: Center Plane

B. Subject to compliance with requirements, provide a comparable product by the following:
Manufacturers: YKK AP America; Oldcastle Infrastructure

C. Substitutions: Refer to Substitutions Section for procedures and submission requirements.
1. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
2. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
3. Certificates: Submit certificate(s) certifying substitute manufacturer (1) attesting to adherence to specification requirements for storefront system performance criteria, and (2) has been engaged in the design, manufacturer and fabrication of aluminum

storefront for a period of not less than ten (10) years. (Company Name)

4. Test Reports: Submit test reports verifying compliance with each test requirement required by the project.
5. Samples: Provide samples of typical product sections and finish samples in manufacturer's standard sizes.

2.2 Materials

A. Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6 alloy and temper.

B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum window members, trim hardware, anchors, and other components.

C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

E. Sealant: For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

F. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

2.3 Storefront Framing System

A. Thermal Barrier:
1. IR 501T - Kawneer SINGLE IsoLock™ Thermal Break with one (1) 1/4" (6.4 mm) separations consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections.
   a. Thermal Break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.

B. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposes shall be stainless steel.

C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

D. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

E. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

2.4 Glazing Systems

A. Glazing: As specified in Division 08 Section “Glazing”.

B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

E. Glazing Sealants: For structural-sealant-glazed systems, as recommended by manufacturer for joint type, and as follows:
1. Structural Sealant: ASTM C 1184, single-component neutral-curing silicone formulation that is compatible with system components with which it comes in contact, specifically formulated and tested for use as structural sealant and approved by a structural-sealant manufacturer for use in aluminum-framed systems indicated.
   a. Color: Black
2. Weatherseal Sealant: ASTM C 920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O; single-component neutral-curing formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and aluminum-framed-system manufacturers for this use.
3. Color: Matching structural sealant.

2.5 Entrance Door Systems

A. Entrance Doors: As specified in Division 08 Section “Impact Resistant Glazed Aluminum Entrances”.

B. Entrance Door Hardware: As specified in Division 08 Section “Door Hardware”.

2.6 Accessory Materials

A. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

B. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 07 Section “Joint Sealants”.

C. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30 mil (0.762 mm) thickness per coat.

2.7 Fabrication

A. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fit joints; make joints flush, hairline and weatherproof.
3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Provisions for field replacement of glazing.

7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

B. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

C. Storefront Framing: Fabricate components for assembly using manufacturer's standard installation instructions.

D. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.8 Aluminum Finishes

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Factory Finishing:
1. Kawneer Permanodic™ AA-M10C21A41 / AA-M45C22A41, AAMA 611, Architectural Class I Clear Anodic Coating.

PART 3 EXECUTION

3.1 Examination

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight sliding door installation.
1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (76 mm) of opening.
3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Installation

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum framed storefront system, accessories, and other components.

B. Install aluminum-framed storefront system level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

C. Set sill members in bed of sealant or with gaskets, as indicated, for weather tight construction.

D. Install aluminum-framed storefront system and components to drain condensation, water penetrating joints, and moisture migrating within aluminum-framed storefront system to the exterior.

E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 Field Quality Control

A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.

1. Testing: Testing shall be performed by a qualified independent testing agency. Refer to Testing Section for payment of testing and testing requirements. Testing Standard per AAMA 503, including reference to ASTM E 783 for Air Infiltration Test and ASTM E 1105 Water Infiltration Test.
    a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft^2, whichever is greater.
    b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.2 psf (300 Pa).

B. Manufacturer's Field Services: Upon Owner’s written request, provide periodic site visit by manufacturer’s field service representative.

3.4 Adjusting, Cleaning, and Protection

A. Clean aluminum surfaces immediately after installing aluminum-framed storefronts. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION

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SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 01 Section "General Conditions”.
2. Division 06 Section “Rough Carpentry”.
3. Division 08 Section “Hollow Metal Doors and Frames”.
4. Division 08 Section “Flush Wood Doors”.
5. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.
6. Division 26 Section "Electrical”

D. Codes and References: Comply with the version adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.

4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

D. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.4 CLOSEOUT SUBMITTALS

A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

1.5 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.6 DELIVERY, STORAGE AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.7 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.8 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Hardware shall not have any visible manufacturer names on exposed materials, except cylinders, when the door is in a closed position.

2.2 BUTT HINGES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

a. Two Hinges: For doors with heights up to 60 inches.
b. Three Hinges: For doors with heights 61 to 90 inches.
c. Four Hinges: For doors with heights 91 to 120 inches.
d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.

5. Manufacturers:

a. McKinney (MK) - TA/T4A Series, 5-knuckle.

2.3 CONTINUOUS HINGES

A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Where specified, provide modular continuous geared hinges that ship in two or three pieces and form a single continuous hinge upon installation.
2. Manufacturers:.

a. Pemko (PE).

2.4 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

1. Manufacturers:

a. Match Existing, Field Verify.

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:

1. Threaded mortise cylinders with rings and cams to suit hardware application.
2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
4. Tubular deadlocks and other auxiliary locks.
5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
6. Keyway: Match Facility Standard.

C. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. New System: Key locks to a new key system as directed by the Owner.

D. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).

E. Construction Keying: Provide construction master keyed cylinders.

F. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.5 CYLINDRICAL LOCKS AND LATCHING DEVICES

A. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed cylindrical locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

    a. ASSA ABLOY ACCENTRA (YA) - 5400LN Series.

2.6 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.7 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

a. ASSA ABLOY ACCENTRA (YA) - 7000 Series.

2.8 SURFACE DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Unitrol): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted closers with door stop mechanism to absorb dead stop shock on arm and top hinge. Hold-open arms to have a spring loaded mechanism in addition to shock absorber assembly. Arms to be provided with rigid steel main arm and secondary arm lengths proportional to the door width.

1. Manufacturers:

a. ASSA ABLOY ACCENTRA (YA) - Unitrol Series.

2.9 DOOR STOPS AND HOLDERS

A. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

a. Rockwood (RO).

2.10 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. Pemko (PE).

2.11 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.12 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and 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 specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.

E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 ADJUSTING

A. Initial 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.

3.5 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.6 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.7 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Manufacturer’s Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. YA - ASSA ABLOY ACCENTRA
4. RO - Rockwood
5. OT - Other

Hardware Sets

Set: 1.0

Doors: 102, 103, 104, 105, 207, 208, 209, 210, 212
Description: SGL - OFFICE

3 Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D	MK	087100
1 Entry Lock	PB 5407LN Temp Core	626	YA	087100
1 Wall Stop	409	US32D	RO	087100

3	Silencer	608-RKW		RO	087100

Set: 2.0

Doors: 211
Description: EXT ALUM - WORK AREA

1	Continuous Hinge	CFM_SLF-HD1-M		PE	087100
1	Rim Exit Device, Classroom	7200 PB506F Temp Core	630	YA	087100
1	Surface Closer	UNI4400	689	YA	087100
1	Sweep	3452AV		PE	087100
1	Threshold	2005AV		PE	087100
1	Balance of Hardware	Existing to Remain		OT	
1	Perimeter Seals	by Door / Frame Mfg.		OT	

Set: 3.0

Doors: x100, x110, x115, x116, X116B, X116C, X117, X118, X119, X120, X200, X202, X203, X204, X205, X213, X215A, X215B, X216, X217, X218
Description: EXISTING TO REMAIN

1	Balance of Hardware	Existing to Remain		OT

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Impact Resistant glazing systems
2. Glazing accessories.

B. Related Sections:
1. Division 01
2. Section 079200 Joint Sealants
3. Section 084213 Impact-Resistant Glazed Aluminum Entrances
4. Section 084300 Impact-Resistant Glazed Aluminum Storefronts

1.2 REFERENCE STANDARDS

1. ASTM C 1036 Specification for Flat Glass
2. ASTM C 1048 Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass
3. ASTM C 1172 Specification for Laminated Architectural Flat Glass
4. ASTM C 1376 Specification for Pyrolytic and Vacuum Deposition Coatings on Glass
5. ASTM E 1300 Practice for Determining Load Resistance of Glass in Buildings
6. ASTM E1886 Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
7. E1996 Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
8. ANSI Z97.1-2004 Glazing Materials Used in Buildings-Safety performance Specifications and Methods of Test
9. ASCE 7-98 Minimum Design Loads for Buildings and Other Structures
10. Consumer Product Safety Standard (CPSC) 16 CFR 1201: Safety Standard for Architectural Glazing Materials
11. Glass Association of North America (GANA) Glazing Manual
12. GANA Laminated Glazing Reference Manual
13. Bulletin 01-0300 - Proper Procedures for Cleaning Architectural Glass Products
14. IBC – International Building Code 2015

1.3 PERFORMANCE REQUIREMENTS

A. Provide glazing assemblies which will withstand normal conditions without failure, loss of weathertightness, or deterioration.
1. Insulating glass Deterioration includes:
a. Moisture or dirt between panes.
b. Development of condensation between panes.
c. Damage to internal coating, if any.
d. Development of other visible indication of seal failure.
2. For laminated glass: Development of visible delamination.

1.4 SUBMITTALS

A. Product Data: Manufacturer's data, describing product characteristics, installation instructions and recommendations, and maintenance procedures.

B. Samples of Glass: 12-inch-square samples, of each glass specified:
1. Laminated glass

1.5 QUALITY ASSURANCE

A. Certified Safety Glazing: Provide Category II products which comply with test requirements of 16 CFR 1201 and ANSI Z97.1 and permanently marked with label of:
1. Safety Glazing Certification Council (SGCC).
2. Other agency acceptable to governing authorities.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect products in accordance with manufacturer's recommendations; specifically, avoid damage to glass edges; prevent damage due to temperature changes, sunlight, and moisture.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Glass Manufacturers - General:
1. Obtain materials from only one manufacturer or fabricator for each type; obtain tinted primary glass (if any) used for each type from only one manufacturer.
2. Where product names are indicated, comparable products of the manufacturers listed will be considered for substitution.

B. Acceptable Manufacturers
1. Vitro Architectural Glass (basis of design)
2. Old Castle Glass
3. Viracon
4. AFG Industries Inc.
5. Prior-Approved Equal.

2.2 GLASS TYPES

A. Glass Types - General: Provide glass types fabricated of the glass products indicated.
1. Select products to comply with performance requirements indicated, in accordance with manufacturer's recommendations.
2. Interior glass thickness: 6 mm (1/4 inch nominal), unless otherwise indicated.
3. Fabricate glass with bite and edge clearance dimensions, including tolerances, as recommended by manufacturer and FGMA "Glazing Manual."
4. Cut tempered glass to size and shape and drill holes prior to tempering.

B. Glass Type S1 (Exterior Storefront Entrances): Type: Low-E Clear Insulating Glass. Clear, laminated low-reflective glass outdoor appearance.
1. Product: “Solarban®” 60 (2) Clear HT + Clear HT laminated by Vitro Industries, Inc. (Basis of Design)
2. Insulating Unit Construction: 1/4 inch (6mm) Clear Tempered Glass, “Solarban” 60 Solar Control (Sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/8 inch (3mm) Clear Tempered Glass/ .06PVB/ 1/8 inch (3mm) Clear Tempered Glass
3. Performance Values: Visible Light Transmission – 42 percent; SHGC – 0.28; Shading Coefficient – 0.32; Outdoor Visible Light Reflectance – 15 percent.
4. Heat Transfer Coefficient: U-Value Winter – 0.29, U-Value Summer – 0.27.

5. Manufacturer's Certified Fabricator only

C Glass Type S2 (Exterior Storefront): Type: Low-E Clear Insulating Glass. Clear, laminated low-reflective glass outdoor appearance.
1. Product: "Solarban®" 60 (2) Clear HT + Clear HT laminated by Vitro Industries, Inc. (Basis of Design)
2. Insulating Unit Construction: 1/4 inch (6mm) Clear HT Glass, "Solarban" 60 Solar Control (Sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear HT Glass/.06PVB/1/4 inch (6mm) Clear HT Glass.
3. Performance Values: Visible Light Transmission – 42 percent; SHGC – 0.28; Shading Coefficient – 0.32; Outdoor Visible Light Reflectance – 15 percent.
4. Heat Transfer Coefficient: U-Value Winter – 0.29, U-Value Summer – 0.27.
5. Manufacturer's Certified Fabricator only

2.3 BASIC GLASS PRODUCTS

A. Float Glass: Quality q3, unless otherwise indicated.
1. Annealed: ASTM C 1036, Type I.
2. Fully tempered: ASTM C 1048, Kind FT, Type I.
a. Tong marks are permitted if they will be concealed in glazing channel.

2.4 INSTALLATION MATERIALS

A. Installation Materials - General: Select products which have appropriate performance characteristics as recommended by glass and glazing materials manufacturers and which are compatible with all materials with which they will come into contact.

B. Glazing Blocks: Neoprene, EPDM, or silicone.
1. Setting blocks: 80 to 90 Shore A hardness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine frames and rabbets in which glazing is to be installed for conditions that could be detrimental to the longevity of the glazing. In particular, check for conditions that would void the manufacturer's warranty.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean surfaces to receive glazing just before installation of glazing.

3.3 INSTALLATION - GENERAL

A. Comply with recommendations for installation contained in the FGMA "Glazing Manual" and "Sealant Manual" except when specifically not recommended or prohibited by the glass or glazing material manufacturer; comply with manufacturer's recommendations.

B. Protect glazing from edge damage during handling and installation.

C. Do not install glass that has edge damage or defects that reduce glass strength or performance or diminish appearance.

D. Install glass so that visual characteristics, such as pattern, bow, and roll wave distortion, are uniform.

3.4 GLAZING IN FRAMES

A. Use the following glazing methods in the locations indicated in other specification sections:
   1. Compression gaskets, both sides.

B. Permanently adhere setting and edge blocks to frame.

C. Do not block weep holes.
   1. Use primer where required for proper adhesion.

D. Compression Gaskets: Secure gaskets so they will not work out under normal movement.
   1. Install so they fit tightly at corners, allowing for stretch during installation.
   2. Do not use joints in gaskets, except at corners.
   3. Miter-cut corners and seal joint with sealant.
   4. Install gaskets so they protrude slightly past face of framing.

3.5 PROTECTION AND CLEANING

A. Immediately after installing glazing in frames, apply warning tape or bands across opening without touching glazing.

B. Do not apply tape or labels to glazing; remove temporary labels.

C. Protect glazing during subsequent construction operations; remove dirt, contaminants, staining agents and other deposits promptly using manufacturer's recommended procedures.
   1. Inspect glazing below and near exterior concrete and masonry frequently but not less than monthly.

D. Replace glazing that is damaged.

E. Wash both sides of glazing, using manufacturer's recommended procedures not more than 10 days before inspection for substantial completion.

END OF SECTION

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Interior gypsum board.

1.2 SUBMITTALS

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

B. Samples: For each product indicated.

1.3 QUALITY ASSURANCE

PART 2 - PRODUCTS

2.1 INTERIOR GYPSUM BOARD

A. Gypsum Board, Type X: ASTM C1396/C1396M
1. Thickness: 5/8 inch (15.9 mm)
2. Long Edges: Tapered.
3. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Gypsum Co.
b. BPB America Inc.

c. Georgia Pacific Gypsum.
d. Lafarge North America Inc.
e. National Gypsum Company.
f. PABCO Gypsum.
g. Temple.
h. USG Corporation.
i. Others, subject to compliance with requirements, as approved by architect prior to bid.

2.2 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.

3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.

2.3 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

2.4 TEXTURE FINISHES

A. Primer: As recommended by textured finish manufacturer.

B. Aggregate Finish: Water-based, job-mixed, aggregated, drying-type texture finish for spray application.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

a. G-P Gypsum; Georgia-Pacific Ceiling Textures/Vermiculite.
b. USG Corporation; SHEETROCK Wall and Ceiling Spray Texture (Aggregated).
c. Others, subject to compliance with Division 01 requirements, with approval of Architect prior to bid.

3. Texture: Light spatter

PART 3 - EXECUTION

3.1 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

D. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.

3.2 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:
1. At locations as indicated on drawings.

3.3 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joint sand damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below:

1. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.
2. Level 2: At panel surfaces to receive ceramic tile.

3.4 APPLYING TEXTURE FINISHES

A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.

B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture] free of starved spots or other evidence of thin application or of application patterns.

C. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture-finish manufacturer's written recommendations.

3.5 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

All of the Contract Documents, including Agreement between Owner and Contractor and Division 1, apply to the work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Acoustical ceiling panels
2. Exposed grid suspension system.
3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings.

B. Related Sections:
1. Division 05 Cold Formed Metal Framing
2. Division 09 - Gypsum Board
3. Division 15 Sections - Mechanical Work
4. Division 16 Sections - Electrical Work
5. Submittals in accordance with 013300, Submittals and 014500, Quality Control Procedures

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):
1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
7. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
8. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.
9. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems.
10. ASTM E 1264 Classification for Acoustical Ceiling Products.
11. ASTM E 1477 Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
12. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
13. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material.

B. ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.

B. Samples: 4” x 4” ceiling tile samples and 8 inch long samples of exposed wall molding and suspension system, including main runner and cross tees.

C. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards.

1.5 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide grid components by a single manufacturer.

B. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store acoustical ceiling units in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.7 PROJECT CONDITIONS

A. Space Enclosure: All ceiling products and suspension systems must be installed and maintained in accordance with Mfg. written installation instructions for that product in effect at the time of installation and best industry practice. Prior to installation, the ceiling product must be kept clean and dry, in an environment that is between 32oF (0o C) and 120oF (49o C) and not subject to Abnormal Conditions. Abnormal conditions include exposure to chemical fumes, vibrations, moisture from conditions such as building leaks or condensation, excessive humidity, or excessive dirt or dust buildup.

1.8 WARRANTY

A. Grid System: Submit a written warranty executed by the manufacturer, agreeing to repair or replace Grid System that fail within the warranty period. Failures include, but are not limited to:
   1. Grid System: Rusting and manufacturer's defects

1.9 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.
   1. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.
   2. Provide minimum of 10% overage of calculated square footage of each type, size, color, and surface finish of acoustical panel specified, in cleaned marked cartons for Owner’s replacement.

3. Deliver specified overrun to Owner's designated storage space, properly packaged (boxed) and identified

Part 2 - PRODUCTS

2.1 MANUFACTURERS

A. Armstrong World Industries (basis of design)
B. Equal product by USG.
C. Equal product by Certainteed

2.2 ACOUSTICAL PANELS

A. Acoustical Panels (**A**): Wet-formed mineral fiber.
   1. Comply with the requirements of ASTM E 1264, Type III, Form 2; manufacturer's standard thickness, but not less than 7/8 inch thick.
   2. Size: 24 by 24 inches.
   3. Ceiling attenuation class: Minimum CAC 35.
      a. Provide foil or other noncombustible backing on panels if standard with manufacturer or if required to achieve specified CAC value
   4. Noise reduction coefficient: Minimum NRC 0.70
   5. Edge profile: Angled Tegular
   6. Finish: Medium texture
   7. Color: White.
   8. Light reflectance coefficient: Minimum LR 0.86.
   9. Sag Resistant
   10. Anti-microbial/mildew
   11. Panels: CIRRUS TEGULAR 24x24x3/4" 9/16" Beveled Tegular edge No. 589 No added formaldehyde as manufactured by Armstrong World Industries

2.3 SUSPENSION SYSTEMS

A. Components: All main beams and cross tees shall be commercial quality hot-dipped galvanized steel as per ASTM A 653. Main beams and cross tees are double-web steel construction with 15/16 inch type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.
   1. Structural Classification: ASTM C 635 Intermediate Duty.
   2. Color: White.
   3. Acceptable Product: PRELUDE XL 15/16" Exposed Tee as manufactured by Armstrong World Industries (Basis of Design)

B. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

C. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least time three design load, but not less than 12 gauge.

D. Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated. Provide moldings with exposed flange of the same width as exposed runner.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations.

B. Examine substrates and conditions under which products of this section are to be installed and verify that the work properly may commence.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

B. Layout: Position ceiling components to maximize use of full-sized acoustical units and to provide border units which are equal in size and shape at opposing ceiling edges. Use of acoustical units which are smaller than 1/2 full-width is prohibited at ceiling perimeters. Conform to reflected ceiling plans to greatest extent possible.

3.3 INSTALLATION

A. SUSPENSION SYSTEM General:
1. Conform to the requirements of ASTM C 636, manufacturer's installation instructions, and governing regulations.
2. Install hangers plumb and supported solely by building structure or carrying channels. Do not allow hangers to contact any objects or materials in ceiling plenum which are not actual components of ceiling system.
    a. Splay hangers only where necessary to avoid obstacles. Provide counter-splaying, bracing, or other acceptable devices to compensate for lateral stresses caused by splayed hangers.
        1. Do not attach hangers to piping, conduit, or duct. Provide carrying channel trapeze support where obstruction cannot be avoided by splaying hanger 45 degrees from vertical or less.
    b. Space hangers at not more than 48 inches on center and within 6 inches of ends of each direct-hung runner or carrying channel, unless indicated otherwise.
    c. Loop and tie wire hangers securely to building's structural members; to attachment devices indicated; or, where not indicated, to devices suitable for substrate and capable of permanently supporting ceiling weight without failure or deterioration.
    d. Level ceiling suspension system to tolerance of 1/8 inch in 12 feet, with cumulative tolerance not to exceed 1/4 inch. Bending or kinking of hangers is not allowed.

B. Exposed (Lay-in) Grid Installation: Install grid members square, with ends of members securely interlocked. Remove and replace dented, bent, or kinked members.

C. TRIM INSTALLATION
1. Install edge moldings and trim units at acoustical ceiling borders, at locations indicated, and where required to cover acoustical unit edges.
2. Molding and trim attachment: Space screws not more than 16 inches on center and within 3 inches of ends of each trim-piece being installed. Install moldings and trim level with suspension system and within tolerance specified for suspension system.
3. Edge moldings: Before installing molding, apply acoustical sealer in uniform bead to vertical molding edge which will be concealed after installation.
4. Miter corners and align butt joints carefully to form tight hairline joints.

5. Face-riveting of trim and moldings is not allowed.

D. LAY-IN PANEL INSTALLATION

E. Panel Installation: Install acoustical panels for accurate fit with suspension system and trim members. Scribe and cut panels at ceiling perimeter and at obstructions to provide neat, precise fit.

3.4 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

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SECTION 096519– RESILIENT FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

A Extent of resilient flooring and accessories is shown on drawings and in schedules. This Contractor is to purchase all materials necessary for installation of flooring. Contractor to provide all labor, adhesives, primers and accessories as necessary for the complete installation of flooring materials.

1.3 QUALITY ASSURANCE:

A Manufacturer: Provide each type of resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds.
1. Wherever possible, provide required resilient flooring and accessories produced by a single manufacturer.

B Fire Test Performance: Unless otherwise indicated, provide resilient flooring having the following classifications or properties when tested in accordance with the standard fire tests referenced below:
1. Flame Spread: Not more than 75 per ASTM E 84.
2. Smoke Developed: Not more than 450 per ASTM E 84.

1.4 SUBMITTALS:

A Product Data: Submit 2 copies of manufacturer's technical data and installation instructions for each type of resilient flooring and accessory.

B Samples: Submit, for verification purposes, samples of each type, color, and pattern of resilient flooring, including accessories, required, indicating full range of color and pattern verification.

C Maintenance Instructions: Submit 2 copies of manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.

D Replacement Materials: After completion of work, deliver to project site replacement materials from same manufactured lot as materials installed, and as follows:
1. Tile Flooring: Four boxes for each type, size, and color installed.
2. Wall Base: Not less than 10 linear yards for each type, and color installed.

1.5 JOB CONDITIONS:

A Maintain minimum temperature of 65 degrees F in spaces to receive resilient flooring for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. Store resilient flooring materials in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 55 degrees F in areas where work is completed.

B Install resilient flooring and accessories after other finishing operation, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by resilient flooring manufacturer's recommended bond and moisture test.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

A Acceptable Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

1. Luxury Vinyl Tile (**LVT**):
a. LVT-1 – Tarkett, Shaw Contract, Mohawk
b. LVT-2 – Tarkett, Shaw Contract
c. Others, with approval of Architect, prior to bid, in accordance with Division 01 requirements.

2. Rubber Wall Base:
a. Johnsonite (Tarkett)
b. Armstrong World Industries, Inc.
c. Flexco Div., Textile Rubber Co. Inc.
d. Roppe Corporation

3. Transition Strips :
a. Armstrong World Industries, Inc.
b. Johnsonite (Tarkett).
c. Flexco Div., Textile Rubber Co. Inc.
d. Roppe Corporation

2.2 MATERIALS:

A Colors and Patterns: As shown or scheduled, or as selected by Architect from manufacturer's standards.

B LUXURY VINYL TILE FLOORING – Selected from one of the following:
1. Commercial Luxury Vinyl Tile (**LVT**) – Tarkett “iD Latitude”, Style “Woods”-ASTM F1700 Class III type B. (Basis of Design)
a. Fire Test Data: ASTM E 648 Critical Radiant Flux Class I - 0.45 or more watts/cm2; ASTM E 662 Smoke Developed 450 or less.
b. Static Load Limit: ASTM F 970 250 psi or less.
c. Gauge: 3.0 mm
d. Wear Layer: 20 mil.
e. Size: 6”x48”
f. Colors: To be selected by Architect from all available colors

2. Commercial Luxury Vinyl Tile (**LVT**) – Shaw Contract “Abide”- ASTM F 1700 Class III type B (Basis of Design)
a. Fire Test Data: ASTM E 648 Critical Radiant Flux Class I - 0.45 or more watts/cm2; ASTM E 662 Smoke Developed 450 or less.
b. Static Load Limit: ASTM F 970 1000 psi
c. Gauge: 2.5 mm
d. Wear Layer: 20 mil.

e. Size: 7”x48”
f. Colors: To be selected by Architect from all available colors

C RUBBER WALL BASE, AND RESILIENT ACCESSORIES:

1. Rubber Wall Base: ASTM F-1861, Type TP, and Group 1, thermoplastic rubber formulation.
   a. Fire Test Data: ASTM E 648/NFPA 253 (Critical Radiant Flux) - Class 1; ASTM E 84/NFPA 255: Flame/Smoke - Class A / less than 450 Smoke.
   b. Flexibility: Will not crack, break, or show any signs of fatigue when bent around a 1/4" diameter cylinder.
   c. Hardness: ASTM D 2240: 85 Shore A
   d. Provide appropriate resilient transition strips selected by the Architect at all dissimilar materials unless noted otherwise (color T.B.D.).
   e. Finish: Matte.
2. Resilient Edge Strips: 1" wide, 1/8" thick, rubber composition.
3. Adhesives (Cements): Waterproof, stabilized type as recommended by flooring manufacturer to suit material and substrate conditions. Adhesive for flooring shall be clear; black adhesive is not acceptable.
4. Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.
5. Leveling Compound: Latex type as recommended by flooring manufacturer.
6. Cove Base

PART 3 - EXECUTION

3.1 PREPARATION:

A Subfloor preparation must be carried out in accordance with the Resilient Floor Covering Institute (RFCI) and as recommended by the manufacturer.

B Broom clean or vacuum surfaces to be covered, and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work.

C Install products only after the jobsite has been cleaned and cleared of other trade apparatus that may damage the finished tile installation. The lighting on the jobsite must be sufficient to permit inspection and preparation of the underfloor, layout, installation, cleanup, and final inspection of the tile.

D Perform bond and moisture tests on concrete subfloors to determine that concrete surfaces are sufficiently cured, dried and ready to receive flooring. The required quantitative test is the calcium chloride test ASTM-1869.

E Check the cartons to assure the pattern number is correct and that there is a sufficient quantity of tile for the installation. Make certain the lot numbers are the same on all cartons.

F Store material in a protected, dry interior area. Do not double-stack pallets. Keep the jobsite, adhesives, and tile at a minimum temperature of 65 degrees F, and a maximum of 95 degrees F for at least 48 hours before, during, and after installation.

G Use leveling compound as recommended by flooring manufacturer for filling small cracks and depressions in sub-floors and for providing a smooth surface at all locations which contain ≅chatter marks≅, rough areas or imperfections which would Atelegraph≅ through the tile surface. The subfloor must be smooth and level before starting the installation.

H Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

3.2 INSTALLATION:

A GENERAL:

1. Install resilient flooring, base, and accessories using method indicated in strict compliance with manufacturer's recommendations. Extend flooring into toe spaces, door reveals, and into closets and similar openings.
2. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.
3. Install flooring on covers for telephone and electrical ducts, and other such items as occur within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers. Tightly cement edges to perimeter of floor around covers and to covers.
4. Tightly cement flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll resilient flooring at perimeter of each covered area to assure adhesion.

B Tile Floors:

1. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room are of equal width. Adjust as necessary to avoid use of cut widths less than 2 tile at room perimeters. Lay tile square to room axis, unless otherwise shown.
2. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped or deformed tile are not acceptable. Lay vinyl composition tile quarter-turned. Keep tiles square to each other throughout the installation.
3. Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.

C Accessories:

1. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in continuous lengths as practicable. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces. Eliminate joints in base whenever possible.
2. Fabricate internal corners from standard lengths of base material. Miter or cope inside corners. Provide pre-molded external corners. Base that "bows" at corners will not be accepted.
3. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
4. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.3 CLEANING AND PROTECTION:

A Remove any excess adhesive or other surface blemishes, using neutral type cleaners as recommended by flooring manufacturer. Protect installed flooring with heavy Kraft paper or other covering.

B Finishing: After completion of project and just prior to final inspection of work, thoroughly clean floors and accessories.

C Apply high-quality polish with type of polish, number of coats, and buffing procedures in strict compliance with flooring manufacturer's instructions.

END OF SECTION

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SECTION 096813 - CARPET TILE

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

A Scope of Work
1 Provide all carpet installation work including stairs as required by Contract Documents.
2 Filling of rough and uneven floor surfaces is part of the work of this section.
3 Sweep, mop and vacuum floor of all loose granular debris.

1.2 QUALITY ASSURANCE

A Manufacturer - Carpet manufacturer shall have no less than ten years of production experience with carpet similar to type specified in this document; and whose published product literature clearly indicates compliance of products with requirements of this section.
1 Commitment to sustainability - carpet manufacturer must practice environmental responsibility through programs of source reduction, recycling, reuse and conservation; and further demonstrate their commitment with 3rd party registration to the ISO 14001 Environmental Management System.

B Trade Contractor - The selected firm must have no less than ten (10) years of successful carpeting experience similar to work of this Section and recommended, trained and approved by the carpet manufacturer. Submit letter from carpet manufacturer stating certification qualifications and acceptance.
1 Participant in environmental program including responsible carpet removal, installation and redirection.

1.3 SUBMITTALS

A Manufacturer’s Data - Submit per Division 01 and Section 013300 Submittals: manufacturer’s specifications and installation instructions for carpet and related items specified.

B Carpet Care Instructions, as written by Manufacturer.
1 Maintenance Instructions - Submit copies of the manufacturer’s carpet maintenance instructions, including information needed for the removal of common stains from each type of carpet required.

C All Applicable Warranties

D Submit manufacturer’s certified test results to show that carpet meets or exceeds product performance specification criteria for carpet testing requirements (i.e. see section 2.3 flame, smoke, Aachen test, etc).

E Sub Contractor must provide five (5) current project references with scope, date and customer contact with phone number in compliance letter.

F SAMPLES

1 Samples - Submit standard size carpet samples of each type of carpet, in each specified pattern, color and construction.
2 Any alternatives to specified product(s) or manufacturer must be submitted for approval in accordance with Section 016000.10 Substitution Request Form.
3 Final Sample Submittal - Submit three (3) sets of samples for each carpet type.

4 No carpet shipments are permitted until acceptance of final samples by representative of the end user or Architect/Design firm, certifying that samples are the approved color, pattern, texture, and with appropriate pattern definition (if applicable).
5 Samples submitted will be assumed to be the manufacturer's best obtainable match to the carpet described under Materials section.

1.4 ATTIC STOCK

A Provide minimum of three percent overage of calculated yardage for each type of carpet (calculated yardage shall include carpet needed for complete installation plus waste and usable scraps).

1.5 PRODUCT DELIVERY AND STORAGE

A Deliver carpet tile in sealed protective cartons.

B Storage and staging area at the site must be coordinated with the General Contractor.

C Materials shall be stored in an enclosed and dry area protected from damage and soiling. All Carpet Tile shall be sealed and enclosed in original boxes complete with product and color identification on each box.

D Job must always be staged according to pattern-size variations when patterned carpet is involved to best facilitate and expedite the installation as well as assure proper alignment at all seams.

1.6 PRE-INSTALLATION MEETING

A Store carpet in working areas that have been enclosed and have maintained environmental conditions as those planned for occupancy. Carpet shall be allowed to reach room temperature or minimum temperature recommended by manufacturer before installation.

B Relative humidity in excess of 70 percent can cause moisture gain in some carpet constructions and should be kept to a minimum to help avoid installation delays and seaming problems.

1.7 WARRANTY

A Provide warranties by Carpet Manufacturer agreeing to replace defective materials during one (1) year warranty period following substantial completion. Also submit the following agreed upon warranties:
1 Wear - Surface fiber wear shall not be more than 10% by weight in 15 years.
2 Static - Carpet will remain static generation at less than 3.0 kV at 70º F, and 20% R.H. for a period no less than 15 years.
3 Delamination warranty (chair pads not required) for a period no less than 15 years Antimicrobial preservation properties warranted to be $\geq$ 90% effective for a period no less than 15 years.
4 Edge Ravel warranty for a period of 15 years.
5 Dimensional stability warranty, i.e. shrinkage, curling and doming which adversely affect the ability of the tile to lay flat for a period no less than 15 years. See Aachen Test.
6 Antimicrobial preservation properties warranted to be $\geq$ 90% effective for a period no less than 15 years.

B Installation service provider agrees to rework any defective carpet handling or installation workmanship during one (1) year warranty period following substantial completion.

Part 2 - PRODUCTS

2.1 MANUFACTURER

A Subject to the minimum requirements listed above and below, provide carpeting as specified.

B Colors and patterns of carpet shall match samples.
1 Any change in products or manufacturer must comply with Division 1.

2.2 CARPET TILE

A Carton Marking - Mark each carpet tile carton according to style, color, pattern, dye lot and quantity. Within each continuous carpet area, install carpet from same dye lot.

B Carpet Construction Specification - All yarn and carpet shall be manufacturer's first quality and recyclable through an existing Carpet Reclamation Program.

2.3 CARPET SHALL MEET THE FOLLOWING PERFORMANCE STANDARDS:

1	Carpet Flammability a. Radiant Panel Test (ASTM E648)	$\geq$ 0.45 watts/cm^2, Class 1
2	Smoke Density (ASTM E662)	$\leq$ 450 Flaming Mode
3	Dimensional Stability (Aachen Method Din 54318)	$\leq$ 0.1% change
4	Static Generation at 70º F (AATCC 134 w/ neolite)	< 3.0 kV
5	Light fastness (AATCC 16E)	4.0 after 60 hours
6	Crocking (AATCC 165)	4.0 wet, dry
7	Cold Water Bleed (AATCC 107)	4.0
8	Gas Fade (AATCC 23)	4.0
9	Ozone Fade (AATCC 109)	4.0
10	Antimicrobial (AATCC 138 Washed, AATCC 174Part II)	$\geq$ 95.0% reduction
11	Fungicidal (AATCC 174, Part III)	No growth
12	Soil/Stain Protection (AATCC 175-1991)	$\geq$ 8.0 on the Red 40 Stain Scale

2.4 PRODUCT SPECIFICATION CPT-1

A.

Manufacturer:	Mowhawk Group / Bigelow
Collection:	Iconic Earth
Style:	To be selected by Architect.
Color(s):	To be selected by Architect.
Surface Texture:	Tufted, Textured Patterned Loop
Gauge:	1/12 in.
Size:	12”x24” or 24”x24” (to be selected by Architect)
Installation Method:	To be determined by Architect

B.

Manufacturer:	Shaw Contract
Collection:	Material Matters
Style:	To be selected by Architect.
Color(s):	To be selected by Architect.
Surface Texture:	Multi-Level Pattern Loop
Gauge:	1/12 in.

Size:	18”x36”
Installation Method:	To be determined by Architect

C.

Manufacturer:	Tarkett
Collection:	Renewal Series
Style:	Ebbing Waves
Color(s):	To be selected by Architect.
Size:	24”x24”
Surface Texture:	Patterned Loop
Installation Method:	To be determined by Architect

Written requests for substitutions will be considered, with approval of Architect, prior to bid, in accordance with Division 01 Requirements.

2.5 GENERAL

A Installation shall be precise so that no pattern mismatch is evident after installation.

2.6 RELATED CARPET MATERIALS

A Leveling Compound - Latex type as recommended by carpet manufacturer and is compatible with carpet adhesive and curing/sealing compound on concrete.

B Installation Method as per manufacturer’s instructions.

1 Carpet Edge Guard, non-metallic - Extruded or molded heavy duty vinyl or rubber carpet edge guard of size and profile indicated, and with minimum two inch wide anchorage flange; colors selected by Architect/Designer from among standard colors available within the industry.

PART 3 - EXECUTION

3.1 PRE-INSTALLATION REQUIREMENTS AND PREPARATORY WORK

A The Trade Contractor shall measure carefully and check all dimensions and other conditions in the field to insure proper fit in the areas designated. Trade Contractor shall be totally responsible for accuracy of his measurements on total yardage requirements. No request for carpet or installation extras from the Owner will be considered due to measurement or takeoff errors by the Trade Contractor. The Trade Contractor shall confirm total yardage required, including 3% attic stock along with bid.

B Trade Contractor shall coordinate all installation activities with the General Contractor.

C Sequence carpeting with other work so as to minimize possibility of damage and soiling of carpet during remainder of construction period. Do not commence carpet installation until painting and finishing work is complete and ceiling and other overhead work has been approved and completed, unless specifically approved by Owner’s Project Manager, in writing.

D Trade Contractor and manufacturer’s representative must examine substrates for conditions over which carpeting is to be installed.

1 New concrete shall be allowed to cure for at least ninety (90) days before carpet installation. Installation cannot begin before it is fully cured.

2 The temperature of the jobsite must stay within 60º F (15.5º C) and 85º F (29.5º C) throughout the installation and for 2-3 days beforehand. Be sure the heating and air conditioning system is operational.

3 Trade Contractor must perform moisture emission testing prior to installation over a new or old concrete subfloor. All concrete floors should be tested for moisture emission by using an anhydrous calcium chloride moisture test kit, and paying strict attention to the test kit manufacturer's detailed instructions, including requirements for controlled indoor climate, duration of testing and number of tests to be used. Moisture emissions should not exceed three (3) pounds per 1,000 square feet for 24 hours. If concrete tests higher than 3 pounds, do not proceed with installation.

4 Trade Contractor must perform alkalinity testing prior to installation over a new or old concrete floor using an alkalinity test kit. The pH test papers should be capable of measuring a range of 0-14. The area to be tested must be weather-tight and conditioned, via the building's HVAC system, to a temperature range of 65º - 85º F and a relative humidity range of 40-60%. This temperature and humidity range must be maintained for at least 48 hours immediately prior to commencing the test, and at all times during the test. Test kit manufacturer's instructions for performing the test must be strictly followed. The slab should have an alkalinity level between 7.0 – 9.0 to be suitable for carpet installation. Do not proceed with the installation if the pH levels fall outside of this range.

5 Cracks 1/16" or more, holes, unevenness and roughness must be filled, leveled and made smooth with a compatible latex floor patching compound. Prior to filling, the floor must be swept clean of all loose granular debris. After filling, allow filler to dry. Then damp mop the floor with warm water and allow to dry. Vacuum after mopping to insure all loose granular debris is removed and provide a proper substrate to install carpet.

6 All surfaces to receive carpet shall be clean and dry, and in a condition satisfactory to the Trade Contractor. Then, Trade Contractor shall notify Construction Manager in writing of any conditions which will prevent him from producing satisfactory finish work after above specified preparatory work is completed.

7 Trade Contractor shall vacuum floors again immediately before installation of carpeting.

8 Confirm compatibility of adhesive with curing compounds on concrete floors.

9 Environmental Conditions - Areas to be carpeted must be preheated at a minimum of 68º F for at least 72 hours prior to installation with the relative humidity not more than 65%. A minimum temperature of 50º F shall be maintained thereafter. Carpet and adhesives must be stored at a minimum temperature of 68º F for 72 hours prior to installation.

10 Once the Trade Contractor commences installation work under this contract, it shall be assumed that the condition of the floor has been accepted and any repairs or further corrections in the floor surface shall become the responsibility of the Trade Contractor.

3.2 INSTALLATION

A General

1 Comply with manufacturer's instructions and recommendations for uniformity of direction carpet installation – Quarter Turn Installation

2 Install carpet under open-bottom obstructions and under removable flanges and furnishings, and into alcoves and closets of each space.

3 Provide cut outs where required. Conceal cut edges with protective edge guards or overlapping flanges.

4 Run carpet under open bottom items such as heating convectors and install tight against walls, columns and cabinets so that the entire floor area is covered with carpet. Cover over all floor type door closures.

5 Install edging guard at all openings and doors wherever carpet terminates, unless indicated otherwise. Prior to installation, report to the Construction Manager all other obstructions which may occur.

6 Cutting shall be done in accordance with the manufacturer's recommendation, using the tools designed for the carpet being installed. Pattern size or loop integrity shall not

be compromised by the trade contractor's use of trace cuts or double cuts on any side seam.

7 All carpet shall be installed with pile-lay in quarter turn perpendicular directions, except as indicated by manufacturer's instructions.

8 Use leveling compound where necessary. Any floor filling or leveling shall have a minimum of 4'0" of feather.

9 Expansion joints - Do not bridge building expansion joints with continuous carpeting. Provide for movements.

B Installation

1 Install carpet according to carpet manufacturer's printed instructions and in keeping with the Carpet and Rug Institute's Installation Standard.

2 Installation contractor shall be a Carpet and Rug Institute's certified installation professional.

3 Tufted patterns must be row-cut on both side seams to maintain pattern integrity.

4 Maintain pattern integrity on all end seams.

3.3 CLEANING AND PROTECTION

A On completion of the installation in each area, all dirt, carpet scraps, etc. must be removed from the surface of the carpet. Any soiling spots or excessive adhesive on the carpet shall be removed with the proper spot remover. (See Section 1.3.6)

B Do not allow construction traffic, other than as may be required to fit up specific carpeted area, to traverse the completed work.

C Remove debris, and sort pieces to be saved from scraps to be redirected and recycled.

D General Contractor and Construction Manager shall protect carpeting against damage during construction.

E At the completion of the work and when directed by the Construction Manager, vacuum carpet of type recommended by carpet manufacturer. Remove spots and replace carpet where spots cannot be removed. Remove rejected carpeting and replace with new carpeting. Remove any protruding yarns with shears or sharp scissors.

F Protection of carpeting with craft paper or other suitable covering shall be maintained on each floor or area until accepted, without waiting until the entire project is complete. Covering should permit curing of adhesives while protecting the carpet from construction traffic and debris.

G If heavy furniture or equipment is to be moved over areas where carpet tile is already installed, plywood or Masonite board must completely cover area where heavy objects will be rolled or slid.

3.4 INSPECTION

A Upon completion of the installation, verify that work is complete, properly installed and acceptable. Remove and replace all work not found acceptable to the Owner at the installer's expense.

END OF SECTION

SECTION 099100 – INTERIOR PAINTS AND COATINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Interior paint and coating commercial systems including surface preparation.

1.2 RELATED SECTIONS

A. Division 06 - Architectural Woodwork.

B. Division 08 - Hollow Metal Door Frames.

C. Division 09 - Gypsum Board.

1.3 REFERENCES

A. Steel Structures Painting Council (SSPC):
   1. SSPC-SP 1 - Solvent Cleaning.
   2. SSPC-SP 2 - Hand Tool Cleaning.
   3. SSPC-SP 3 - Power Tool Cleaning.

B. Material Safety Data Sheets / Environmental Data Sheets: Per manufacturer's MSDS/EDS for specific VOCs (calculated per 40 CFR 59.406). VOCs may vary by base and sheen.

1.4 SUBMITTALS

A. Submit under provisions of Division 1.

B. Product Data: For each paint system indicated, including.
   1. Product characteristics.
   2. Surface preparation instructions and recommendations.
   3. Primer requirements and finish specification.
   4. Storage and handling requirements and recommendations.
   5. Application methods.
   6. Cautions for storage, handling and installation.

C. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's products, colors and sheens available.

D. Verification Samples: For each finish product specified, submit samples that represent actual product, color, and sheen.

E. Only submit complying products based on project requirements (i.e. LEED). One must also comply with the regulations regarding VOCs (CARB, OTC, SCAQMD, LADCO). To ensure compliance with district regulations and other rules, businesses that perform coating activities should contact the local district in each area where the coating will be used.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

B. Paint exposed surfaces. If a color of finish, or a surface is not specifically mentioned, Architect will select from standard products, colors and sheens available.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels unless indicated.

D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish surfaces for verification of products, colors and sheens.
2. Finish area designated by Architect.
3. Provide samples that designate primer and finish coats.
4. Do not proceed with remaining work until the Architect approves the mock-up.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information.
1. Product name, and type (description).
2. Application and use instructions.
3. Surface preparation.
4. VOC content.
5. Environmental handling.
6. Batch date.
7. Color number.

B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

C. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.

D. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.

B. Furnish Owner with an additional one percent of each material and color, but not less than 1 gal (3.8 l) or 1 case, as appropriate.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Sherwin-Williams, which is located at: 101 Prospect Ave.; Cleveland, OH 44115; ASD Toll Free Tel: 800-524-5979; Tel: 216-566-2000; Fax: 440-826-1989; Email: request infospecifications@sherwin.com; Web:www.swspecs.com.

B. Equal paint products made by one of the following manufacturers are acceptable:
   1. Benjamin Moore
   2. PPG Paints
   3. Others, with prior-approval of Architect, in accordance with Division 01 requirements.

2.2 APPLICATIONS/SCOPE

A. Interior Paint and Coating Commercial Systems:
   1. Metal: Hollow metal door frames
   2. Drywall: Drywall board, Gypsum board.
   3. Wood: Trim.

2.3 PAINT MATERIALS - GENERAL

A. Paints and Coatings:
   1. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
   2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color. Or follow manufactures product instructions for optimal color conformance.

B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.

D. Color: Refer to Finish Schedule for paint colors, and as selected.

E. LEED Requirements: LEED v4 EQ Credit: Indoor Environmental Quality-Low Emitting Materials.

2.4 INTERIOR PAINT AND COATING COMMERCIAL SYSTEMS

A. Metal: Hollow Metal Doors and Frames:
   1. Acrylic Systems:
      a. Semi-Gloss Finish:
         1) 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series (5.0 mils wet, 2.0 mils dry).
         2) 2nd Coat: S-W Pro Industrial DTM Acrylic, B66-1150 Series
         3) 3rd Coat: S-W Pro Industrial DTM Acrylic Semi-Gloss, B66-1150 Series (6.0 mils wet, 2.4 mils dry per coat).

B. Drywall - Walls, Ceilings, Gypsum Board and similar items.
   1. Latex Systems:
      a. Eg-Shel / Satin Finish:
         1) 1st Coat: S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600 (4 mils wet, 1.5 mils dry).
         2) 2nd Coat: S-W ProMar 200 HP Zero VOC Latex Eg-Shel, B20-1950 Series.
         3) 3rd Coat: S-W ProMar 200 HP Zero VOC Latex Eg-Shel, B20-1950 Series (4 mils wet, 1.7 mils dry per coat).

C. Wood: Miscellaneous Wood Trim.

1. Latex Systems:
   a. Semi-Gloss Finish:
      1) 1st Coat: S-W ProBlock Int/Ext Latex Primer Sealer, B51-600 Series (4 mils wet, 1.5 mils dry).
      2) 2nd Coat: S-W ProMar 200 HP Zero VOC Latex Semi-Gloss, B31-1950 Series.
      3) 3rd Coat: S-W ProMar 200 HP Zero VOC Latex Semi-Gloss, B311950 Series (4 mils wet, 1.7 mils dry per coat).

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared; notify Architect of unsatisfactory conditions before proceeding. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

B. Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.

C. Previously Painted Surfaces: Verify that existing painted surfaces do not contain lead based paints, notify Architect immediately if lead based paints are encountered.

3.2 SURFACE PREPARATION

A. General: Surfaces shall be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.
   1. Prior to attempting to remove mildew, it is recommended to test any cleaner on a small, inconspicuous area prior to use. Bleach and bleaching type cleaners may damage or discolor existing paint films. Bleach alternative cleaning solutions are advised.
   2. Remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply solution and scrub the mildewed area. Allow solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow surface to dry before painting. Wear protective glasses or goggles, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.
   3. Remove items including but not limited to thermostats, electrical outlets, switch covers and similar items prior to painting. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
   4. No exterior painting should be done immediately after a rain, during foggy weather, when rain is predicted, or when the temperature is below 50 degrees F (10 degrees C), unless products are designed specifically for these conditions. On large expanses of metal siding, the air, surface and material temperatures must be 50 degrees F (10 degrees F) or higher to use low temperature products.

B. Drywall - Interior: Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting.

C. Galvanized Metal: Clean per SSPC-SP1 using detergent and water or a degreasing cleaner to remove greases and oils. Apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP16 is necessary to remove these treatments.

D. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

3.3 INSTALLATION

A. Apply all coatings and materials with the manufacturer's specifications in mind. Mix and thin coatings according to manufacturer's recommendations.

B. Do not apply to wet or damp surfaces. Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply appropriate coatings prior to 30 days. Test new concrete for moisture content. Wait until wood is fully dry after rain or morning fog or dew.

C. Apply coatings using methods recommended by manufacturer.

D. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.

E. Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.

F. Regardless of number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.

G. Inspection: The coated surface must be inspected and approved by the Architect just prior to the application of each coat.

3.4 PROTECTION

A. Protect finished coatings from damage until completion of project.

B. Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

END OF SECTION

SECTION 104413 - FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes:
   1. Portable fire extinguishers.

1.2 SUBMITTALS

A. Product Data: Manufacturer's data showing compliance with contract documents.

B. Samples: Finishes of cabinets, on actual or similar material.

C. Operating and Maintenance Data: Instruction manual complying with requirements of NFPA 10.

D. Certification: Installer shall submit written certification that the fire extinguishers installed comply with the contract documents and are fully and correctly charged.

1.3 QUALITY ASSURANCE

A. Provide only fire extinguishers which comply with NFPA 10.

B. Labels: Provide only fire extinguishers which are listed and labeled by Underwriters Laboratories Inc., or Factory Mutual System.

1.4 PROJECT CONDITIONS

A. Do not deliver or install extinguishers until just before substantial completion.

B. Do not use permanent fire extinguishers for construction period fire protection.

PART 2 - PRODUCTS

2.1 FIRE EXTINGUISHERS

A. Manufacturers: Products of the following manufacturers, provided they comply with requirements of contract documents, will be among those considered acceptable:
   1. Fire extinguishers:
      a. Any manufacturer of listed and labeled extinguishers meeting requirements.

B. Fire Extinguishers:
   1. Rating: 3A:40B:C - 5 LB, 10 pounds capacity at all locations.
      a. Type: Multipurpose dry chemical (ammonium phosphate).
      b. Stored pressure type.
   2. Wall mounted and cabinet mounted, as indicated by Type.

C. Provide tag per State Fire Marshal requirements and authorities having jurisdiction.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Perform installation in accordance with the manufacturer's instructions except where more stringent requirements are shown or specified, and except where project conditions require extra precautions or provisions to ensure satisfactory performance of the work. At rated walls ensure that wall rating is maintained.

B. Install extinguishers in locations indicated.

C. Install brackets for wall mounted extinguishers at height indicated.

3.2 OWNER PERSONNEL INSTRUCTION

A. Instruct designated personnel of owner in:
1. Operation of extinguishers.
2. Frequency of inspection and maintenance.
3. Procedures for inspection and maintenance.
4. Designation of inspection and maintenance entity.

END OF SECTION

CERTIFICATION OF RESPONSIBILITY FOR

DOCUMENT PREPARATION

PROJECT NAME: Stennis Tech Renovation
RCE Project No.: 260004

MECHANICAL SPECIFICATIONS

THE FOLLOWING SPECIFICATION SECTIONS INCLUDED IN THIS PROJECT MANUAL WERE PREPARED BY OR UNDER THE RESPONSIBLE SUPERVISION OF THE PERSON LISTED BELOW:

22 05 00	GENERAL PROVISIONS FOR PLUMBING
22 05 03	BASIC MATERIALS AND METHODS FOR PLUMBING
22 07 00	PLUMBING INSULATION
22 10 00	PLUMBING
22 11 00	WATER SUPPLY
22 13 00	WASTE WATER DISPOSAL

23 05 00	GENERAL PROVISIONS FOR HVAC
23 05 03	BASIC MATERIALS AND METHODS FOR HVAC
23 05 93	TESTING, ADJUSTING, AND BALANCING FOR HVAC
23 07 00	MECHANICAL INSULATION
23 09 00	TEMPERATURE CONTROLS FOR HVAC
23 30 00	AIR DISTRIBUTION FOR HVAC

04-17-2026

Andrea B. Manceaux, P.E.
Ritter Consulting Engineers Ltd.

SECTION 22 05 00 - GENERAL PROVISIONS FOR PLUMBING

I. GENERAL

A. DIVISION OF SPECIFICATIONS

1. For Bidder's convenience only, this Division of the Specifications is divided into the following parts:

22 05 00	GENERAL PROVISIONS FOR PLUMBING
22 05 03	BASIC MATERIALS AND METHODS FOR PLUMBING
22 07 00	PLUMBING INSULATION
22 10 00	PLUMBING
22 11 00	WATER SUPPLY
22 13 00	WASTE WATER DISPOSAL

B. GENERAL CONDITIONS

1. The General Conditions of the Architectural Specifications along with supplementary conditions, special conditions, information to bidders, and any other pertinent information and documents shall apply the same as if repeated herein. The contractor shall review Architectural General Conditions. Where the requirements of Architectural General Conditions and these specs conflict for the contractor, the most stringent shall be applied.

2. Plumbing subcontractor shall be the sole source responsible party to furnish and install the plumbing system. Plumbing contractor shall be properly licensed to perform this work.

3. Wherever the word contractor is mentioned in Division 22 of these specifications, it is intended to mean the Plumbing Contractor as appropriate. These are sub-contractors to the General Contractor who has the contract with the owner. It is the General contractor who bears the responsibility to fulfill this part of the project (Division 22 – Plumbing) under the contract with the owner. The General Contractor shall be responsible for all costs associated with any and all bidding errors and omissions of the sub-contractor.

C. SCOPE OF WORK

1. Furnish labor, materials and equipment necessary to provide and install the complete plumbing portion of this contract, as called for herein and on accompanying drawings. Parts of the plumbing division may be bid separately or in combination at the contractor's option; however, it shall be

2. covered in the Plumbing Division have been included if he chooses to accept separate bids.

3. Contractor shall refer to the Architectural, Structural, Mechanical and Electrical drawings and install all equipment, piping, etc., to meet building and space requirements. **No equipment shall be bid on or submitted for approval if it will not fit in space provided or coordinated with other trades involved on the project**.

4. It is the intention of these Specifications that all plumbing systems shall be furnished complete with all necessary valves, controls, insulation, piping, devices, equipment, etc., necessary to provide a satisfactory installation in working order and in accordance with all Federal, State and Local codes and ordinances.

5. Contractor shall visit the site and acquaint himself thoroughly with all existing facilities and conditions which would affect his portion of the work. Failure to do so shall not relieve the contractor from the responsibility of installing his work to meet conditions.

6. Lack of coordination shall not be acceptable and shall not be a reason for poorly installed work or additional cost to this trade or others on the project. All associated extra cost shall be borne by the contractor. The General contractor shall be responsible for all costs, time and liquidated damages associated with lack of coordination or poor coordination.

D. LOCAL CONDITIONS

1. Location and elevation of all services is based on information obtained from the Owner. However, this shall serve as a general guide only and the contractor shall visit the site and verify the location and elevation of this service to his own satisfaction in order to determine the amount of work required for the execution of the contract.

2. Contractor shall contact the various utility companies, determine the extent of their requirements and cooperate with the utility company in reaching a finished product. Contractor shall pay charges by Utility Company for extensions, connections, meter fees, street patching, etc.

3. In case major changes are required, this fact, together with the reasons therefore, shall be submitted to the Architect, in writing, not less than seven days before the date of bidding. Failure to comply with this requirement will make the contractor liable for any changes, additions and expenses necessary for the successful completion of the project.

E. CUTTING AND PATCHING

1. Initial cutting and patching shall be the responsibility of the General Contractor with the Plumbing Contractor responsible for laying out and marking any and all holes required for the reception of his work. No structural beams or joists shall be cut or thimbled without first receiving the approval of the Architect/Engineer. After initial surfacing has been done, any further cutting, patching and painting shall be done at this contractor's expense.

2. Cutting and patching shall be done in such a manner that the surrounding work will be restored to its original condition.

3. The plumbing piping shall be run at proper slopes and without conflict with other trades. It may be necessary to penetrate beams, grade beams, footings and foundations. Install thimbles as required and of approved by the Structural Engineer and Architect.

F. CODES AND STANDARDS

1. The entire plumbing work shall comply with the rules and regulations of the City, County and State in which this project is being constructed including the State Fire Marshal and State Board of Health. All modifications required by these authorities shall be made without additional charge to the Owners. The Plumbing Contractor shall report these changes to the Architect and secure his approval before work is started.

2. In addition to the codes mentioned, all plumbing work and equipment shall conform to the applicable portions of the following Specifications, codes and regulations:

   a. National Electric Code
   b. National Fire Protection Association
   c. American Society of Mechanical Engineers
   d. Underwriters's Laboratories
   e. International Energy Conservation Code
   f. International Building Code
   g. International Plumbing Code

3. Materials, equipment and accessories installed under this contract shall conform to all rules, codes, etc., as recommended by National Associations governing the manufacturer, rating and testing of such materials, equipment and accessories. Materials shall be new and of the best quality and first class in every respect. Whenever directed by the Architect, contractor shall submit a sample for approval before proceeding.

4. Where laws or local regulations provide that certain accessories such as gauges, thermometers, relief valves and parts be installed on equipment, it shall be understood that such equipment be furnished complete with the necessary accessories whether or not called for in these Specifications.

5. Material and equipment furnished or installed as part of these construction documents shall be installed and operated in strict accordance with the respective manufacturer's guidelines for installation and operating instructions. The manufacturer's guidelines shall become part of the construction documents.

G. MINOR DEVIATIONS

1. Plans and detail sketches are submitted to limit, explain and define conditions, specified requirements, pipe sizes and manner of erecting work. Structural or other conditions may require certain modifications from the manner of installation shown and such deviations are permissible and shall be made as required, but, specified sizes and requirements necessary for satisfactory operation shall remain unchanged. It may be necessary to shift pipes or to change the shape of and these changes shall be made as required. All such changes shall be referred to the Architect/Engineer for approval before proceeding. Extra charges shall not be allowed for these changes.

2. No structural beams or joists (concrete or steel) shall be cut or thimbled without first receiving the approval of the Architect/Structural Engineer. After initial surfacing has been done, any further cutting, patching and painting shall be done at the Plumbing Contractor's own expense.

3. Contractor shall realize that the drawings could delve into every step, sequence or operation necessary for the completion of the project without drawing on the contractor's experience or ingenuity. However, only typical details are shown on the plans. In cases where the contractor is not certain about the method of installation of his work, he shall ask for details. Lack of details shall not be an excuse for improper installation. Submit installation shop drawings with manufacturer's details for review prior to installation.

4. In general, the drawings are diagrammatic and the contractor shall install his work in a manner so that interferences between the various trades are avoided. In cases where interferences do occur, the Architect/Engineer is to state which equipment, piping, etc., is to be relocated regardless of which item was first installed.

H. WORKMANSHIP

1. Workmanship shall be of highest grade, highest quality and all construction shall be done according to the best practice of the trade. Work shall be completed to satisfaction of the Architect/Engineer.

I. COORDINATION

1. Coordinate work of the different trades to avoid interferences between plumbing and all other work. All piping, ductwork, etc., shall be installed in lines as required to accomplish this end whether or not shown on the plans.

2. There will be a certain amount of work which must be coordinated with the Owner. This contractor shall coordinate required work with the Owner through the General Contractor using procedures acceptable to the Architect and Owner. The contractor shall maintain documentation of coordinated work.

3. This contractor shall coordinate the space clearances required for the plumbing system with the structure, ceilings, lights, ductwork, etc. In some cases, due to space limitations, it may be necessary to reroute piping to meet the conditions of the project. Any rerouting shall be part of this project and done without any additional cost to the Owner. **DO NOT MAKE PIPING WITHOUT COORDINATION. Avoid conflicts with other trades.**

4. This contractor shall coordinate the installation of sewer lines with all parts of the structural foundation system and structural building systems. Provide sleeves through grade beams or concrete beams at all conflicts. All points of penetration of foundation shall be reviewed by the Architect/Engineer prior to rough-in. All sleeves shall be installed per the instructions and details of structural engineer.

5. All piping shall be run as high as possible with sleeves through concrete beams to avoid conflicts. This means the piping shall run in or through the structure unless approved otherwise by the Architect/Engineer.

J. REVIEW OF MATERIALS

1. Whenever manufacturers or trade names are mentioned in these plans or Specifications, the words "or approved equivalent" shall be assumed to follow whether or not so stated. Manufacturers or trade names are used to establish a standard of quality only and should not be construed to infer a preference. Equivalent products which meet the Architect's approval will be accepted; however, these requests for acceptance of products must be received by the Architect a minimum of ten days prior to bid date.

Submission shall include manufacturer's name, model number, rating table and construction features. Upon receipt and checking of this submittal, the Architect will issue an addendum listing items which are approved as equivalent to those specified. The contractor shall base his bid solely on those items specified or included in the "Prior Approval Addendum" as no other item will be acceptable. Prior approval of a particular piece of equipment does not mean automatic final acceptance and will not relieve the contractor of the responsibility of assuring himself that this equipment is in complete accord with plans and Specifications and will fit into the space provided. Submit shop drawings on all items of equipment for approval as hereinafter specified.

2. Should a substitution or variation occur, the better quality or greater quantity of material or work shall be furnished. This also does not preclude other manufacturers if they meet the following criteria:

   a. Product proposed for substitution shall be equal or superior to that specified in construction, efficiency, utility and function.
   b. Physical size of substitute brand shall not be greater than space provided for it.
   c. Profile of substitution shall be same concerning size, shape, indentations, recesses, etc.
   d. Complete illustrations, specifications and description of substitution shall be submitted for approval.
   e. Availability and proximity of manufacturer's service representative shall be factors considered in substitution approval.
   f. Substitution and/or variations shall be reviewed and allowed when there is no change in cost to the project and shall be made at the discretion of the Engineer.

K. SHOP DRAWINGS

1. The General Contractor shall submit plumbing submittal within 30 days of the date of the contract between owner and contractor or the date of notice to proceed as issued by the owner to the General Contractor. The mechanical submittals shall have been submitted to the General Contractor within 30 days after the construction contract has been signed. The General Contractor and his sub-contractors shall bear all responsibility for any extra costs or delays to late submittals of shop drawings.

2. Drawings shall be presented in a clear and thorough manner.

3. Details shall be identified by reference to sheet detail, schedule or room numbers shown on contract and drawings.

4. Drawings shall contain the following information:

a. Date.
b. Number of the drawing or revision.
c. Name of project or facility.
d. Name of contractor and subcontractor.
e. Clear identification of contents and location of work.

5. Preparation:

a. Clearly mark each copy to identify pertinent products or models.
b. Show performance characteristics and capacities.
c. Show dimensions and clearances required.
d. Show wiring or piping diagrams and controls.
e. Show weights and mounting data.
f. Provide letter documentation confirming that all coordination with other trades effected have been done. This is especially necessary with the electrical requirements and rough-in requirements.

6. Manufacturer's standard schematic drawings and diagrams:

a. Modify drawings and diagrams to delete information which is not applicable to the work.
b. Supplement standard information to provide information specifically applicable to the work.

7. Office samples shall be of sufficient size and quantity to clearly illustrate:

a. Functional characteristics of the product, with integral related parts and attachment devices.
b. Full range of color, texture and pattern.

8. Equipment shop drawing shall be prepared by the contractor/supplier. These shop drawing shall include the manufacturer’s performance data and installation manuals. In addition, the shop drawings shall show the installation specific to this project.

9. Assemble certificates, executed by each of the respective manufacturers, suppliers, and subcontractors.

10. All submittals shall be submitted prepaid and in ample time for review before installation.

11. Six (6) copies of each submittal shall be submitted to the Architect.

12. These shop drawings shall be supplied as part of this contractor's contract. Any drawings not approved shall be resubmitted until approved. **Submit all shop drawings at the same time. No separate items will be accepted.**

13. Time necessary for review of samples, certificates, test reports, and shop drawings is at least 30 calendar days after receipt of the item. All materials installed in the work shall match the reviewed submittals. After a submission has been reviewed, no substitutions will be permitted without written approval by the Architect.

14. The Architect's/Engineer's review of shop drawings shall not relieve the contractor from the responsibility of incorrectly figured dimensions or any other errors that may be contained in these drawings. The omission from the shop drawings or specifications, even though approved by the Architect, shall not relieve the contractor from furnishing and erecting same.

15. Any delays caused by contractor not submitting shop drawings within a timely manner shall be the problem of the responsible subcontractor and the General Contractor.

L. MATERIALS

1. Work materials shall be new and the best of their respective kinds, and shall bear the label of NFPA, ASME Code, and UL where such standard has been established for the particular item of equipment used.

M. MATERIAL STORAGE

1. General: Provide space for storage of material and equipment at ground level. Roof surfaces shall not be used for storage of materials or equipment. Any storage within the building shall be approved by the Architect/Engineer prior to use of the space.

2. Exterior: Pipe, fitting, or other materials stored outside of building shall be set on wood or steel racks or platforms inside storage container units. All necessary provisions shall be made to keep water and debris away from such stored material. Ends of pipes and valves shall be kept sealed until used.

3. Warehousing: Equipment subject to rusting shall be kept warehoused until just prior to setting. If necessary the warehouse shall have climate controlled conditions.

4. Offsite warehousing shall be approved by the Architect and Owner only.

5. Any warehousing used shall be approved by the Owner and an insurance certificate naming the Owner as insured shall be provided to the Owner.

N. GROUNDS AND CHASES

1. Contractor shall see that all required chases, sleeves, grounds, holes and accessories necessary for the installation of his work are properly built in as the work progresses; otherwise he shall bear the cost of providing them.

O. MACHINERY GUARDS

1. Contractor shall provide v-belt guards for each v-belt drive or other hazardous drive. Guard shall enclose the drive entirely and shall have a hole for taking tachometer reading.

P. SPECIAL TOOLS

1. Special tools required for proper operation or maintenance of any equipment provided under this contract shall be delivered to the Owner at the completion of the project.

Q. FILL AND CHARGES FOR EQUIPMENT

1. Fill and charge with materials or chemicals all devices or equipment as required to comply with the manufacturer's guarantee or as required for proper operation of the equipment.

2. This contractor shall flush systems as required per local and state jurisdictions and equipment/material manufacturer’s guideline. (Chlorination, chemical treatment, etc.)

R. TEMPORARY USE OF EQUIPMENT

1. The permanent equipment installation shall not be used for temporary purposes by the contractor for temporary conditioning of the building during construction.

2. Acceptable Use Without Specific Authorization: Temporary use shall not be construed to mean "bumping" of electric motors on equipment to verify rotation direction nor short time operation of systems for test purposes.

S. CLEANING AND ADJUSTING

1. Upon completion of his work, the contractor shall clean and adjust all equipment, controls, valves, etc. Clean all piping, etc., and leave entire installation in good working order.

T. PAINTING

1. This contractor shall obtain the services of a painting sub-contractor as part of his contract with the General Contractor for all painting.
2. General: Except for standard factory finishes, all pipe, pipe covering, equipment, supports, hangers, etc., exposed inside and outside building or in equipment room shall be painted. This contractor shall prepare surface of material to receive first coat of paint. All subsequent coatings shall be prepared by Painting Subcontractor. Requirements covering paints, workmanship and preparation of surfaces as stated in Architectural Specifications shall govern. Color coding shall be approved by Architect (submit color samples). All submittals for review shall be through Architect.

3. Damage: Where standard equipment factory finishes have been damaged or scratched, the damaged area shall be repaired or replaced by the contractor to match the original finish.

4. Preparation: Thoroughly clean surfaces of all rust, scale, cement, and dirt from all equipment, piping or other work installed and leave ready for finish painting.

5. All exposed piping shall be painted. Paint with two (2) coats of paint. The color shall be industry standard color coding. Submit color code chart with sample color chips to Architect for review prior to starting work.

U. FIRESTOPPING

1. Penetrations through rated construction shall be sealed with a material capable of preventing the passage of flames and hot gases when tested in accordance with ASTM-EB14.

2. Notify Architect for inspection of all completed fire and/or smoke barrier walls before any construction is installed that may conceal the firestopping material installation.

3. Access to random selected areas may be required by the architect at the time of final inspection should notification not be given.

4. Provide detailed instructive cutsheets of fire penetration sealing system (firestopping) used to the architect at the time of inspection. Random selective sampling by the contractor will be observed by the architect and State Fire Marshal.

V. PERMITS, INSPECTIONS AND TESTS

1. Contractor shall obtain and pay for permits, fees, etc., for the installation, inspection, service connections, verifying location or construction of the work which are required by any authority and/or agencies having jurisdiction.

2. Contractor shall arrange and pay for inspections, examinations and tests required to obtain complete and final acceptance of all plumbing systems. Contractor shall deliver certificates of all such inspections to the Architect.

3. Contractor shall notify Architect and local governing authorities before any tests are made and tests are not to be drawn off a line covered or insulated until examined and approved by the authorities. In the event defects are found, these shall be corrected and the work shall be retested.

4. Prior to requesting final inspection by the Architect, the contractor shall have a complete coordination and adjustment meeting of all of his subcontractors directly responsible for the operation of any portion of the system. At the time of this meeting, each and every sequence of operation shall be checked to assure proper operation. Notify the Architect in writing ten days prior to this meeting instructing him of the time, date and whom you are requesting be present. This project shall not be accepted until the above provisions are met to the satisfaction of the Architect.

W. OPERATION AND MAINTENANCE INSTRUCTIONS

1. Provide Owner with four (4) copies of printed instructions indicating various pieces of equipment by name and model number complete with parts lists and maintenance and repair instructions. This information shall be bound in plastic covered notebooks. Submit the manuals to the Architect for approval.

2. Include all warranty certificates or statements in a separate section of the manuals. Provide all materials and test certificates for the final inspection.

3. Provide three (3) sets of DVDs of the operation and maintenance manuals.

X. GUARANTEE

1. Contractor shall guarantee all materials, equipment and workmanship for a period of one year from the date of final acceptance of the project. This guarantee shall include furnishing of all labor and material necessary to make any repairs, adjustments or replacement of any equipment, parts, etc., necessary to restore the project to first class condition. This guarantee shall exclude only the changing or cleaning of filters.

2. If the contractor's office is in excess of a 50 mile radius of the project, he shall appoint a local qualified contractor to perform any emergency repairs or adjustments required during the guarantee period. The contractor appointed to provide emergency services shall be submitted to the Architect for his approval.

Y. WARRANTIES

1. Assemble warranties executed by each of the respective manufacturers, suppliers, and subcontractors into a warranty book and prepare a table of contents.

2. Two (2) original signed copies of each warranty are required.

3. Provide complete information for each item including:

   a. Product and work item.
   b. Local supplying firm or manufacturer's dealer, with name of principal, address and telephone number.
   c. Scope of warranty.
   d. Date of beginning of warranty.
   e. Duration of warranty.
   f. Provide information for Owner:
   g. Proper procedure to evoke the warranty in case of failure.
   h. Instances which might affect the validity of the warranty.
   i. Contractor, name of responsible principal, address and telephone number.
   j. All contractors and manufacturers equipment warranties shall start at the acceptance of the project by the Owner.
   k. Provide owner with contact information for warranties which extend beyond one year.

Z. RECORD DRAWINGS

1. Contractor shall maintain two (2) sets of drawings of the original construction documents to utilize as markup sets to record field modifications from original construction documents. Once approval has been gained from the Architect, the contractor shall record these variances on the two (2) sets in a neat and readable manner. Noted shall be sizes, locations, changes in directions, etc. with distances dimensioned from columns, walls, inverts, etc. The maintenance and cost of these documents shall be the responsibility of the contractor.

AA. DEMOLITION

1. This contractor shall do all demolition as shown on the plans. The contractor shall make the areas ready for the new construction work. All demolition debris, piping, equipment, etc., shall be removed from the site by this contractor. All demolition work shall be scheduled through the General Contractor to prevent interruption of any existing services. Do not start any demolition which would interrupt the building operation without scheduling with the Owner (schedule through the General Contractor).

2. The Owner shall retain first salvage rights to anything within the demolition area. If the Owner selected an item to be retained, then this contractor shall remove it with care and deliver the item to the Owner designated location on site. Anything not retained by the Owner shall become the property of the contractor and be removed from the site.

BB. MATERIALS CONTAINING HAZARDOUS SUBSTANCES OR COMPONENTS

1. This contractor shall not provide any material or component of equipment which contains asbestos, lead based paint or PCBs. The contractor shall provide certificates or manufacturer's statements/letters to show that the products and/or building materials do not contain asbestos, lead based paint or PCBs.

2. If any product or building material is found to contain asbestos, lead based paint or PCBs, the contractor shall bear all cost for removal, abatement, and disposal of materials in accordance with all state and federal regulations. The contractor shall install replacement materials to the satisfaction of the Architect at no additional cost to the project.

3. During the construction, if the contractor suspects that any material in the building contains or is a hazard material (asbestos, lead, PCB, mercury, etc.) work shall be stopped to prevent disturbance and the Owner shall be notified immediately.

END OF SECTION 22 05 00

SECTION 22 05 03 - BASIC MATERIALS AND METHODS FOR PLUMBING

I. GENERAL

A. DESCRIPTION

1. Type of piping for various systems shall be as specified herein.

2. All pipe shall be true and straight without sags or traps.

II. MATERIALS

A. SANITARY SEWER WASTE AND VENT LINES

1. All sanitary sewer waste and vent lines above and below building slab shall be constructed of service weight bell and spigot cast iron pipe and fittings. Where space requirements do not allow the use of the above materials, government type DWV copper pipe shall be used. All cast iron pipes shall comply with Commercial Standards CS 188-59 coated with tar inside and out and marked with manufacturer's identification and proper weight classification. Joints shall be made with neoprene gaskets.

2. At contractor’s option, all sanitary sewer waste and vent lines may be Schedule 40 PVC plastic lines and fittings with solvent weld joints (solid core allowed only; foam or cell core not acceptable).

3. Sanitary sewer lines exterior of building (5 feet from building) shall be constructed of PVC Schedule 40 type "DWV" plastic pipe and fittings (solid core allowed only; foam or cell core not acceptable).

4. At contractor’s option, sanitary sewer vent lines and storm drain lines above grade may be constructed of “no hub” service weight cast iron pipe with neoprene/stainless steel clamp couplings.

B. DOMESTIC WATER PIPE

1. All domestic cold water lines/hot water lines within building, water heater relief lines and equipment drain piping shall be government type "L" hard copper water tube of standard weight and thickness, unless indicated otherwise. Use 95-5 "lead free" solder on all piping above slab. Use Silfos 1000 degrees Fahrenheit solder on all piping beneath slabs. “Press-Fit” or “Pro-Press” piping is not acceptable.

C. PIPE FITTINGS

1. All pipe fittings shall be same as piping specified unless indicated otherwise.

2. Fittings for domestic water lines shall be solder type wrought copper, Nibco or equivalent.

D. PIPE SPECIALTIES

1. Dielectric unions shall be used between copper and iron pipe.

E. PIPE HANGERS AND SUPPORTS

1. This contractor shall furnish and install all foundations and supports required for his equipment unless indicated otherwise on the drawings.

2. This contractor shall furnish and install all escutcheons, inserts, thimbles, hangers, etc., required for the proper support and installation of his equipment and piping. Cooperate with other trades in locating and placing these items.

3. Provide sleeves for all pipes passing through walls, floors, beams, etc. Sleeves passing through structural members shall be of cast iron or Schedule 40 steel pipe unless other material is approved by the Structural Engineer. Sleeves passing through nonstructural walls or floors shall be of Schedule 10 galvanized iron. Joints between sleeves and pipes passing through floors shall be made watertight with plastic materials. Where pipes pass through floors shall be made watertight with plastic materials. Where pipes pass through waterproofing membrane, flashing sleeves shall be installed.

4. Provide malleable iron split ring hangers with rod supports throughout. Strap hangers or wire will not be accepted. Maximum spacing of hangers for cast iron pipes shall be 5 feet; for other than soil, use 10 feet.

5. Provide galvanized iron shields between hangers and pipe covering.

6. Provide chrome plated brass escutcheons wherever pipes pass through floors, walls or ceilings in exposed or finished areas.

7. All piping projecting from chases shall be rigidly supported in the wall or chase. Loosely supported piping or accessories will not be accepted.

F. VALVES AND UNIONS

1. Furnish and install all valves, unions, stops, connections, etc., shown on plans and necessary to make a complete system in working order. Provide

valves on inlet and outlet of all equipment and fixtures and on branch lines to fixtures or groups of fixtures.

2. All valves, unions, etc., where pipe is chrome plated shall have similar finish. All exposed supplies to plumbing fixtures shall be chrome plated.

3. Ball valves shall be as manufactured by Milwaukee Valve (MV), Watts, Stockham, Powell, NIBCO, Neles-Jamesbury or Hammond.

4. All valves over 2 inches shall be flanged type and full port type. All valves 2 inches and smaller shall be screw type, sweat type or flanged type as appropriate for type of pipe.

G. ACCESS PANELS

1. Furnish and install access panels where valves, dampers, etc., are concealed in walls, ceilings, floors or otherwise inaccessible. Panels shall be Milcor, Babcock, Larsen, MIFAB, Acudor, Nystrom or equivalent. All access panels shall be minimum 18 inches X 18 inches hinged with flush latch and lock. The panels shall be constructed of minimum 16 gauge steel. Frame flange shall be minimum 1-1/2 inches wide. Rated panels shall have U.L. rating for type wall or ceiling where located.

2. Access panels located in rated walls, floors, ceilings, shall be so rated and installed per manufacturer's recommendations to maintain rated integrity.

3. Steel access panels shall be primed and painted color as selected by Architect.

III. EXECUTION

A. SANITARY SEWER PIPE

1. Pipe ends shall be square cut. Ends of pipes shall be reamed and shall be wiped clean to remove cuttings. Before installation, pipe shall be stood on end and tapped sharply to remove cuttings and other foreign materials from interior. Pipe shall be thoroughly cleaned inside and outside. Bending or springing of pipe shall not be permitted.

2. Various service pipes, valves, fittings, etc., running parallel with each other and near together shall be in line with each other and shall be kept at a sufficient distance from each other and other work to permit no less than 1/2 inch between finished coverings on different services.

3. Each contractor shall furnish all foundations, structural or pipe supports indicated, called for specifically or that may be required to support his

particular equipment and material unless hangers are definitely indicated as being furnished by others. All horizontal runs of piping shall be securely supported by pipe hangers spaced at not more than 10 feet apart and closer when necessary to prevent sagging. Sewer waste and vent lines shall be supported every 5 feet.

4. Perforated strap hangers shall not be allowed for any part of the hangers.

5. Drainage and vent pipes: The main vertical soil and waste vent shall be extended full size through the wall. Cast-iron pipe inside the building shall be extended 6 inches above the floor.

6. Fittings: Changes in pipe size on soil, waste, and drain lines shall be made with reducing fittings of recessed reducers. All changes in direction shall be made by the appropriate use of 45 degree wyes, long or short sweep 1/4 bends, 1/6, 1/8, or 1/16 bends, or by a combination of those or equivalent fitting, except that single and double sanitary tees may be used in drainage lines only where the direction of flow is from horizontal to vertical. Short sweeps not less than 3 inches in diameter may be used where the change in direction of flow is either from horizontal to vertical or from vertical to horizontal.

7. Pipe sleeve, hangers, and fixture supports: These items shall be furnished and set and the contractor shall be responsible for their proper and permanent location.

    a. Pipe sleeves - Install sleeves for all pipes passing through footings, floors, and walls. Clearance between sleeves and pipe covering and/or pipes shall be approximately 1/4 inch. Construction shall not be cut except where approved by the Architect. Where cutting of construction is permitted, the construction shall be repaired to match its original condition. Sleeves shall not be installed in structural members except where indicated. Sleeves are not required for wall hydrants.
        1) Install sleeves for pipes that pass through walls. Sleeves that pass through walls shall be cut flush with surfaces. The space between sleeves and pipe or covering shall be sealed with graphite packing and synthetic rubber caulking compound.
        2) Install sleeves where pipes pass through waterproofing membrane. The sleeves shall be provided with an integral flashing flange or a clamping device to which a 4 pound lead flashing shield shall be clamped or soldered. The shield shall extend 12 inches from the pipe and shall be thoroughly mopped into the membrane. The space between the sleeve and pipe shall be made watertight by inserting an

oakum gasket, filling the remaining space with lead, and thoroughly caulking.

b. Threaded pipe - Support pipes at 7 foot intervals.

c. Copper tubing - Support tubing at not more than 5 foot intervals. Hangers for copper tubing except where protective shields are installed shall have proper size rings to suit outside diameter of tubing and the hangers or supports shall be copper or copper plated at contact surfaces.

d. Underground piping - Lay pipe on a firm bed for its entire length, except where support is otherwise provided.

e. Vertical piping - Supports shall be at each floor. Horizontal piping - Hangers and supports shall be installed at locations not more than 3 feet from the end of each run out. A hanger shall be installed not over 1 foot from each change in direction of piping.

8. Make connections to equipment and branch mains with unions.

9. Provide drain valves at main shutoff valves, low points of piping and apparatus.

10. Install each fixture with trap, easily removable for servicing and cleaning. Each trap shall be placed as near the fixture as possible, and no fixture shall be double trapped. At completion, thoroughly clean plumbing fixtures and equipment.

11. Fixture connections: Connections between earthenware fixtures and flanges on soil pipes shall be made absolutely gas tight and water tight with a closet-setting compound or gasket. Bolts shall be not less than 1/4 inch in diameter and shall be equipped with chromium-plated nuts and washers.

12. Test sanitary drainage, condensate drains and vent systems with water or air in accordance with requirements of the State Sanitary Code, International Plumbing Code and all applicable local codes. Water test may be applied to entire drainage systems or sections of systems. All openings shall be tightly closed in section to be tested except at highest opening. All portions of systems shall be subject to a minimum of 10 feet head of water. Water must have been in the system 2 hours prior to inspection. Air test in accordance with the Plumbing Code may be used at contractor's option.

13. Sanitary sewer or storm drain pipe penetrating concrete slabs shall be wrapped with foam insulation tape.

B. DOMESTIC WATER PIPE

1. Perforated strap hangers shall not be allowed for any part of the hangers.

2. Mains, branches, and run outs: Piping shall be installed as indicated on the drawings. Pipe shall be cut accurately to measurements established at the building and shall be worked into place without springing or forcing. Care shall be taken not to weaken structural portions of the building. Above ground piping shall be run parallel with the lines of the building unless otherwise shown or noted on the drawings. Branch pipes from service lines may be taken from top, bottom, side or main, using such crossover fittings as may be required by structural or installation conditions. Service pipes, valves, and fittings shall be kept a sufficient distance from other work and other services to permit not less than 1/2 inch between finished covering and other work and not 1/2 inch between finished covering on the different services. No water pipe shall be made with reducing fittings. Use of long screws and bushings will not be permitted. Slope water pipe 1 inch in 40 feet and arrange to drain at low point.

3. Expansion and contraction of piping: Allowance for expansion and contraction shall be made throughout. Sufficient flexibility shall be provided on all branch run outs from mains to risers to provide for expansion and contraction of piping. Flexibility shall be provided by installing one or more turns in the line so that the piping will spring enough to allow for expansion without straining.

4. Joints: Tubing shall be cut square, and butts shall be removed. Both inside of fittings and outside of tubing shall be well cleaned with steel wool before sweating. Care shall be taken to prevent annealing of fittings and hard drawn tubing when making connections. Installation shall be made by competent workmen in accordance with manufacturer's recommendation. Mitering of joints for elbows and notching of straight runs of pipe for tees will not be permitted. Joints for soldered fittings shall be made with a noncorrosive paste flux and solid string of wire solder. Cored solder will not be permitted.

5. Valves: Valves shall be provided on all supplies to fixtures as specified under type of fixture and fixture trimmings. Valves indicated in connection with run outs, risers, branches, and mains shall be in accordance with this specification. No valve shall be installed on any lines with its stem below the horizontal. All valves shall be gate valves unless otherwise specified or indicated. Provide drain valves at main shut-off valves, low points of piping and apparatus.

6. Pipe sleeve, hangers, and fixture supports: These items shall be furnished and set and the contractor shall be responsible for their proper and permanent location.

a. Pipe sleeves - Install sleeves for all pipes passing through footings, floors, and walls. Clearance between sleeves and pipe covering and/or pipes shall be approximately 1/4 inch. Construction shall not be cut except where approved by the Architect. Where cutting of construction is permitted, the construction shall be repaired to match its original condition. Sleeves shall not be installed in structural members except where indicated. Sleeves are not required for wall hydrants.
   1) Install sleeves for pipes that pass through walls. Sleeves that pass through walls shall be cut flush with surfaces. The space between sleeves and pipe or covering shall be sealed with graphite packing and synthetic rubber caulking compound.
   2) Install sleeves where pipes pass through waterproofing membrane. The sleeves shall be provided with an integral flashing flange or a clamping device to which a 4 pound lead flashing shield shall be clamped or soldered. The shield shall extend 12 inches from the pipe and shall be thoroughly mopped into the membrane. The space between the sleeve and pipe shall be made watertight by inserting an oakum gasket, filling the remaining space with lead, and thoroughly caulking.

b. Threaded pipe - Support pipes at 7 foot intervals.

c. Copper tubing - Support tubing at not more than 5 foot intervals. Hangers for copper tubing except where protective shields are installed shall have proper size rings to suit outside diameter of tubing and the hangers or supports shall be copper or copper plated at contact surfaces.

d. Underground piping - Lay pipe on a firm bed for its entire length, except where support is otherwise provided.

e. Vertical piping - Supports shall be at each floor. Horizontal piping - Hangers and supports shall be installed at locations not more than 3 feet from the end of each run out. A hanger shall be installed not over 1 foot from each change in direction of piping.

7. Unions: Make connections to equipment and branch mains with unions. Provide non-conducting type connections wherever jointing dissimilar metals in open systems. Brass adapters and valves are acceptable.

8. Domestic cold water lines penetrating concrete slabs shall be wrapped with vinyl flexible tube. Domestic hot or return water piping penetrating concrete slabs shall be insulated at all penetrations through slab (refer to insulation specifications).

9. Provide drain valves at main shutoff valves, low points of piping and apparatus.

10. Hydrostatically test entire domestic water system to 200 psig or 2-1/2 times normal working pressure.

11. Sealing or flashing the building envelope due to penetrations in building shall be the responsibility of the general contractor.

12. Water service to fixtures or groups of fixtures shall have 12 inch long air chambers at the same diameter as header or service pipe on both hot and cold water lines. Air chamber shall be installed close to fixture. Provide and install shock arrestors on sterilizer water supplies or supplies with quick closing valves such as flush valves, dishwashers, tempering valves, etc. Location and size of shock arrestor shall be as per manufacturer's instructions.

END OF SECTION 22 05 03

SECTION 22 07 00 – PLUMBING INSULATION

I. GENERAL

A. DESCRIPTION

1. Pipe insulation installation shall not begin until all work has been tested and found to be tight. All insulation shall be UL listed and have a flame spread of less than 25 and a developed smoke rating less than 50. All insulation shall be banded with aluminum bands, three per section. All insulation shall be continuous through walls, floors, ceilings, etc.

II. MATERIALS

A. DOMESTIC WATER PIPING

1. Cover cold water lines above ceilings and in exterior walls and all hot water lines with 1 inch thick closed cell rubber type insulation. At contractor's option, 1 inch thick fiberglass insulation with white universal jacket may be used. All flanges, valves and fittings shall be insulated with closed cell rubber type molded fittings insulation, fabricated mitered segments of pipe insulation or closed cell rubber type insulation equivalent in thickness to insulation of adjoining pipe.

2. All water lines exposed in finished spaces and mechanical rooms shall be covered with 0.020 color coded PVC jacket with solvent welded seams and joints.

3. All water lines outside of building exposed to the weather shall have 1 inch thick closed cell rubber type insulation covered with 0.016 smooth aluminum jacket and elbows.

4. All water lines below building slab shall be insulated with 1 inch thick closed cell insulation with two (2) coats of mastic.

B. HORIZONTAL WASTE PIPING

1. All horizontal waste lines and traps above first floor slab which receive condensate from air conditioning equipment, storm drain piping, roof drain bodies, shall be insulated with 2 inch thick, 3/4 pound density fiberglass insulation with aluminum foil vapor barrier or closed cell rubber insulation.

C. INSULATION BANDS

1. All pipe insulation shall be banded with nylon tie-wrap bands, three (3) to a section, and with one (1) band on each side of each fitting, valve, etc.

D. FLANGES, VALVES AND FITTINGS

1. All flanges, valves and fittings shall be insulated with fabricated fiberglass molded fitting insulation, using factory fabricated fittings up to 3 inches and fabricated mitered segments of pipe insulation equal in thickness to the insulation to the adjoining pipe. All fabricated mitered segments shall be covered with matching embossed vapor barrier laminate.

III. INSTALLATION

A. Provide clearance for installation of insulation and for access to valves, air vents, drains and unions.

1. Insulation Installation:

a. Do not install covering before piping has been tested and approved.
b. Ensure piping surface is clean and dry prior to installation.
c. Ensure insulation is dry before and during application.
d. Insulation shall be continuous through walls, floors and ceiling. Pack around pipes with fire proof self-supporting insulation material, fully sealed.
e. Insulate fittings and valves. The end of the insulation shall be fitted with a metal escutcheon plate with set screw or taped neatly with pressure sensitive fiberglass reinforcing cloth.
f. All joints shall be sealed with 3 inch wide fiberglass reinforcing cloth with pressure sensitive adhesive.
g. Pipe insulation at Hangers and Supports: Pipe insulation at hanger and support shall be protected with a half circular shield of the size of the insulation and 12 inches long constructed from 20 gauge galvanized steel. The shield shall be held in place with the fiberglass reinforcing cloth and pressure sensitive adhesive. Where pipes pass through walls, ceiling and floor in finished areas, escutcheon plates shall be installed to encompass pipe and insulation. Escutcheon plates shall be chromed brass or stainless steel and shall be either solid or the clamp on split type.
h. Painting of fiberglass pipe jacket is not required. Piping shall be painted colors as standard in this facility.
i. The first 8 feet of outlet piping and the inlet piping between the storage tank (water heater) and a heat trap (including the heat trap) must be insulated with fiberglass insulation equivalent in thickness to supply water piping.

END OF SECTION 22 07 00

SECTION 22 10 00 - PLUMBING

I. GENERAL

A. DESCRIPTION

1. Furnish all labor and materials as hereinbefore specified, indicated or reasonably implied for the complete installation of the following systems:

a. Cold Water
b. Hot Water System
c. Sanitary Drainage System

II. MATERIALS

A. PLUMBING FIXTURES

1. Plumbing Contractor shall furnish and install all plumbing fixtures shown on accompanying drawings. Refer to both plumbing and architectural drawings and provide all fixtures shown on either. Fixtures shall be complete with all necessary brass and accessories required for a complete installation including traps, escutcheons, angle supplies, basin cocks, etc. All fixtures shall be new and must be delivered to the building properly crated in perfect condition.

2. All brass must be of the best quality; lightweight goods will not be accepted. All brass pipe shall be seamless brass tubing and nipples shall be extra heavy. All fittings and trim shall be chromium plated heavy brass unless otherwise specified. "P" traps shall be cast brass with cleanouts. All exposed piping shall be chromium plated. Provide cutoff valves at each fixture in both hot and cold water piping.

3. For the purpose of establishing type and class of fixtures required, the scheduled plate numbers have been taken from the indicated catalog. Approved equals shall be as follows: Fixtures: Kohler, Zurn, Briggs, American Standard, Crane, Eljer, Elkay, Dayton, Just or Universal Rundle. Flush Valves: Sloan, Zurn. Faucets: Elkay, Just, Chicago, Kohler, American Standard, Delta Commercial, Zurn, Speakman. Water Heaters: A.O.Smith, Ruud/Rheem, State, Bradford White. Drains: Wade, J.R. Smith, Zurn, Josam. Hose Bibbs: Josam, Woodford, J.R. Smith, Wade, Zurn.

III. EXECUTION

A. SURFACE CONDITIONS

1. Inspection:

   a. Prior to all work of this section, carefully inspect the installed work of adjacent trades and verify that all such work is complete to the point where fixture installation may properly commence.
   b. Verify that all hangers and fixture supports are properly installed to receive plumbing fixtures.

B. PLUMBING FIXTURES

1. Each plumbing fixture shall be fitted with all necessary and proper fittings, trimmings and operating devices, and shall be in perfect operating condition.

2. Refer to architectural drawings for any other information that may be necessary or required in connection with plumbing installation.

3. Before setting any fixtures, obtain the exact mounting height, as desired, from the Architect.

4. Wall mounted water closets, urinals, and lavatories shall have a floor anchored carrier to fit in available wall space (coordinate requirements in drawings).

END OF SECTION 22 10 00

SECTION 22 11 00 - WATER SUPPLY

I. GENERAL

A. DESCRIPTION

1. Install water supply piping as indicated on plans.

II. MATERIALS

A. PIPING

1. All water supply piping shall be of materials hereinbefore specified.

2. All water lines shall be disinfected in accordance with the State Sanitary Code.

III. EXECUTION

A. INSTALLATION

1. Water lines run underground shall have a minimum of 24 inches cover to finished grade.

2. Make up complete water supply system. Connect to all fixtures and outlets requiring water.

3. At each fixture or group of fixtures furnish and install a 12 inch high air chamber of same size as branch feed line except at fixtures with quick closing valves such as flush valves, dishwashers, etc., in which cases provide "Shock Arrester" properly sized for each unit.

B. TESTING

1. All lines shall be tested in accordance with requirements listed in construction documents and State Plumbing Code.

END OF SECTION 22 11 00

SECTION 22 13 00 - WASTE WATER DISPOSAL

I. GENERAL

A. DESCRIPTION

1. Extend sanitary sewer lines to the location as shown on the plans.

II. MATERIALS

A. PIPING

1. The system of sewage and drainage shall be of materials as hereinbefore specified except where space requirements necessitate the use of Type "DWV" copper

III. EXECUTION

A. INSTALLATION

1. All work shall be in strict conformity with the State Plumbing Code and in accordance with all local codes. Piping shall be routed as shown on plans or in acceptable manner to meet building conditions. Venting shall be as shown on plumbing riser diagrams.

2. Connections between traps and cast iron pipes are to be made with heavy brass ferrules.

3. Provide reducers, increasers, special flanges, and fittings where required between piping work and fixtures in order to connect and complete work and render it ready for use. Make any offsets required to avoid construction.

4. All lines 3 inches and smaller shall be sloped 1/4 inch per foot, lines 4 inches through 6 inches shall be sloped 1/8 inch per foot, lines 8 inches and larger shall be sloped 1/16 inch per foot. Piping shall be laid so slope is continuous.

5. All vents shall extend 10 inches above roof and terminate in an appropriate flashing collar. No vents shall penetrate roof within 48 inches of an exterior wall. Offset in ceiling as required. All back vents shall be taken off as near trap as possible.

B. TESTING

1. All lines shall be tested in accordance with requirements listed in construction documents and State Plumbing Code.

END OF SECTION 22 13 00

SECTION 23 05 00 - GENERAL PROVISIONS FOR HVAC

I. GENERAL

A. DIVISION OF SPECIFICATIONS

1. For Bidder's convenience only, this Division of the Specifications is divided into the following parts:

23 05 00	GENERAL PROVISIONS FOR HVAC
23 05 03	BASIC MATERIALS AND METHODS FOR HVAC
23 05 93	TESTING, ADJUSTING, AND BALANCING
23 07 00	MECHANICAL INSULATION
23 09 00	TEMPERATURE CONTROLS
23 30 00	AIR DISTRIBUTION

B. GENERAL CONDITIONS

1. The General Conditions of the Architectural Specifications along with supplementary conditions, special conditions, information to bidders, and any other pertinent information and documents shall apply the same as if repeated herein. The contractor shall review Architectural General Conditions. Where the requirements of Architectural General Conditions and these specs conflict for the contractor, the most stringent shall be applied.

2. Mechanical subcontractor shall be the sole source responsible party to furnish and install the mechanical system. Mechanical contractor shall be properly licensed to perform this work.

3. Wherever the word contractor is mentioned in Division 23 of these specifications, it is intended to mean the Mechanical Contractor as appropriate. These are sub contractors to the General Contractor who has the contract with the owner. It is the General Contractor who bears the responsibility to fulfill this part of the project (Division 23 – Mechanical) under the contract with the owner. The General Contractor shall be responsible for all costs associated with any and all bidding errors and omissions of the sub-contractor.

C. SCOPE OF WORK

1. Furnish labor, materials and equipment necessary to provide and install the complete mechanical portion of this contract, including air conditioning, heating, and ventilating systems as called for herein and on accompanying drawings. Parts of the mechanical division may be bid

separately or in combination at the contractor's option; however, it shall be the responsibility of the General Contractor to assure himself that all items covered in the Mechanical Division have been included if he chooses to accept separate bids.

2. Contractor shall refer to the Architectural, Structural, Plumbing and Electrical drawings and install all equipment, piping, etc., to meet building and space requirements. **No equipment shall be bid on or submitted for approval if it will not fit in space provided or coordinated with other trades involved on the project**.

3. It is the intention of these Specifications that all mechanical systems shall be furnished complete with all necessary valves, controls, insulation, piping, devices, equipment, etc., necessary to provide a satisfactory installation in working order and in accordance with all Federal, State and Local codes and ordinances.

4. Contractor shall visit the site and acquaint himself thoroughly with all existing facilities and conditions which would affect his portion of the work. Failure to do so shall not relieve the contractor from the responsibility of installing his work to meet conditions.

5. Lack of coordination shall not be acceptable and shall not be a reason for poorly installed work or additional cost to this trade or others on the project. All associated extra cost shall be borne by the contractor. The General Contractor shall be responsible for all costs, time and liquidated damages associated with lack of coordination or poor coordination.

D. LOCAL CONDITIONS

1. Location and elevation of all services is based on information obtained from the Owner. However, this shall serve as a general guide only and the contractor shall visit the site and verify the location and elevation of this service to his own satisfaction in order to determine the amount of work required for the execution of the contract.

2. In case major changes are required, this fact, together with the reasons therefore, shall be submitted to the Architect, in writing, not less than seven days before the date of bidding. Failure to comply with this requirement will make the contractor liable for any changes, additions and expenses necessary for the successful completion of the project.

E. CUTTING AND PATCHING

1. Initial cutting and patching shall be the responsibility of the General Contractor with the Mechanical Contractor responsible for laying out and

marking any and all holes required for the reception of his work. No structural beams or joists shall be cut or thimbled without first receiving the approval of the Architect/Engineer. After initial surfacing has been done, any further cutting, patching and painting shall be done at this contractor's expense.

2. Cutting and patching shall be done in such a manner that the surrounding work will be restored to its original condition.

3. The HVAC piping shall be run in such a manner as to avoid conflicts with other trades. It may be necessary to penetrate beams, grade beams, footings, and foundations. Install thimbles as required and as approved by the Structural Engineer and Architect.

F. CODES AND STANDARDS

1. The entire mechanical work shall comply with the rules and regulations of the City, County and State in which this project is being constructed including the State Fire Marshal and State Board of Health. All modifications required by these authorities shall be made without additional charge to the Owners. The Mechanical Contractor shall report these changes to the Architect and secure his approval before work is started.

2. In addition to the codes mentioned, all mechanical work and equipment shall conform to the applicable portions of the following Specifications, codes and regulations:

   a. American Society of Heating, Refrigeration and Air Conditioning Engineers
   b. National Electric Code
   c. National Fire Protection Association
   d. American Society of Mechanical Engineers
   e. Underwriters's Laboratories
   f. International Energy Conservation Code
   g. International Building Code
   h. International Plumbing Code
   i. International Mechanical Code
   j. International Fuel Gas Code
   k. SMACNA Guidelines

3. Materials, equipment and accessories installed under this contract shall conform to all rules, codes, etc., as recommended by National Associations governing the manufacturer, rating and testing of such materials, equipment and accessories. Materials shall be new and of the best quality and first class in every respect. Whenever directed by the

Architect, contractor shall submit a sample for approval before proceeding.

4. Where laws or local regulations provide that certain accessories such as gauges, thermometers, relief valves and parts be installed on equipment, it shall be understood that such equipment be furnished complete with the necessary accessories whether or not called for in these Specifications.

5. Material and equipment furnished or installed as part of these construction documents shall be installed and operated in strict accordance with the respective manufacturer's guidelines for installation and operating instructions. The manufacturer's guidelines shall become part of the construction documents.

G. MINOR DEVIATIONS

1. Plans and detail sketches are submitted to limit, explain and define conditions, specified requirements, pipe sizes and manner of erecting work. Structural or other conditions may require certain modifications from the manner of installation shown and such deviations are permissible and shall be made as required, but, specified sizes and requirements necessary for satisfactory operation shall remain unchanged. It may be necessary to shift ducts or pipes or to change the shape of ducts and these changes shall be made as required. All such changes shall be referred to the Architect/Engineer for approval before proceeding. Extra charges shall not be allowed for these changes.

2. No structural beams or joists (concrete or steel) shall be cut or thimbled without first receiving the approval of the Architect/Structural Engineer. After initial surfacing has been done, any further cutting, patching and painting shall be done at the Mechanical Contractor's own expense.

3. Contractor shall realize that the drawings could delve into every step, sequence or operation necessary for the completion of the project without drawing on the contractor's experience or ingenuity. However, only typical details are shown on the plans. In cases where the contractor is not certain about the method of installation of his work, he shall ask for details. Lack of details shall not be an excuse for improper installation. Submit installation shop drawings with manufacturer's details for review prior to installation.

4. In general, the drawings are diagrammatic and the contractor shall install his work in a manner so that interferences between the various trades are avoided. In cases where interferences do occur, the Architect is to state which equipment, piping, etc., is to be relocated regardless of which item was first installed.

5. Materials and equipment furnished or installed as part of these construction documents shall be installed and operated in strict accordance with the respective manufacturer's guidelines for installation and operating instructions. The manufacturer's guidelines shall become part of the construction documents.

H. WORKMANSHIP

1. Workmanship shall be of highest grade, highest quality and all construction shall be done according to the best practice of the trade. Work shall be completed to satisfaction of the Architect/Engineer.

I. COORDINATION

1. Coordinate work of the different trades to avoid interferences between mechanical and all other work. All piping, ductwork, etc., shall be installed in lines as required to accomplish this end whether or not shown on the plans.

2. There will be a certain amount of work which must be coordinated with the Owner. This contractor shall coordinate required work with the Owner through the General Contractor using procedures acceptable to the Architect and Owner. The contractor shall maintain documentation of coordinated work.

3. This contractor shall coordinate and confirm that all equipment requiring electric service will be adequately and properly serviced by Electrical Contractor. Any conflicts shall be brought to the attention of the Architect/Engineer prior to ordering the equipment. **VERIFY ALL VOLTAGES WITH THE ELECTRICAL PLANS AND ELECTRICAL CONTRACTOR.**

4. This contractor shall coordinate the space clearances required for the HVAC ductwork with the structure, ceilings, lights, etc. In some cases, due to space limitations, it may be necessary to re-size ductwork to meet the conditions of the project. **Any resizing required shall be part of this project and done without any additional cost to the Owner. DO NOT MAKE DUCTWORK WITHOUT COORDINATION. Avoid conflicts with other trades.**

5. This contractor shall coordinate the installation of HVAC piping with all parts of the structural foundation system and structural building systems. Provide sleeves through grade beams or concrete beams at all conflicts. All points of penetration of foundation shall be reviewed by the

Architect/Engineer prior to rough-in. All sleeves shall be installed per instructions and details of the structural engineer.

6. All piping shall be run as high as possible with sleeves through concrete beams to avoid conflicts. This means the piping shall run in or through the structure unless approved otherwise by the Architect/Engineer.

J. REVIEW OF MATERIALS

1. Whenever manufacturers or trade names are mentioned in these plans or Specifications, the words "or approved equivalent" shall be assumed to follow whether or not so stated. Manufacturers or trade names are used to establish a standard of quality only and should not be construed to infer a preference. Equivalent products which meet the Architect's approval will be accepted; however, these requests for acceptance of products must be received by the Architect a minimum of ten days prior to bid date. Submission shall include manufacturer's name, model number, rating table and construction features. Upon receipt and checking of this submittal, the Architect will issue an addendum listing items which are approved as equivalent to those specified. The contractor shall base his bid solely on those items specified or included in the "Prior Approval Addendum" as no other item will be acceptable. Prior approval of a particular piece of equipment does not mean automatic final acceptance and will not relieve the contractor of the responsibility of assuring himself that this equipment is in complete accord with plans and Specifications and will fit into the space provided. Submit shop drawings on all items of equipment for approval as hereinafter specified.

2. Should a substitution or variation occur, the better quality or greater quantity of material or work shall be furnished. This also does not preclude other manufacturers if they meet the following criteria:

   a. Product proposed for substitution shall be equal or superior to that specified in construction, efficiency, utility and function.
   b. Physical size of substitute brand shall not be greater than space provided for it.
   c. Profile of substitution shall be same concerning size, shape, indentations, recesses, etc.
   d. Complete illustrations, specifications and description of substitution shall be submitted for approval.
   e. Availability and proximity of manufacturer's service representative shall be factors considered in substitution approval.
   f. Substitution and/or variations shall be reviewed and allowed when there is no change in cost to the project and shall be made at the discretion of the Engineer.

K. SHOP DRAWINGS

1. The General Contractor shall submit mechanical submittal within 30 days of the date of the contract between owner and contractor or the date of notice to proceed as issued by the owner to the General Contractor. The mechanical submittals shall have been submitted to the General Contractor within 30 days after the construction contract has been signed. The General Contractor and his sub-contractors shall bear all responsibility for any extra costs or delays to late submittals of shop drawings.

2. Drawings shall be presented in a clear and thorough manner.

3. Details shall be identified by reference to sheet detail, schedule or room numbers shown on contract and drawings.

4. Drawings shall contain the following information:

   a. Date.
   b. Number of the drawing or revision.
   c. Name of project or facility.
   d. Name of contractor and subcontractor.
   e. Clear identification of contents and location of work.

5. Preparation:

   a. Clearly mark each copy to identify pertinent products or models.
   b. Show performance characteristics and capacities.
   c. Show dimensions and clearances required.
   d. Show wiring or piping diagrams and controls.
   e. Show weights and mounting data.
   f. Provide letter documentation confirming that all coordination with other trades effected have been done. This is especially necessary with the electrical requirements and rough-in requirements.

6. Manufacturer's standard schematic drawings and diagrams:

   a. Modify drawings and diagrams to delete information which is not applicable to the work.
   b. Supplement standard information to provide information specifically applicable to the work.

7. Office samples shall be of sufficient size and quantity to clearly illustrate:

   a. Functional characteristics of the product, with integral related parts and attachment devices.
   b. Full range of color, texture and pattern.

8. Equipment shop drawing shall be prepared by the contractor/supplier. These shop drawing shall include the manufacturer's performance data and installation manuals. In addition, the shop drawings shall show the installation specific to this project.

9. Assemble certificates, executed by each of the respective manufacturers, suppliers, and subcontractors.

10. All submittals shall be submitted prepaid and in ample time for review before installation.

11. Six (6) copies of each submittal shall be submitted to the Architect.

12. These shop drawings shall be supplied as part of this contractor's contract. Any drawings not approved shall be resubmitted until approved. **Submit all shop drawings at the same time. No separate items will be accepted.**

13. Time necessary for review of samples, certificates, test reports, and shop drawings is at least 30 calendar days after receipt of the item. All materials installed in the work shall match the reviewed submittals. After a submission has been reviewed, no substitutions will be permitted without written approval by the Architect.

14. The Architect's/Engineer's review of shop drawings shall not relieve the contractor from the responsibility of incorrectly figured dimensions or any other errors that may be contained in these drawings. The omission from the shop drawings or specifications, even though approved by the Architect, shall not relieve the contractor from furnishing and erecting same.

15. Any delays caused by contractor not submitting shop drawings within a timely manner shall be the problem of the responsible subcontractor and the General Contractor.

L. MATERIALS

1. Work materials shall be new and the best of their respective kinds, and shall bear the label of NFPA, ASME Code, and UL where such standard has been established for the particular item of equipment used.

M. MATERIAL STORAGE

1. General: Provide space for storage of material and equipment at ground level. Roof surfaces shall not be used for storage of materials or

equipment. Any storage within the building shall be approved by the Architect/Engineer prior to use of the space.

2. Exterior: Pipe, fitting, or other materials stored outside of building shall be set on wood or steel racks or platforms inside storage container units. All necessary provisions shall be made to keep water and debris away from such stored material. Ends of pipes and valves shall be kept sealed until used.

3. Warehousing: Equipment subject to rusting shall be kept warehoused until just prior to setting. If necessary the warehouse shall have climate controlled conditions.

4. Offsite warehousing shall be approved by the Architect and Owner only.

5. Any warehousing used shall be approved by the Owner and an insurance certificate naming the Owner as insured shall be provided to the Owner.

N. GROUNDS AND CHASES

1. Contractor shall see that all required chases, sleeves, grounds, holes and accessories necessary for the installation of his work are properly built in as the work progresses; otherwise he shall bear the cost of providing them.

O. MACHINERY GUARDS

1. Contractor shall provide v-belt guards for each v-belt drive or other hazardous drive. Guard shall enclose the drive entirely and shall have a hole for taking tachometer reading.

P. SPECIAL TOOLS

1. Special tools required for proper operation or maintenance of any mechanical equipment provided under this contract shall be delivered to the Owner at the completion of the project.

Q. FILL AND CHARGES FOR EQUIPMENT

1. Fill and charge with materials or chemicals all devices or equipment as required to comply with the manufacturer's guarantee or as required for proper operation of the equipment.

2. This contractor shall flush systems as required per local and state jurisdictions and equipment/material manufacturer’s guidelines (chlorination, chemical treatment, etc.).

R. EQUIPMENT IDENTIFICATION

1. Stenciling: All items of major mechanical equipment (pumps, AHUs, starters, valves, etc.) shall be neatly and clearly stenciled in letters not less than 1 inch high, with the same designation as appears on drawing. Location and color of such stenciling shall be appropriate for ready identification and/or as directed by the Architect. One set of compatible metal interlocking stencil letters and numbers shall be turned over to the Owner at the completion of the job. At contractor's option engraved plastic adhesive tags may be used. Tags used outdoors shall be listed for such use.

2. Pipe Coding: All piping, etc., both insulated and bare, shall be color coded with a general purpose pipe marker for interior locations and a 6 inch enamel painted ban for exterior locations, and stenciled as to service and characteristics on the 10 foot centers and/or as directed. Directional arrows not less than 1/2 inch wide and not less than 6 inches long shall be permanently stenciled on each line at each stencil location. Stenciling shall be located such that it is clearly visible from floor or adjacent service platform. Coding shall be as per schedule approved by Owner through submittal to Architect. At contractor's option, pre-manufactured vinyl pipe labels and directional arrows may be used but shall be banded on either end to secure to pipe.

3. Valve tags shall be installed on all valves controlling building zones, areas, or equipment. Valve tags shall be 2 inch diameter brass stenciled with valve number. A framed list of valves with associated numbers, sizes and locations shall be mounted in the building as directed by Architect.

S. TEMPORARY USE OF EQUIPMENT

1. The permanent equipment installation shall not be used for temporary purposes by the contractor for temporary conditioning of the building during construction. **Contractor shall provide temporary dehumidification and drying equipment as required to maintain clean, dry air during construction.**

2. Acceptable Use Without Specific Authorization: Temporary use shall not be construed to mean "bumping" of electric motors on equipment to verify rotation direction nor short time operation of systems for test purposes, operation of refrigeration and heating system for short periods to adjust controls and temperature regulation, or the operation of fans for air balance.

T. CLEANING AND ADJUSTING

1. Upon completion of his work, the contractor shall clean and adjust all equipment, controls, valves, etc. Clean all piping, ductwork, etc., and leave entire installation in good working order.

U. PAINTING

1. This contractor shall obtain the services of a painting sub-contractor as part of contract with the General Contractor for all painting.

2. General: Except for standard factory finishes, all pipe, pipe covering, ducts, equipment, supports, hangers, etc., exposed inside and outside building or in equipment room shall be painted. This contractor shall prepare surface of material to receive first coat of paint. All subsequent coatings shall be prepared by Painting Subcontractor. Requirements covering paints, workmanship and preparation of surfaces as stated in Architectural Specifications shall govern. Color coding shall be approved by Architect (submit color sample). All submittals for review shall be through Architect.

3. Damage: Where standard equipment factory finishes have been damaged or scratched, the damaged area shall be repaired or replaced by the contractor to match the original finish.

4. Preparation: Thoroughly clean surfaces of all rust, scale, cement, and dirt from all equipment, piping or other work installed and leave ready for finish painting.

5. All exposed piping shall be painted. Paint with two (2) coats of paint. The color shall be industry standard color coding. Submit color code chart with sample color chips to Architect for review prior to starting work

V. FIRESTOPPING

1. Penetrations through rated construction shall be sealed with a material capable of preventing the passage of flames and hot gases when tested in accordance with ASTM-EB14.

2. Notify Architect for inspection of all completed fire and/or smoke barrier walls before any construction is installed that may conceal the firestopping material installation.

3. Access to random selected areas may be required by the architect at the time of final inspection should notification not be given.

4. Provide detailed instructive cutsheets of fire penetration sealing system (firestopping) used to the architect at the time of inspection. Random

selective sampling by the contractor will be observed by the architect and State Fire Marshal.

W. NOISE VIBRATION

1. General: Take the utmost precautions in the installation of the equipment, piping, and duct systems to prevent noise and vibration transmission.

2. Isolation of equipment: Equipment that would tend to cause noise or vibration shall be isolated to prevent noise transmission to the building or to other equipment.

3. Equipment Connections: Piping, conduit, or other connections to equipment shall be isolated. The contractor shall be responsible for the prevention of noise and vibration transmission through these connections to equipment.

X. PERMITS, INSPECTIONS AND TESTS

1. Contractor shall obtain and pay for permits, fees, etc., for the installation, inspection, service connections, verifying location or construction of the work which are required by any authority and/or agencies having jurisdiction.

2. Contractor shall arrange and pay for inspections, examinations and tests required to obtain complete and final acceptance of all mechanical systems. Contractor shall deliver certificates of all such inspections to the Architect.

3. Contractor shall notify Architect and local governing authorities before any tests are made and tests are not to be drawn off a line covered or insulated until examined and approved by the authorities. In the event defects are found, these shall be corrected and the work shall be retested.

4. Prior to requesting final inspection by the Architect, the contractor shall have a complete coordination and adjustment meeting of all of his subcontractors directly responsible for the operation of any portion of the system. At the time of this meeting, each and every sequence of operation shall be checked to assure proper operation. Notify the Architect in writing ten days prior to this meeting instructing him of the time, date and whom you are requesting be present. This project shall not be accepted until the above provisions are met to the satisfaction of the Architect.

Y. TRAINING OF MAINTENANCE PERSONNEL

1. Contractor shall provide on the job training for Owner's personnel upon completion of the work including testing and adjustment. Minimum 16 hours of onsite training shall include maintenance checks, lubrication of components, adjustment of control set points, and troubleshooting techniques of the air conditioning unit.

2. Contractor shall use factory start-up personnel to train the owner's maintenance personnel (where factory start-up is specified).

Z. OPERATION AND MAINTENANCE INSTRUCTIONS

1. Provide Owner with four (4) copies of printed instructions indicating various pieces of equipment by name and model number complete with parts lists and maintenance and repair instructions. This information shall be bound in plastic covered notebooks. Submit the manuals to the Architect for approval.

2. Include all warranty certificates or statements in a separate section of the manuals. Provide all materials and test certificates for the final inspection.

3. Provide three (3) sets of DVDs of the operation and maintenance manuals.

AA. GUARANTEE

1. Contractor shall guarantee all materials, equipment and workmanship for a period of one year from the date of final acceptance of the project. This guarantee shall include furnishing of all labor and material necessary to make any repairs, adjustments or replacement of any equipment, parts, etc., necessary to restore the project to first class condition. This guarantee shall exclude only the changing or cleaning of filters.

2. If the contractor's office is in excess of a 50 mile radius of the project, he shall appoint a local qualified contractor to perform any emergency repairs or adjustments required during the guarantee period. The contractor appointed to provide emergency services shall be submitted to the Architect for his approval.

BB. WARRANTIES

1. Assemble warranties executed by each of the respective manufacturers, suppliers, and subcontractors into a warranty book and prepare a table of contents.

2. Two (2) original signed copies of each warranty are required.

3. Provide complete information for each item including:

a. Product and work item.
b. Local supplying firm or manufacturer's dealer, with name of principal, address and telephone number.
c. Scope of warranty.
d. Date of beginning of warranty.
e. Duration of warranty.
f. Provide information for Owner:
   1) Proper procedure to evoke the warranty in case of failure.
   2) Instances which might affect the validity of the warranty.
g. Contractor, name of responsible principal, address and telephone number.
h. All contractors and manufacturers equipment warranties shall start at the acceptance of the project by the Owner.
i. Provide owner with contact information for warranties which extend beyond one year.

CC. RECORD DRAWINGS

1. Contractor shall maintain two (2) sets of drawings of the original construction documents to utilize as markup sets to record field modifications from original construction documents. Once approval has been gained from the Architect, the contractor shall record these variances on the two (2) sets in a neat and readable manner. Noted shall be sizes, locations, changes in directions, etc. with distances dimensioned from columns, walls, inverts, etc. The maintenance and cost of these documents shall be the responsibility of the contractor.

DD. DEMOLITION

1. This contractor shall do all demolition as shown on the plans. The contractor shall make the areas ready for the new construction work. All demolition debris, piping, equipment, etc., shall be removed from the site by this contractor. All demolition work shall be scheduled through the General Contractor to prevent interruption of any existing services. Do not start any demolition which would interrupt the building operation without scheduling with the Owner (schedule through the General Contractor).

2. The Owner shall retain first salvage rights to anything within the demolition area. If the Owner selected an item to be retained, then this contractor shall remove it with care and deliver the item to the Owner designated location on site. Anything not retained by the Owner shall become the property of the contractor and be removed from the site.

EE. MATERIALS CONTAINING HAZARDOUS SUBSTANCES OR COMPONENTS

1. This contractor shall not provide any material or component of equipment which contains asbestos, lead based paint or PCBs. The contractor shall provide certificates or manufacturer's statements/letters to show that the products and/or building materials do not contain asbestos, lead based paint or PCBs.

2. If any product or building material is found to contain asbestos, lead based paint or PCBs, the contractor shall bear all cost for removal, abatement, and disposal of materials in accordance with all state and federal regulations. The contractor shall install replacement materials to the satisfaction of the Architect at no additional cost to the project.

3. During the construction, if the contractor suspects that any material in the building contains or is a hazard material (asbestos, lead, PCB, mercury,

etc.) work shall be stopped to prevent disturbance and the Owner shall be notified immediately.

END OF SECTION 23 05 00

SECTION 23 05 03 - BASIC MATERIALS AND METHODS FOR HVAC

I. GENERAL

A. DESCRIPTION

1. Type of piping for various systems shall be as specified herein.

2. All pipe shall be true and straight without sags or traps.

II. MATERIALS

A. REFRIGERANT PIPING/EQUIPMENT DRAIN PIPING

1. All refrigerant and equipment drain piping shall be government type "L" hard copper tube standard weight and thickness as made by Mueller, Chase, Anaconda or equivalent, unless indicated otherwise. Use Silfos 1000 degrees Fahrenheit solder on all joints.

2. Tubing shall be brought to the site with ends sealed.

B. A/C CONDENSATE DRAIN PIPING

1. All A/C condensate drain piping shall be government type "L" hard copper water tube of standard weight and thickness. Fittings shall be compatible with pipe. Use Silfos 1000 degrees Fahrenheit solder on all joints.

C. PIPE FITTINGS

1. All pipe fittings shall be same as piping specified unless indicated otherwise.

2. Fittings for refrigerant piping and other copper lines shall be solder type wrought copper, Nibco or equivalent.

D. PIPE SPECIALTIES

1. Dielectric unions shall be used between copper and iron pipe.

E. PIPE HANGERS AND SUPPORTS

1. This contractor shall furnish and install all foundations and supports required for his equipment unless indicated otherwise on the drawings.

2. This contractor shall furnish and install all escutcheons, inserts, thimbles, hangers, etc., required for the proper support and installation of his

equipment and piping. Cooperate with other trades in locating and placing these items.

3. Provide sleeves for all pipes passing through walls, floors, beams, etc. Sleeves passing through structural members shall be of cast iron or Schedule 40 steel pipe unless other material is approved by the Structural Engineer. Sleeves passing through nonstructural walls or floors shall be of Schedule 10 galvanized iron. Joints between sleeves and pipes passing through floors shall be made watertight with plastic materials. Where pipes pass through floors shall be made watertight with plastic materials. Where pipes pass through waterproofing membrane, flashing sleeves shall be installed.

4. Provide malleable iron split ring hangers with rod supports throughout. Strap hangers or wire will not be accepted. Maximum spacing of hangers for cast iron pipes shall be 5 feet; for other than soil, use 10 feet.

5. Provide galvanized iron shields between hangers and pipe covering.

6. Provide chrome plated brass escutcheons wherever pipes pass through floors, walls or ceilings in exposed or finished areas.

7. All piping projecting from chases shall be rigidly supported in the wall or chase. Loosely supported piping or accessories will not be accepted.

F. MOTORS STARTERS AND ELECTRICAL WORK

1. The Mechanical Contractor shall furnish to Electrical Contractor for installation, all motor starters, start-stop push buttons and pilot lights for each piece of motor driven equipment unless shown otherwise.

2. The Electrical Contractor shall install all motor starters, start-stop push buttons and pilot lights as furnished by the Mechanical Contractor. The Electrical Contractor shall do all power wiring required for the installation of all mechanical equipment including equipment interlocking power wiring, etc. Temperature control wiring shall be furnished and installed by the Mechanical Contractor. All work shall be done in accordance with the National Electrical Code requirements and with wiring workmanship, etc., as called for in the Electrical Specifications. The Mechanical Contractor shall provide approved wiring diagrams of all equipment, controls, etc., to the Electrical Contractor for his installation. Coordinate all work to provide a complete system in working order. All wiring shall be plenum rated.

3. All motors for the mechanical equipment shall be of the 40 degrees Celsius rise type and shall be furnished and installed by the Mechanical Contractor.

All motors shall be wound for +/- 10 percent of the specified voltage. Motors shall be voltages indicated on drawings. All motors shall have copper windings, class F insulation and shall be rated for continuous duty service. All three-phase motors shall be inverter-duty type motors.

4. All electrical equipment shall have UL label or ETL label and shall meet the standards of the National Electrical Code and NEMA.

5. Starters for single phase motors 1/2 HP and below shall be furnished with pilot light and "hand-off-auto" selector switch where required.

6. Starters for three-phase, single speed motors shall be stepless solid state soft starter with "hand-off-auto" selector switch, three (3) overload relays and auxiliary contacts as required. The starter shall operate at manufacturers ratings with 10 percent and -15 percent applied voltage tolerance and be capable of operating continuously under ambient temperatures of 0 to 50 degrees Celsius. The starter control circuitry shall be designed for current ramp operation and utilize current feedback for closed loop operation to minimize variation of acceleration time with varying load conditions. The starter shall use metal oxide varistors to clip transient voltage spikes on incoming power lines with protection to limit the rate of rise of voltage spikes to protect the SCR's from damage. The starter shall provide electronic motor overload protection. The starter shall shut down (or shall not start) to protect itself from either phase loss or phase rotation. The starter shall have adjustments for initial torque, pulse, ramp up time, ramp down time, and current limit. The starter shall have a main trip breaker to act as a disconnect and necessary contactors. The starter shall have contacts for remote starting from a building energy management system.

7. Mechanical contractor shall provide and install all smoke dampers and smoke or duct detectors. The electrical contractor shall provide and install all wiring/interlocks with fire alarm.

G. ACCESS PANELS

1. Furnish and install access panels where valves, dampers, etc., are concealed in walls, ceilings, floors or otherwise inaccessible. Panels shall be Milcor, Babcock, Larsen, MIFAB, Acudor, Nystrom or equivalent. All access panels shall be minimum 18 inches X 18 inches hinged with flush latch and lock. The panels shall be constructed of minimum 16 gauge steel. Frame flange shall be minimum 1-1/2 inches wide. Rated panels shall have U.L. rating for type wall or ceiling where located.

2. Access panels located in rated walls, floors, or ceilings shall be so rated and installed per manufacturer’s recommendations to maintain rated integrity.

3. Steel access panels shall be primed and painted color as selected by Architect.

III. EXECUTION

A. PIPING

1. Perforated strap hangers shall not be allowed for any part of the hangers.

2. Piping shall be installed as indicated on the drawings. Pipe shall be cut accurately to measurements established at the building and shall be worked into place without springing or forcing. Care shall be taken not to weaken structural portions of the building. Service pipes, valves, and fittings shall be kept a sufficient distance from other work and other services to permit not less than 1/2 inch between finished covering and other work and not 1/2 inch between finished covering on the different services.

3. Expansion and contraction of piping: Allowance for expansion and contraction shall be made throughout.

4. Tubing shall be cut square, and butts shall be removed. Both inside of fittings and outside of tubing shall be well cleaned with steel wool before sweating. Care shall be taken to prevent annealing of fittings and hard drawn tubing when making connections. Installation shall be made by competent workmen in accordance with manufacturer's recommendation. Mitering of joints for elbows and notching of straight runs of pipe for tees will not be permitted. Joints for soldered fittings shall be made with a noncorrosive paste flux and solid string of wire solder. Cored solder will not be permitted.

5. Pipe sleeve and hangers: These items shall be furnished and set and the contractor shall be responsible for their proper and permanent location.

   a. Pipe sleeves - Install sleeves for all pipes passing through footings, floors, and walls. Clearance between sleeves and pipe covering and/or pipes shall be approximately 1/4 inch. Construction shall not be cut except where approved by the Architect. Where cutting of construction is permitted, the construction shall be repaired to match its original condition. Sleeves shall not be installed in structural members except where indicated.
      1) Install sleeves for pipes that pass through walls. Sleeves that pass through walls shall be cut flush with surfaces. The space between sleeves and pipe or covering shall be sealed with graphite packing and synthetic rubber caulking compound.

2) Install sleeves where pipes pass through waterproofing membrane. The sleeves shall be provided with an integral flashing flange or a clamping device to which a 4 pound lead flashing shield shall be clamped or soldered. The shield shall extend 12 inches from the pipe and shall be thoroughly mopped into the membrane. The space between the sleeve and pipe shall be made watertight by inserting an oakum gasket, filling the remaining space with lead, and thoroughly caulking.

b. Threaded pipe - Support pipes at 7 foot intervals.

c. Copper tubing - Support tubing at not more than 5 foot intervals. Hangers for copper tubing except where protective shields are installed shall have proper size rings to suit outside diameter of tubing and the hangers or supports shall be copper or copper plated at contact surfaces.

d. Underground piping - Lay pipe on a firm bed for its entire length, except where support is otherwise provided.

e. Vertical piping - Supports shall be at each floor. Horizontal piping - Hangers and supports shall be installed at locations not more than 3 feet from the end of each run out. A hanger shall be installed not over 1 foot from each change in direction of piping.

END OF SECTION 23 05 03

SECTION 23 05 93 - TESTING, ADJUSTING, AND BALANCING

I. GENERAL

A. RELATED DOCUMENTS

1. All Division 23 Specification Sections, drawings, and general provisions of the contract apply to work of this section, as do other documents referred to in this section.

B. SCOPE OF WORK

1. The Mechanical Contractor shall obtain the services of an independent test and balance company which specializes in the testing and balancing of heating, ventilating and air conditioning (HVAC) systems to test, adjust and balance all HVAC systems in the building(s). These services shall not be provided by the installing mechanical contractor on the project but shall be a direct subcontractor of the mechanical contractor.

    a. Agency shall provide proof of having successfully completed at least five projects of similar size and scope. Work by this Agency shall be done under direct supervision of a qualified Heating and Ventilating Technician employed by Agency.
    b. Instruments used by Agency shall be accurately calibrated and maintained in good working order.
    c. If requested, conduct tests in presence of Engineer.
    d. Agency shall be approved in writing by Engineer. Mechanical Contractor shall not be permitted to do this work. Submit qualifications for review.

2. The work included in this section consists of furnishing labor, instruments, and tools required in testing, adjusting and balancing the HVAC systems, as described in these Specifications or shown on accompanying drawings. Services shall include checking equipment performance, taking the specified measurements, and recording and reporting the results.

3. Upon completion of the HVAC system installation, the test and balance company shall perform all testing and balancing with the full cooperation of the contractor and his subcontractors. The contractor shall make changes and/or adjustments to the HVAC system components that are required by the test and balance company to accomplish proper balancing. The TAB agency shall not supply or install any materials or balancing devices such as pulleys, drives, belts, etc. All of this work by the contractor shall be performed at no additional cost to the Owner.

4. The test and balance report shall be submitted to the Architect for review by his Mechanical Engineer. If the Mechanical Engineer agrees with the report, he shall sign it and return it to the Architect. If he does not concur with the report, he shall meet with the Test and Balance Company to determine what needs to be done to obtain a properly balanced system.

5. After the Mechanical Engineer signs the testing and balancing report, the Test and Balance Company shall supply four (4) copies of the final and complete report to the Architect for inclusion in the Operation and Maintenance Manuals.

C. The items requiring testing, adjusting, and balancing include (but are not restricted to) the following:

1. AIR SYSTEMS:
Air Handling Units
Exhaust Fans
Zone Branch and Main Ducts
Diffusers, Registers, Grilles and Dampers
Coils (Air Temperatures)
Valves
Vibration Isolators
Duct Smoke/Pressure Leak Testing

D. SCHEDULING

1. Contractor shall award test and balance contract to approved agency upon receipt of his contract to proceed to allow Agency to schedule this work in cooperation with other Sections involved and comply with completion date.

E. DEFINITIONS, REFERENCES, STANDARDS

1. All work shall be in accordance with the latest edition of the Associated Air Balance Council (AABC) National Standards or the latest standards of the National Environmental Balancing Bureau (NEBB). If these contract documents set forth more stringent requirements than the AABC National Standards or the NEBB Standards, these contract documents shall prevail.

F. QUALIFICATIONS

1. Agency Qualifications: The TAB agency shall be a current member of the AABC, NEBB or TABB.

2. Prior to working on this project, the technicians shall attend training provided by the manufacturer of the various equipment on this project on the specific aspects of balancing the equipment. Include letters or certificates from the manufacturer on attendance and satisfactory completion of the factory training. These certifications may be used for continuing education. At a minimum, the technicians shall receive training from the air distribution equipment manufacturer, air terminal unit manufacturer, air unit manufacturer, pump manufacturer, air cooled chiller manufacturer and temperature controls manufacturer. This should be done prior to any equipment start-ups.

3. Although acceptable to be bidding the project the TAB agency shall provide qualifications and certifications to provide the required services.

G. SUBMITTALS

1. Qualifications: The TAB agency shall submit a company resume listing personnel and project experience in air and hydronic system balancing and a copy of the agency's test and balance engineer or technician certificate.

2. Procedures and Agenda: The TAB agency shall submit the TAB procedures and agenda proposed to be used.

3. Sample Forms: The TAB agency shall submit sample forms, which shall include the minimum data required by the AABC National Standards or the NEBB Standards.

4. Submit continuing education training on each lead technician working on the project.

H. TAB PREPARATION AND COORDINATION

1. Shop drawings, submittal data, up-to-date revisions, change orders, and other data required for planning, preparation, and execution of the TAB work shall be provided when available and no later than 30 days prior to the start of TAB work.

2. System installation and equipment startup shall be witnessed by the TAB agency. The TAB Agency's final Test and Balance shall begin when all factory start-ups are complete.

3. The building control system (BCS) contractor shall provide and install the control system, including all temperature, pressure and humidity sensors. These shall be calibrated for accurate control. If applicable, the BCS contractor shall install all necessary computers and computer programs, and make these operational. Assistance shall be provided as required for

reprogramming, coordination, and problem resolution. The BCS contractor shall provide all necessary software to the TAB Agency at no additional cost.

4. All test points, balancing devices, identification tags, etc., shall be accessible and clear of insulation and other obstructions that would impede TAB procedures.

5. Qualified installation or startup personnel shall be readily available for the operation and adjustment of the systems. Assistance shall be provided as required for coordination and problem resolution.

6. If, upon commencing the work, the TAB contractor finds that the systems are not ready, or if a dispute occurs as to the readiness of the systems, the TAB contractor may request an inspection to be made by the Designer's Mechanical Engineer. This inspection shall establish to the satisfaction of the represented parties whether or not the systems meet the basic requirements for testing and balancing. Items that are determined to be not ready for testing and balancing shall be completed by the Mechanical Contractor and placed in operational readiness before TAB services are again requested.

I. TAB REPORTS

1. Final TAB Report: The TAB agency shall submit the final TAB report for review by the Engineer. On plans provided, all outlets, devices, HVAC equipment, etc., shall be identified, along with a numbering system corresponding to report unit identification. The TAB agency shall submit an AABC or NEBB "National Project Performance Guaranty" assuring that the project systems were tested, adjusted and balanced in accordance with the project Specifications and AABC or NEBB National Standards.

2. Submit four (4) copies of the final TAB report to the Architect for inclusion in the Operation and Maintenance Manuals.

II. INSTRUMENTATION

A. All instruments used for measurements shall be accurate and calibrated. Calibration and maintenance of all instruments shall be in accordance with the requirements of AABC or NEBB National Standards.

III. EXECUTION

A. GENERAL

1. Mechanical Contractor shall put heating, ventilating, and cooling systems and equipment into full operation and continue their operation during each working day of testing and balancing.

2. Air Balance and Testing Agency shall perform tests specified, compile test data, and submit four (4) copies of complete test data to contractor for forwarding to Engineer for evaluation and approval.

   a. Approved copies of report shall be bound in Operations and Maintenance manuals.

3. System shall be completely balanced and all reports submitted to Engineer prior to prefinal inspection.

4. The specified systems shall be reviewed and inspected for conformance to design documents. Testing, adjusting and balancing on each identified system shall be performed. The accuracy of measurements shall be in accordance with AABC or NEBB National Standards. Adjustment tolerances shall be + or -10 percent unless otherwise stated.

5. Equipment settings, including manual damper quadrant positions, valve indicators, fan speed control levers, and similar controls and devices shall be marked to show final settings.

6. All information necessary to complete a proper TAB project and report shall be per AABC or NEBB standards unless otherwise noted. The descriptions of work required, as listed in this section, are a guide to the minimum information needed.

7. TAB contractor shall cut insulation, ductwork and piping for installation of test probes to the minimum extent necessary to allow adequate performance of procedures. Upon completion, patch insulation, ductwork and housings using materials identical to those removed. Seal insulation to reestablish integrity of the vapor barrier.

8. TAB work shall include additional inspection and adjustment of components during the season following the initial balance to include re-balance of any items influenced by seasonal changes or as directed by the Owner.

B. AIR SYSTEMS

1. **TESTING PROCEDURE**
   Air Balance and Testing Agency shall perform following tests and balance system in accordance with following requirements. Perform the following

tests at high and low speeds of multi-speed systems and single speed system.

a. Test and adjust blower rpm to design requirements.
b. Test and record motor full load amperes.
c. Make Pitot Tube traverse of main supply and return and obtain cfm.
d. Test and record system static pressures, suction, and discharge.
e. Test and adjust system for design cfm air.
f. Test and adjust system for design cfm outside air.
g. Test and record entering air temperatures (db heating and cooling).
h. Test and record entering air temperatures (wb cooling).
i. Test and record leaving air temperatures (db heating and cooling).
j. Test and record leaving air temperatures (wb cooling).
k. Adjust main supply and return air ducts to proper design cfm.
l. Adjust zones to proper design cfm, supply and return.
m. Test and adjust each diffuser, grille, and register to within 10 percent of design requirements.
n. Identify each diffuser, grille, and register to location and area.
o. Identify and list size, type, and Manufacturer of diffusers, grilles, registers, and testing equipment. Use Manufacturer's rating on equipment to make required calculations.
p. In readings and tests of diffusers, grilles, and registers, include required fpm velocity and test fpm velocity and required cfm and test cfm after adjustments.
q. In cooperation with Mechanical Contractor, set adjustments of automatically operated dampers to operate as specified, indicated, or noted.
r. Adjust diffusers, grilles, and registers to minimize drafts.
s. Verify the calibration of temperature control devices, thermostats, etc.
t. Verify all control sequences with specifications.
u. Include manufacturer’s performance data with reports.
v. Schedule three (3) inspections to verify original test and balance of systems within 90 days of acceptance by Owner. Make opposite season adjustment and inspection of systems at one year after acceptance by Owner. Submit reports after each inspection. Submit schedule as part of initial report. Submit schedules as part of initial report.

2. Where systems supplied to job site provides over 5 percent more air than schedule requirements, rooms supplied by that system shall have their supply air quantities increased by the ratio of the actual total air quantity supplied to the minimum air quantity required by the schedule.

3. The TAB agency shall verify that all ductwork, splitters, extractors, dampers, grilles, registers, and diffusers have been installed per design, are functional and set full open. Any leakage in the ductwork shall be repaired prior to the test. The TAB agency shall perform the following TAB procedures in accordance with the AABC National Standards or NEBB Standards:
   a. Exhaust Fans (Existing)
      1) Fan Speeds--Test and adjust fan RPM to achieve design cfm requirements.
      2) Current and Voltage--Test and record motor voltage and amperage, and compare data with the nameplate limits to ensure fan motor is not in or above the service factor.
      3) Pitot-Tube Traverse--Perform pitot-tube traverse of the main exhaust ducts to obtain total CFM. If a pitot-tube traverse is not practical, an explanation of why a traverse was not made must appear on the appropriate data sheet.
      4) Static Pressure--Test and record system static pressure, including the static pressure profile of each exhaust fan.
   b. Zone, Branch, and Main Ducts
      1) Adjust ducts to within design cfm requirements. As applicable, at least one zone balancing damper shall be completely open. Multi-diffuser branch ducts shall have at least one outlet or inlet volume damper completely open.
   c. Diffusers, Registers, and Grilles (New and Existing)
      1) Tolerances--Test, adjust, and balance each diffuser, grille, and register to within 10 percent of design requirements. Minimize drafts.
      2) Identification--Identify the type, location, and size of each grille, diffuser and register. This information shall be recorded on air outlet data sheets.
   d. Coils (New and Existing)
      1) Air Temperature--Once air flow is set to acceptable limits, take wet bulb and dry bulb air temperatures on the entering and leaving side of each cooling coil. Dry bulb temperature shall be taken on the entering and leaving side of each heating coil.
   e. Air Handling Units (New and Existing):
      1) Location, manufacturer, model number, serial number, motor manufacturer, fan and motor sheaves, belts. Required and test data with unit operating at full air flow conditions (all space thermostats calling for cooling) for each of following: total CFM, return and outside air CFM, total static pressure, suction and discharge static pressures across unit fan, HP, amperage, voltage, fan RPM. Verify performance of static pressure controls, vane operators,

dampers and controls. Adjust and/or change pulleys and belts as required to obtain delivery of system specified or required full load air quantities.

f. Split Systems--Indoor Section:
   1) Location, manufacturer, model number, serial number, and manufacturer. Required and test data with unit operating at full air flow conditions (all space thermostats calling for cooling) for each of following: total CFM, return and outside air CFM, total static pressure, suction and discharge static pressures across unit fan, HP, amperage, voltage, fan RPM. Verify performance controls.

g. Split Systems --Outdoor Section:
   1) Both specified and test data for each unit. Verify voltage specified and actual. Full load amps at outdoor conditions. Refrigerant charge.

h. Control Systems:
   1) Verify all control sequences and calibration of all thermostats and sensors.

END OF SECTION 23 05 93

SECTION 23 07 00 - MECHANICAL INSULATION

I. GENERAL

A. DESCRIPTION

1. Pipe insulation installation shall not begin until all work has been tested and found to be tight. All insulation shall be UL listed and have a flame spread of less than 25 and a developed smoke rating less than 50. All insulation shall be banded with aluminum bands, three per section. All insulation shall be continuous through walls, floors, ceilings, etc.

II. MATERIALS

A. CONDENSATE DRAIN PIPING

1. Insulate condensate drain piping with 1/2 inch thick closed cell rubber type insulation.

B. REFRIGERANT LINES

1. Insulate all refrigerant suction lines with 1 inch thick closed cell rubber insulation. Apply two (2) coats of black mastic where the lines are exposed to the weather. Refrigerant piping below grade shall be installed in watertight PVC sleeve.

C. AIR CONDITIONING DUCTWORK

1. Insulate all ducts above ceiling with one layer of 3 inch thick, 3/4 pound density flexible Fiberglass duct insulation with aluminum foil facing. Duct insulation to be applied with 2 inches lap of facing sealed with tape and outward clinch staples. Seal all joints with 2 inch wide vapor barrier tape. An additional band of tape shall be applied between the circumferential joints for a maximum 2 foot spacing of taped bands.

2. The ductwrap shall have a minimum installed R-value of 8.0 and shall comply with Energy Code requirements.

D. HORIZONTAL WASTE PIPING

1. All horizontal waste lines and traps above first floor slab which receive condensate from air conditioning equipment, roof drain bodies, shall be insulated same with 2 inch thick, 3/4 pound density fiberglass insulation with aluminum foil vapor barrier or closed cell rubber insulation.

E. INSULATION BANDS

1. All pipe insulation shall be banded with nylon tie-wrap bands, three (3) to a section, and with one band on each side of each fitting, valve, etc.

F. FLANGES, VALVES AND FITTINGS

1. All flanges, valves and fittings shall be insulated with fabricated fiberglass molded fitting insulation, using factory fabricated fittings up to 3 inches and fabricated mitered segments of pipe insulation equal in thickness to the insulation to the adjoining pipe. All fabricated mitered segments shall be covered with matching embossed vapor barrier laminate.

III. INSTALLATION

A. Provide clearance for installation of insulation and for access to valves, air vents, drains and unions.

1. Insulation Installation:

a. Do not install covering before piping has been tested and approved.
b. Ensure piping surface is clean and dry prior to installation.
c. Ensure insulation is dry before and during application.
d. Insulation shall be continuous through walls, floors and ceiling. Pack around pipes with fire proof self-supporting insulation material, fully sealed.
e. Insulate fittings and valves. The end of the insulation shall be fitted with a metal escutcheon plate with set screw or taped neatly with pressure sensitive fiberglass reinforcing cloth.
f. All joints shall be sealed with 3 inch wide fiberglass reinforcing cloth with pressure sensitive adhesive.
g. Pipe insulation at Hangers and Supports: Pipe insulation at hanger and support shall be protected with a half circular shield of the size of the insulation and 12 inches long constructed from 20 gauge galvanized steel. The shield shall be held in place with the fiberglass reinforcing cloth and pressure sensitive adhesive. Where pipes pass through walls, ceiling and floor in finished areas, escutcheon plates shall be installed to encompass pipe and insulation. Escutcheon plates shall be chromed brass or stainless steel and shall be either solid or the clamp on split type.
h. Painting of fiberglass pipe jacket is not required. Piping shall be painted colors as standard in this facility.

END OF SECTION 23 07 00

SECTION 23 09 00 - TEMPERATURE CONTROLS

I. GENERAL

A. GENERAL REQUIREMENTS

1. Refer to Section 23 05 00, Section 23 05 03, Section 23 30 00 and Section 23 70 00, provisions of which apply to work under this Section.

2. All control systems shall be furnished complete and functioning.

3. Coordinate all control work with the mechanical and electrical contractors. Contact the Test and Balance Contractor and notify them as to when controls work shall be installed. Test and Balance controller shall verify controls systems installation and proper operations.

B. DESCRIPTION OF WORK

1. Provide a complete system of "hard-wired" automatic controls (wireless unacceptable) as indicated herein. Control system shall consist of all thermostats, sensors, actuators, operators, wiring, switches, relays and control panels necessary to accomplish the control sequence specified herein.

2. Wireless controls shall not be acceptable.

C. RELATED WORK IN OTHER SECTIONS

1. For extent of power wiring and connection to mechanical equipment under Electrical Work, refer to Division 26.

2. For control devices furnished with equipment, refer to equipment specifications and schedules. Any controls equipment not specifically called for elsewhere shall be provided by controls contractor. All control wiring shall be done by controls contractor.

3. All power for control devices such as actuators, operators, fire/smoke dampers, control dampers, etc. shall be furnished, installed and wired by the Controls Contractor. Controls Contractor may use 24 VAC or 120 VAC for the control system. The controls contractor shall be responsible for obtaining the necessary power and pay all costs associated with obtaining power to controls and controls equipment.

4. All interior control wiring shall be installed in galvanized EMT conduit. The last 6 inches at connection to equipment shall be flexible metal

conduit. All control wiring on exterior of building shall be in Seal-Tite conduit and/ or Liquid Tight flexible conduit.

5. All control wiring shall be furnished and installed by this contractor.

D. SERVICE

1. Installing Contractor (Mechanical Contractor or subcontractor under the Mechanical Contractors) shall maintain adequate automatic control personnel on his payroll to provide back-up project control service on the automatic control system provided under this contract.

E. WARRANTY

1. Contractor shall warranty all work performed under this contract to be free of any defects in workmanship or material for a period of 1 year after final acceptance by the Owner's representative. The installing controls contractor shall include a second year of extended warranty to cover all parts and labor. The warranty and extended warranty shall include quarterly calibration and set-up checks of all controls. THIS WARRANTY DOES NOT START ON DATE THAT THE MECHANICAL EQUIPMENT IS STARTED.

F. SUBMITTAL

1. Submit shop drawings and product data sheets indicating configuration, general assembly, and materials used in fabrication.

2. Submit manufacturer's installation instructions. Instructions shall include complete wiring diagrams drawn specifically for this project.

G. OPERATION AND MAINTENANCE

1. Include manufacturer's descriptive literature, operating instructions, and maintenance data.

H. QUALITY ASSURANCE

1. Manufacturer shall be a company specializing in products of the type specified in this section. All components shall be Class A quality commercial or industrial grade for installation in locations or environments shown on plans.

I. SYSTEM RESPONSIBILITY

1. The entire control system, shall be furnished by a single source manufacturer who shall be responsible for the entire system. The installation shall be by technicians employed by the controls system manufacturer.

II. PRODUCTS

A. WIRING

1. Factory mount and wire HVAC equipment controls. Mount electrical components in unit control box with removable cover. Provide clearance for access to controls (36 inch clearance).

2. Provide terminal strip(s) for field wiring of thermostat, communications and power source. DO NOT USE WIRE NUTS IN JUNCTION BOX.

3. All wiring shall comply with local and national electric codes and the manufacturer's published installation manual.

4. Provide terminal strip(s) for field wiring of air conditioning unit input connections, duct temperature sensor, velocity sensor, static pressure sensor, communications, start/stop devices, VFD controls, time clock, bypass damper motor and power wiring, etc. Do not use wire nuts on loose wire. All wire shall be in conduit, flexible conduit or wiring harness.

B. THERMOSTAT

1. Provide fully automatic room-type electronic programmable thermidistat as indicated on plans to cycle outdoor unit on cooling cycle and heating cycles as required to maintain space conditions. Thermidistat shall have the following features:

   a. Designed for use with the type of system used.
   b. "Auto-On" fan selector switch for constant or automatic fan operation.
   c. "Auto-Off" selector switch to energize unit to fully automatic change-over from heating to cooling mode.
   d. Temperature selector switch with concealed screw-type maximum set points for heating and cooling mode.
   e. Thermidistat shall be programmable for automatic temperature set-up or setback for occupied and unoccupied times minimum two per day.
   f. Shall have an LED or LCD read out display.
   g. Battery back-up should loss of building power occur.
   h. Button type or touch sensitive keypad for data entry in to the thermostat.

i. Thermidistat range of operation shall be 55 degrees Fahrenheit – 85 degrees Fahrenheit in heating or cooling mode.

j. Thermidistat shall maintain humidity setpoint. Humidity setpoint shall be adjustable by the user.

III. EXECUTION

A. INSTALLATION

1. Division 26, ELECTRICAL, shall be responsible for point to point wiring of all starters and starting switches not factory installed in the HVAC equipment.

2. Install all components of control systems under this Section using experienced control mechanics, all in the regular employ of the Installing Contractor, or the apparatus manufacturer.

B. WIRING

1. Install all control, pilot circuit and interlock wiring, including wiring through interposed safety or other auxiliary control devices within the confines of the mechanical equipment only. Wiring of thermostats shall be by the Mechanical Contractor.

2. All wiring shall conform to the Local and National Electrical Codes.

3. All control and interlock wiring shall be fused at conductor capacity as shown in the National Electrical Code.

4. No splices will be allowed except at junction boxes and control centers.

5. All wires to each control device must be different colors. All wires to each device must be laced or tied at point of entry into control panel and tagged as to its point of origin.

6. All wires shall be run directly from controller or controlled device to control center. There shall be no looping of wires from one device to another external to the control centers.

7. Control voltage shall be a maximum of 120-volt, unless otherwise indicated herein.

8. Control or interlock wiring shall not be run in conduit with any power wiring other than that serving the equipment controlled.

9. Refer to Division 26, ELECTRICAL, for extent of work under that Division. Provide other wiring systems required to accomplish the work of this Section, following requirements of Division 26 for products and execution.

10. Wiring connection to terminal posts shall be made by means of compression type lugs. Wire splices shall be made with sketch locks.

11. Safety devices in motor control circuits shall be wired to interrupt the holding coil circuit regardless of the position of any selector switches in the circuit.

12. Control circuit conductors shall be sized for a maximum voltage drop of 10 percent of the circuit voltage.

13. All electrical power wiring shall conform in all respects with the provisions of the National Electrical Code and Division 26, ELECTRICAL, of the Specifications.

14. Provide all necessary contactors, switches, transformers to accomplish operating sequences.

C. SYSTEM CHECK-OUT

1. Check-out each system for control function through entire sequence, check calibration of instruments, reset instruments control points.

2. Owner maintenance personnel shall be made thoroughly familiar, by the contractor, with the operation and service of the project automatic temperature control circuits.

END OF SECTION 23 09 00

SECTION 23 30 00 - AIR DISTRIBUTION

I. GENERAL

A. GENERAL

1. Furnish and install all ducts for Air Conditioning, Heating, and Ventilating Systems as shown on the plans and as may be required to provide complete system. Ductwork shall be complete with grilles, vanes, flashings, hangers, flexible connections, splitters, manual dampers, fresh air inlets, louvers, reinforcing angles, etc. All ductwork shall be concealed and insulated as hereinafter specified.

B. COORDINATION

1. The General Contractor and Mechanical Contractor shall coordinate the space clearances required for ductwork with the structure, ceilings, lights, sprinklers, etc. In some cases, due to space limitations, it may be necessary to re-size ductwork to meet the conditions of the project. Any re-sizing required shall be part of this project and done without any additional cost to the project. DO NOT MAKE DUCTWORK WITHOUT COORDINATION.

C. Sealing or flashing the building envelope due to penetrations in the building shall be the responsibility of the general contractor.

II. MATERIALS

A. DUCT HANGERS AND SUPPORTS

1. All ductwork shall be properly braced to prevent rattling, breathing, or other unnecessary noise. No sharp edges or obstructions shall project into air stream.

B. LOW PRESSURE DUCTWORK

1. All ductwork shall be galvanized steel and shall be of gauges and construction as recommended by ASHRAE Guide and Data Book and SMACNA guidelines. Gauges are as follows with longest side governing.

Dimension of longest side	Low Pressure Ductwork Sheet Metal Gauge
0"-12"	26 gauge
13"-30"	24 gauge

31"-54"	22 gauge
55"-84"	20 gauge

2. Low pressure ductwork shall be all exhaust ducts, return air ducts, fresh air ducts and supply ducts.

3. From boxes medium pressure ducts shall be all main ducts from air units to boxes.

4. Joints and reinforcing shall be as per ASHRAE Guide and Data Book an lips shall be installed without edge of internal part of slip facing downstream.

5. Construction standard of Article 110, of the National Board of Fire Underwriters Bulletin 90, latest edition, shall apply throughout.

6. Flashings shall be of sheet copper and shall be furnished and installed around all outside openings used for ducts of fans and wherever required. Roof flashings shall extend at least 8 inches above roof.

7. All ducts shall be straight and true and installed in a neat and workmanlike manner.

8. All edges shall be straight and true and all bends shall be made with veined turns. Where long radius turns cannot be used, the contractor shall use square turns and use air splitters spaced not more than 3 inches center to center, and of a length so air will be properly distributed over ducts.

9. All ducts shown are metal to metal dimensions.

10. Mastic shall be applied to both male and female connections (all seams and joints) to make all duct joints air tight (applies to all ductwork; round or rectangular). Surplus mastic shall be removed. Tape and re-mastic joints if necessary. Mastic (hard-cast or equivalent duct sealer: tape not acceptable) shall be applied to the joints during assembly so that sealant is on all mating surfaces of the joint.

C. FILTERS--PRIMARY

1. Units shall be equipped with low velocity filter section with 30 percent efficient 2 inches thick pleated type (Continental air filters "cono pleat" FARR 3030, American Air Filter or equal) throwaway filters.

2. Provide and install one set of filters as called for in these Specifications for initial testing and start-up and another complete set upon completion of the project.

D. DUCT ACCESSORIES

1. Dampers of the fusible link operated type shall be provided in all ductwork passing through floor or fire walls.

2. Provide quadrant or adjustable splitters and mark shaft to give position of splitter damper in duct.

3. Provide vanes behind every supply grille or diffuser. Splitters shall be provided where shown on plans and where located in concealed non-accessible space provided Young Regulators to operate splitter. Vanes shall be Tuttle and Bailey "Ducturns", Barber-Coleman, Uniflo, or equivalent. Shop fabricated vanes will be acceptable. All dampers shall be constructed of 14 gauge steel.

E. REGISTERS, GRILLES AND DIFFUSERS

1. Ceiling supply outlets, unless otherwise indicated on plans shall be Anemostat/Waterloo, Metalaire, Krueger, Titus, Price, Nailor or approved equal. Outlets shall be mounted tight to the construction, and shall have frame suitable for type of ceiling used unless otherwise noted.

2. Return air grilles shall be as manufactured by Anemostat/Waterloo, Krueger, Metalaire, Titus, Price, Nailor or approved equivalent and shall be of style called for on plans.

3. All supply outlets shall have sponge rubber gaskets.

4. All grilles, diffusers, and registers shall be of sizes indicated on plans or scheduled on drawings.

5. Usless otherwise shown on drawings, all grilles installed in the ceiling shall be furnished with white baked-on enamel finish

F. PRE-INSULATED FLEXIBLE DUCT

1. Flexible duct shall be rated for a maximum pressure of 16 inches (4-10 inches I.D.) or 10 inches (12-16 inches I.D.) water column positive pressure and 2 inches water column maximum negative pressure and 6000 FPM maximum velocity and listed by Underwriters Laboratories, Inc. under UL Standard 181 as a Class 1 air duct complying with NFPA Standards 90A and 90B. Flexible air duct shall be factory-made and composed of an inner duct of woven and coated fiber glass fabric providing an air seal and permanently bonded to coated steel wire helix, a fiber glass insulating blanket with minimum R-8.0 value (minimum 2 inch

thickness) and low permeability outer vapor barrier of fiberglass reinforced metalized film laminate. Flexible air ducts shall be Thermaflex Everclean or Flexmaster type 4M with minimum R-8.0 insulation to meet ASHRAE 90.1 energy code. Maximum installed length shall not exceed 3 feet-0 inches without approval.

III. INSTALLATION

A. DUCTS

1. Ductwork shall be constructed and installed as follows:

   a. Straight and smooth on inside with joints neatly finished unless otherwise directed.
   b. Duct panels through 48 inch dimension having acoustic duct liner need not be crossbroken or beaded.
   c. Crossbreak unlined ducts and duct panels larger than 48 inches or bead 12 inches on center.
   d. Securely anchor ducts to building structure with specified duct hangers attached with screws.
   e. Brace and install ducts so they shall be free of vibration under all conditions of operation.
   f. Ducts shall not bear on the top of structural member.
   g. Make duct take-offs to branches, registers, grilles, and diffusers as detailed on Drawings.
   h. Properly flash where ducts protrude above roof.
   i. Install internal ends of slip joints in direction of flow. Make joints air tight using specified duct sealer.

2. Install flexible duct connections to each air handling unit.

3. Provide each take-off with an adjustable volume damper to balance that branch.

   a. Anchor dampers securely to duct.
   b. Install dampers in main ducts within insulation.
   c. Dampers in branch ducts shall fit against sheet metal walls, bottom and top of duct, and be securely fastened.
   d. Where concealed ceiling damper regulators are installed, provide a cover plate.

4. Install grilles, registers, and diffusers.

B. AIR TURNS

1. Permanently installed, consisting of curved metal blades or vanes arranged to permit air to make abrupt turn without appreciable turbulence, in elbows of supply and above ground return ductwork.

2. Air turns shall be quiet and free from vibration when system is in operation.

END OF SECTION 23 30 00

Certification of Responsibility for Document Preparation

TECHNOLOGY BUILDING SUITE 100 (B) INTERIOR OFFICE RENOVATIONS
Hancock County Port and Harbor Commission
Stennis International Airport
7250 Stennis Airport Road
Kiln, Mississippi 39556

Electrical Specifications:

THE FOLLOWING SPECIFICATION SECTIONS INCLUDED IN THIS PROJECT MANUAL WERE PREPARED BY OR UNDER THE RESPONSIBLE SUPERVISION OF THE COMPANY LISTED BELOW:

Division 26 - Electrical

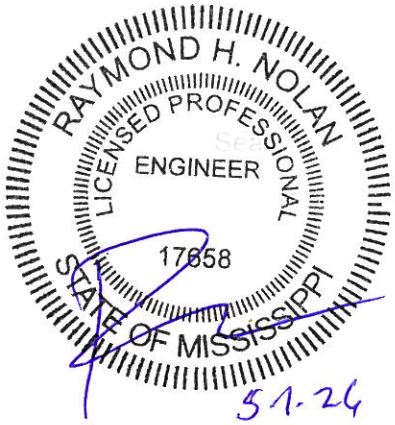
260100	Electrical General Requirements	260100 - 1-13
260200	Electrical Demolition	260200 - 1-4
260519	Conductors and Cables	260519 - 1-6
260526	Grounding and Bonding	260526 - 1-4
260529	Hangars and Supports for Electrical Systems	260529 - 1-6
260533	Raceways and Boxes	260533 - 1-10
260553	Electrical Identification	260553 - 1-6
260923	Lighting Control Devices	260923 - 1-6
262726	Wiring Devices	262726 - 1-6
262813	Fuses	262813 - 1-3
262816	Enclosed Switches and Circuit Breakers	262816 - 1-6
265119	Lighting	265119 - 1-8

Division 27 - Communications

271300	Telecommunications	271300 - 1-2

5-1-24

Ray Nolan, P.E. — Date
Creative Engineering Group LLC



SECTION 260100 – ELECTRICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. General electrical requirements

B. These specifications are intended to provide for labor, materials, equipment, and services and of performing all operations required for the complete electrical system as specified herein and/or shown on the accompanying drawings.

1.3 SUBMITTALS

A. Refer to Division 1 for Submittal Requirements. The following paragraphs are an extension of Division 1.

B. Where names of manufacturers or catalog numbers are listed in the Specification and/or on the accompanying drawings it is to establish a standard for the type, general design and quality of the product required. Where “or approved equivalent” is indicated, other products similar in design and of equivalent quality and complying with the Drawings and Specifications will be considered for acceptance. See Division 1 Section “Product Substitutions”. “Similar in design” and “equivalent quality” will be determined by the architect, engineer and lighting consultants.

C. Any item not specified herein, but submitted as a substitute for the specified item, shall be submitted in accordance with Division 1 Section “Product Substitutions” and accompanied by manufacturer’s documentation stating/illustrating the following applicable information in addition to the specific information requested in other sections:

1. Dimensions/weight.
2. Electrical ratings-voltage, amperage, short circuit capability, etc.
3. Construction – gauge of steel/aluminum, paint finish/application method, color, NEMA type, etc.
4. Warranty.
5. Local manufacturer’s representative or nearest stocking distributor.
6. Length of time the product has been available to the public.
7. Specific deviations.

D. Shop Drawings: Listed below are shop drawings required for submittal

1. Lighting Fixtures
2. Lighting Control System
3. Wiring Devices & Device Cover Plates
4. Safety and/or Disconnect Switches
5. Raceways and Boxes
6. Conductors and Cables

E. Comments made on Shop Drawings during the review do not relieve the Contractor from compliance with requirements of the contract documents. Shop Drawings will be checked for general conformance with the design concept of the project and general compliance with the documents. Review of the Shop Drawings shall not relieve the Contractor from responsibility for conforming and correlating all quantities and dimensions, coordinating work with that of all other trades, and performing work in a safe and satisfactory manner. Review of Shop Drawings shall not permit any deviation from Drawings and Specifications. Shop Drawings must be accompanied by signed statement from Contractor, stating that he has reviewed the submittal and checked it for compliance.

F. CLOSEOUT DRAWINGS:

1. Operation and Maintenance Manuals:

   a. Before the date of substantial completion, Contractor shall furnish to the Architect three (3) bound sets of descriptive, dimensional and parts data on all major items of electrical equipment and material including those items listed above under “Shop Drawings”.
   b. Each set of this literature shall be bound in a permanent type hard cover ring binder and shall be suitably indexed.
   c. This submittal shall be accompanied by test results for all tests required in other sections of the specification, final Electrical Inspection Certificate from the authority having jurisdiction and Statement of Inspection from State Fire Marshal’s Office.

2. Record Drawings:

   a. Prepare Record Drawings in accordance with the requirements in Division 1.
   b. In addition to the requirements specified in Division 1, indicate the following installed conditions:
      1) Equipment locations (exposed and concealed), dimensioned from prominent building lines.
      2) Approved substitutions, Contract Modifications, and actual equipment and materials installed.
      3) Underground conduits both interior and exterior, drawn to scale and fully dimensioned.
      4) Grounding systems.
   c. Transmit record drawings to Architect.

1.4 QUALITY ASSURANCE

A. The electrical installation shall conform to the requirements of the latest edition of the National Electrical Code (NEC). Notify Architect of conflicts before installation.

B. Electrical material shall be built and tested in accordance with the applicable standards of the National Electrical Manufacturers' Association (NEMA), the American National Standards Institute (ANSI), the American Society for Testing and Materials (ASTM), and the Institute of Electrical and Electronic Engineers (IEEE).

C. All applicable sections of the following codes and standards (latest edition) shall also be followed:

1. NFPA, including but not limited to, NFPA 70 (NEC) and NFPA 101 (Life Safety Code).
2. ADA (Americans with Disabilities Act)
3. International Building Code (latest edition)
4. Applicable state and local codes/ordinances.
5. CBM – Certified Ballast Manufacturer.
6. IPCEA – Insulated Power Cable Engineers' Association.
7. FM – Factory Mutual.
8. ETL – Electrical Testing Laboratories.
9. IES – Illuminating Engineering Society.

D. Include all items of labor and materials required to comply with the above referenced codes and standards. Where quantities, sizes, or other requirements indicated on Drawings or herein specified are in excess of the requirements of the Standards and Codes, the Specifications or Drawings shall govern. Where a conflict exists the more restrictive shall be bid.

1.5 COORDINATION

A. Power Characteristics: For all items requiring power provided in sections of Division 2 through 50, the Contractor is to verify all electrical requirements, including voltages, ratings and any other electrical characteristics with actual equipment to be furnished and adjust work as required to provide proper electrical service to the particular item at no extra cost to owner. Notify the Architect before starting work if changes from the work shown on the drawings will be necessary.

B. Coordination of Options and Substitutions: Where contract documents permit selection from several product options, do not proceed with purchasing until coordination of interface requirements has been checked and satisfactorily established.

C. Raceways, Wiring, Safety/Disconnect Switches, etc. for Equipment by Others: Electrical service required for all equipment furnished under Division 25 (Mechanical), 26 (Electrical), or other Divisions of this Specification shall be furnished and connected as part of this work. It is part of the work of this Division to obtain correct roughing-in dimensions and requirements for this equipment and provide labor, materials, equipment and services for a complete installation.

D. For exposed electrical work, coordinate colors and finishes with the Architect. Determine in advance of purchase that equipment and materials proposed for installation will fit into the

confines indicated, leaving adequate clearance as required by applicable codes, and for adjustment, repair, or replacement. Paint all exposed conduit and boxes to match wall/ceiling finish. Final color selection shall be determined by the architect.

E. Coordinate installation of required supporting devices and set sleeves in cast-in place concrete, masonry walls, and other structural components as they are constructed.

F. Coordinate location of access panels and doors for electrical items that are behind finishes surfaces or otherwise concealed.

G. MECHANICAL WORK:

1. Coordinate electrical work with mechanical work (Division 25) for proper service to each item of equipment requiring electrical connection prior to rough-in. Determine, with each mechanical equipment installer, the proper sequencing and location for disconnect switches and similar points of interface between mechanical and electrical work. Electrical equipment and circuit ratings are based on the load information provided on the mechanical drawings. The electrical contractor shall be aware that certain mechanical equipment substitutions may require different electrical equipment and circuit ratings. All equipment and circuit rating changes resulting from mechanical equipment substitutions shall be accounted for in the contractor's bid.
2. Except as otherwise indicated, final power connections are provided under Division 26 – Electrical.
3. Except as otherwise indicated, control wiring, 120 volts and less, and associated raceway system shall be provided under Division 25 - Mechanical.
4. Except as otherwise indicated, magnetic starters and variable speed drives shall be furnished under Division 25 – Mechanical, and installed under Division 26 - Electrical.
5. Overload elements in starters shall be selected according to actual motor nameplate full load current. Responsibility for this coordination shall lie with the Division under which the particular starter is furnished.
6. Except as otherwise indicated, power disconnect switches and single speed manual starting switches shall be furnished and installed under this Division. Where combination magnetic starters are provided as work of another Division, the associated disconnect switch will be furnished as work of that Division. Fuses shall be furnished and installed under this Division. Except as otherwise indicated, disconnect switches for control wiring shall be furnished and installed under Division 25- Mechanical.
7. Determine location of all control points for HVAC equipment and provide final connection. This includes, but is not limited to, HVAC control panels, air handling unit UV lights, HVAC equipment control power connections, and smoke dampers. The electrical contractor shall coordinate all connection points with the mechanical contractor and provide 120 volt branch circuits as necessary.
8. The building does not have a fire alarm system; any required duct detectors for air handling units shall be provided under Division 25 – Mechanical.
9. All conduits entering air moving HVAC equipment to be sealed with ductseal.

H. UTILITY COORDINATION:

1. Coordinate connections of electrical and telephone systems with the local electrical utility company and service providers. Comply with requirements of governing regulations,

franchised service companies and controlling agencies. Pay any charges for installation of their facilities.

2. Contact the utility company and service providers to schedule and arrange for their work to be done. Pay any utility company and service provider charges for the installation of their facilities, and make arrangements for final connection of the services. Service shall be installed, connected, and available for full use prior to completion or acceptance of the work.
3. Coordinate utility installation requirements and obtain all utility installation and construction details related to the utility service entrance facilities prior to the start of work.
4. Service layout and arrangement, as indicated on the drawings, shall be confirmed with the utility company prior to bid. Any modifications required shall be included in the bid and made at no additional cost to the Project.

I. EQUIPMENT LAYOUT:

1. The physical location and arrangements of electrical equipment is shown on the plans and is to be used by the Contractor. Alternate arrangements due to field conditions or changes in physical size of the equipment proposed for the project are to be submitted to the Architect for review before any work is begun or equipment ordered. The alternate arrangement is to be presented in a 1/4 inch scaled drawing showing all equipment, including those of other contractors. Include shop drawing cut sheets and applicable information. Indicate on the drawing by dimension all required Code clearances, wiring distances and maintenance access requirements. Where equipment heights are required to be coordinated with architectural or other items, indicate revised heights.
2. Where the design intent of the installation is not certain, ask for clarification. Lack of details will not be an excuse for improper installation. Any such work must be corrected at no expense to the Owner.
3. Coordination Drawings: For locations where several elements of the work must be sequenced and positioned with precision in order to fit into the available space, prepare coordination drawings showing the actual physical dimensions (at accurate scale, minimum ¼") required for the installation. Raceways shall be coordinated with other trades to avoid conflicts. Prepare and submit coordination drawings prior to purchase-fabrication-installation of any of the elements involved in the coordination.
4. Contractor shall be responsible to ensure that equipment selected fits in spaces allocated, with provisions for maintenance and/or code required access and clearances.

J. DELIVERY, STORAGE AND HANDLING

1. The Contractor shall be responsible for receiving, unloading, storing, protecting from weather, theft, breakage, etc., all electrical equipment, and material either purchases by the Contractor or furnished by others. The Contractor shall remove such material from storage and transport it to the site of erection when required for construction. The Contractor shall protect his own tools in a like manner. Also, the Contractor shall protect all equipment from accidental damage due to operating and maintenance activities that will be in progress in the same area.
2. Storage Coordination: It is recognized that space at project for storage of materials and products is limited. Coordinate deliveries of electrical materials and products with scheduling and sequencing of work so that storage requirements at project are minimized.

In general, do not deliver individual items of electrical equipment to project substantially ahead of time of installation.

3. At all times take precautions necessary to properly protect electrical equipment from damage. Failure to comply with the above to the Architect's satisfaction shall be sufficient cause for the rejection of the particular piece of apparatus in question.

1.6 PERMITS, INSPECTIONS AND FEES

A. Permits: Obtain and pay for all necessary permits, inspections, connection charges, fees, insurance, bond, licenses, and comply with all governing laws, ordinances, rules and regulations including those of the National Fire Protection Association and all municipal, state or other authority having jurisdiction over the work. Include all fees for services in bid.

B. Certificates of Inspection: Upon completion and before the date of substantial completion of each designated Phase, furnish a certificate of inspection issued by the proper authorities to the effect that the installation is in full conformity with all local and state requirements.

1.7 WARRANTY

A. The Contractor shall guarantee the work installed by him for one year from the date of final acceptance of the project and shall furnish free of cost to the Owner materials and labor necessary to repair or replace defective items of workmanship. The Contractor shall guarantee all equipment to be of the quality and capacity specified.

PART 2 - PRODUCTS

2.1 GENERAL

A. Refer to DIVISION 1 sections for general requirements on products, materials and equipment. The provisions outlined below expand or modify the requirements as applicable to electrical work. Refer to other DIVISION 26 sections for additional requirements.

B. Materials and equipment shall conform in all respects to the requirements set forth in these Specifications and the accompanying Drawings.

C. Provide products which are compatible with other products of the electrical work and with other work requiring interface with the electrical work, including electrical connections and control devices. For exposed electrical work, coordinate colors and finishes with the Architect. Determine in advance of purchase that equipment and materials proposed for installation will fit into the confines indicated, leaving adequate clearance as required by applicable codes, and for adjustment, repair, or replacement. For concealed electrical work requiring access, provide access panel, complete with anchorages and hardware, of adequate size for intended access.

D. All electrical products on this project shall conform, unless otherwise specifically noted, to applicable standards of the National Electrical Manufacturer’s Association and shall be listed by the Underwriter’s Laboratories, Inc.

E. Where materials, equipment, apparatus, or other products are specified by manufacturer, brand name or type, or catalog number, such designation is to establish standards of desired quality and style and shall be the basis of the bid. Except where noted, it is implied that "or approved equal" follows all specified items.

F. Any bills of materials, conduit and wire schedules, etc., shall be used for identification, type, and reference. It shall be the responsibility of the Contractor to determine exact quantities and components required to effect a complete job in accordance with drawings and associated specifications.

G. Equipment shall be installed in strict accordance with manufacturer's instructions. Contractor shall obtain these instructions and they shall be considered a part of these specifications.

PART 3 - EXECUTION

3.1 GENERAL

A. Comply with all federal, state and local safety laws, ordinances and regulations relating to the building and public health and safety.

B. No work shall be concealed until approved by the local inspector and all local regulations are adhered to.

C. Electrical Drawings are diagrammatic except where dimensioned. Do not scale. Follow manufacturer's certified Shop Drawings for accuracy. Consult Architect in cases of doubt or conflict. Unless noted as fixed, dimensions are based on the product of one (1) manufacturer. Verify dimensions with certified Shop Drawings of the materials actually approved and purchased.

3.2 TEMPORARY WIRING, LIGHTING AND POWER AT THE SITE: Furnish and install provisions for temporary electrical service and construction light and power during the construction period conforming to all local code and State labor law requirements.

A. Arrange for temporary service with the Utility Company.

B. Furnish, install, and maintain all temporary service equipment as required until permanent service is installed and "alive", switch-over of temporary light system, for the building while under construction.

C. Furnish, install, and maintain temporary feeders to permanent mechanical equipment and existing distribution and power electrical panels requiring service before permanent feeders are ready for same.

D. Provide and and/or all relocations of temporary electric facilities as necessary to clear the permanent installations of all trades.

E. Provide temporary panels, wires, conduits, etc. as required, to keep in operation the different building areas during construction. No additional compensation shall be provided to the Contractor to provide electrical power to all existing lights, receptacles, devices, HVAC equipment, etc., to keep these said areas in operation during construction.

F. Refer to the Project Schedule for sequencing of the work. All electrical related services to and within the limits of work phasing areas not currently under construction, shall be maintained in complete functional operation. All electrical related work in areas designated by the work phasing plan to be under construction shall be made complete and functionally operable prior to proceeding with any other phase of the work.

G. Remove all temporary electrical service equipment from the building when temporary services are no longer required.

3.3 INSPECTION AND PREPARATION

A. Substrate Examination: Installer of each element of electrical work shall examine condition of substrate to receive work, and conditions under which work will be performed, and shall make notification of conditions detrimental to completion of work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

B. Existing Facilities and Conditions: The Contractor shall visit the building sites to determine existing conditions and will be held responsible for allowing for these conditions in his bid. This area of work may have existing storm drainage, mechanical and electrical utilities, etc. located underground. It is part of this work for the Contractor to determine the scope and location of all existing utilities and the scope and location of all new utilities to be installed concurrent with this project and arrange his work around others. Damages to existing utilities by the contractor shall be corrected by him at no additional compensation. Contractor shall call 1-800-272-3020 per Louisiana statutes.

C. Large and Heavy Equipment: Where possible, prearrange for movement and positioning of large equipment into the building structure, so that enclosing walls and roofs will neither be delayed nor need to be removed. Otherwise, make notice of opening requirements to be maintained for subsequent entry of large equipment units.

3.4 CUTTING AND PATCHING

A. Structural Limitations: Do not cut structural framing, walls, floors, decks and other members which are load bearing, except with the written consent of the Architect. Authorization will be granted only where there is no other reasonable method for completing electrical work, and where proposed cutting clearly does not materially weaken the structure.

B. Other Work: Do not endanger or damage other work through procedures and processes of cutting to accommodate electrical work. Review proposed cutting with Installers of the work to be cut, and comply with their recommendations to minimize damage. Where necessary, engage original Installer or other specialists to execute cutting in recommended manner.

C. Patching: Where patching is required to restore other work, because of cutting or other damage occurring during installation of electrical work, execute patching in manner recommended by original Installer. Original Installer, where patching of finishes existing prior to beginning of work, refers to those performing similar work in areas of new construction. Restore other work in every respect, including elimination of visual defects in exposed finishes, as judged by Architect.

D. Provide, properly located and sized, all required chases, shafts, openings, furred spaces, etc., required for the work or to conceal any of the work, in any part of the structure.

E. It is the responsibility of this Division to coordinate with other responsible Divisions for required cutting and patching.

3.5 ELECTRICAL INSTALLATION

A. Conform with arrangement indicated by contract documents, recognizing that portions of work are shown only in diagrammatic form.

B. These specifications and accompanying drawings are intended to describe complete workable systems of the various types. Items of materials, work, or equipment not mentioned, but normally necessary for the proper execution of this work, shall be provided as if specifically called for.

C. The drawings show approximate locations only of feeders, branch circuits, outlets, etc., except where specific routing or dimensions are indicated. The Architect reserves the right to make changes in locations indicated, before roughing-in, without additional cost to the Owner.

D. Because of the small scale of the drawings, it is not possible to indicate all of the offsets, fittings, pull/junction boxes and accessories required. Investigate the structural and finish conditions and arrange work accordingly, furnishing fittings, bends, junction boxes, pull boxes, access panels, and accessories required to meet such conditions.

E. Where coordination requirements conflict with individual system requirements, comply with the Architect's decision on resolution of conflict.

F. Sequence, coordinate, and integrate various elements of electrical work so that electrical system will perform as indicated and be in harmony with other work of building. Architect will not supervise coordination, which is exclusive responsibility of Contractor.

G. Provide all supports and mounting hardware as necessary for installation of electrical equipment, light fixtures and devices.

H. Arrange work to facilitate maintenance and repair or replacement of equipment. Locate services requiring maintenance on wiring devices and similar units in front of services requiring less maintenance. Connect equipment for ease of disconnecting, with minimum of interference with other work. Locate operating and control equipment and devices for easy access. Maintain NEC code working clearances around all electrical equipment.

I. Install access panels where electrical work requiring access is concealed by finishes and similar work. Access panels utilized shall be approved by the Architect.

J. Integrate electrical work in ceiling plenums, including lighting fixtures, with ceiling finish, suspension, ductwork, air diffusers and other work, so that required performances of each will be achieved.

K. Where work is in close proximity to the work of other contractors, the Electrical Contractor shall review plans of other contractors and coordinate his work with theirs. The Electrical Contractor shall verify the location of lighting fixtures, beams, structural members, conduit, ductwork, pipes or other obstructions before beginning his work in the area. Notify the Architect where proper clearances do not occur or where the work of others would interfere with the safe and/or proper operation of this work. Give right-of-way in confined-service spaces to piping which must slope for drainage, and to larger HVAC ductwork and similar services which are less conformable than electrical services.

L. Fireproofing: Where conduit and/or cables penetrate fire-resistant/rated walls, partitions, ceilings, or floors, adequate fire seals using UL listed methods and products listed for the application to maintain the fire-resistance rating shall be provided and installed.

3.6 MOUNTING HEIGHTS

A. Unless otherwise noted on the drawings or required by the Architect, the following mounting heights shall apply. Heights are to center of device unless noted otherwise:

Toggle Switches	4’-0”
Receptacles	1’-6”
Telephone/Data Outlets	1’-6”
Motor Control Equipment	5’-0”
Panelboards	6’-6” to top (not more than 5’-6” from top most operating handling to floor.)
Contactors/Time Switches	5’-0”

B. Upon approval of the Architect, mounting heights may be adjusted to simplify cutting of concrete blocks in block walls or to facilitate furniture, base or cabinet arrangements. All mounting heights may be field adjusted by the Architect without any additional cost.

C. Coordinate mounting height of wiring devices above counters and/or benches and/or shelves and/or lavatories with architect prior to rough-in.

3.7 SERVICE CONTINUITY

A. At all times during the construction of the project, services (power, telephone, fire alarm, etc.) shall be maintained to all portions of the site except with prior written approval of interruptions. Any required interruptions of services (power, telephone, fire alarm, etc.) due to work being

performed under this contract shall be scheduled in advance after consultation with the Architect and the Owner.

B. At least 14 days prior to the requirement of any interruption of services, the Contractor shall furnish to the Architect for approval a written plan for the work associated with the outage including a description of the installation and removal of temporary wiring and facilities necessary to be installed.

3.8 ACCESS TO ELECTRICAL WORK

A. Install access units in accordance with manufacturer's written instructions, in compliance with NEC, and with recognized industry practices.

B. Coordinate with other work, including substrate construction work, as necessary to interface installation of access units with other work.

C. Locate each removable access unit accurately in relation to electrical work requiring access.

D. Provide adequate temporary support or attachment to framing or formwork so that units will not be dislocated during construction of substrates.

E. Set frames accurately in position and securely attach to supports with face panels plumb or level in relation to adjacent finish surfaces.

F. Adjust hardware and panels after installation for proper operation.

G. Remove and replace panels or frames which are warped, bowed, or damaged.

3.9 EXCAVATING FOR ELECTRICAL WORK

A. General: Do not excavate for electrical work until the work is ready to proceed without delay, so that total time lapse from excavation to completion of backfilling will be minimized.

B. Existing Utilities: Locate and protect existing utilities and other underground work in manner which will ensure that no damage or service interruption will result from excavating and backfilling.

C. Notify the Architect before beginning any and each excavation. At this time, exact locations of underground services to be installed shall be determined by inspection with the Owner and the Architect. Wherever other underground facilities are known to exist in the area of required excavations such facilities shall be located exactly by hand excavation by the Contractor. Should any minor relocation of new facilities be required before installation, the Contractor shall make the necessary relocation at no extra cost to the Owner.

D. Excavate trenches to depth indicated or required.

E. Excavate with vertical-sided excavations to greatest extent possible, except where otherwise indicated. Where necessary, provide sheeting and cross-bracing to sustain sides of excavations.

Remove sheeting and cross-bracing during backfilling wherever such removal would not endanger the work or other property. Where not removed, cut sheeting off at sufficient distance below finished grade to not interfere with other work.

F. Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.

3.10 BACKFILLING

A. General: Except as otherwise indicated, backfill with properly qualified backfill materials.

B. Backfill to elevations matching adjacent grades, at time of completion of work or as required to provide patching of paved surfaces.

3.11 WORKMANSHIP

A. All workmanship shall be of the highest quality. Any work judged substandard by the Architect shall be redone at the Contractors expense. Install all materials and electrical components of the work in accordance with instructions of manufacturer following the best modern construction practices and conforming with the Contract Documents. Workmanship shall be first class, in both function and appearance, whether finally concealed or exposed and shall be performed by experienced workmen skilled in the type of work. As practicable, the lines of all components of the system shall be perpendicular or parallel to building lines. In general, workmanship shall conform to guidelines set forth in N.E.C.A. manuals.

3.12 FIELD QUALITY CONTROL

A. As a minimum, upon completion of installation of electrical connections, and after circuitry has been energized, test connections to demonstrate capability and compliance with requirements. Ensure that direction of rotation of each motor fulfills requirement.

3.13 CLEANING UP

A. Remove once per week and at the completion of the work all empty cartons, scrap wire, raceways, rubbish, etc., accumulated on the project as a result of work performed.

B. Remove all marks, stains, fingerprints, bugs, dust and other foreign material from all electrical components. Refinish damaged surfaces and restore original finish to the satisfaction of the Architect.

C. After final performance test run of each electrical system, clean system both externally and internally. Touch-up minor damage to factory-painted finishes; refinish work where damage is extensive.

D. Construction Equipment: After completion of performance testing and Owner's operating instructions and demonstrations, remove installer's tools, test facilities, construction equipment and similar devices and materials used in execution of work but not incorporated in work.

3.14 SAFETY: It shall be the Contractor’s responsibility to do all things necessary in the pursuit of the installation or testing to provide safe conditions in which to work.

END OF SECTION 260100

SECTION 260200 – ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes:

1. Demolition and removal of selected electrical portions of building or structure.
2. Demolition and removal of selected electrical site elements.
3. Salvage of existing electrical items to be reused or recycled.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 SUBMITTALS

A. Pre-demolition Photographs or Videotapes: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations. Comply with Division 1 Section "Photographic Documentation." Submit before Work begins.

1.5 PROJECT CONDITIONS

A. Hazardous Materials: It is unknown whether hazardous materials will be encountered in the Work.

1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.

B. Storage or sale of removed items or materials on-site is not permitted.

1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Field measurements and circuiting shown on drawings is based on casual field observation and existing record documents, and may not reflect actual conditions. Verify field measurements and existing circuiting prior to work, and report discrepancies to Architect/Engineer before disturbing existing installation.

B. Verify that wiring and equipment to be disconnected serve only abandoned facilities not required to remain.

C. Survey of Existing Conditions: Record existing conditions by use of measured drawings and preconstruction photographs or preconstruction videotapes.

1. Comply with requirements specified in Division 1.

2. Before selective demolition or removal of existing building elements, make permanent record of measurements, materials, and construction details.

3.2 PREPARATION

A. Disconnect electrical systems noted for removal.

B. Coordinate service outages for power, telephone, fire alarm, etc with Owner.

C. Provide temporary wiring and connections to maintain existing systems in service during construction.

3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Remove all abandoned wiring to source of supply.

B. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut abandoned conduit flush with existing walls and floors to remain, and patch surfaces.

C. Where electrical items (i.e. conduits, boxes, wiring, etc) are required to remain in areas of new construction, and interfere with the new construction, relocate those items as required to avoid the new construction.

D. Disconnect abandoned outlets and remove devices. Remove abandoned outlet box if conduit servicing the box is abandoned and removed. Provide blank cover for abandoned outlet boxes which are not removed.

E. Disconnect and remove abandoned luminaries. Remove brackets, stems, hangers, and other accessories.

F. Repair adjacent construction and finishes damaged during demolition and extension work.

G. For items noted to be removed on the drawings, remove associated existing wiring and conduits not required to be re-used. Re-feed any items fed through removed items as required with new circuiting to match existing. Field verify and adjust demolition as required to accommodate actual existing circuiting arrangement.

H. Coordinate exact scope of demolition with Architect and disconnect and remove additional items if required, whether specifically shown on drawings or not.

I. Do not re-use any conductors removed from existing conduits runs.

J. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Protect items from damage during transport and storage.
3. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

K. Existing Items to Remain: Protect items indicated to remain against damage and soiling during construction. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.4 SALVAGED MATERIAL

A. Removed and Salvaged Items: The Owner shall have priority for the selection of salvaged material and equipment. Any equipment and material selected to remain the property of the Owner shall be removed and delivered to a location on the site as designated by the Owner.

Material and equipment not retained by the Owner shall become the property of the Contractor and shall be removed from the site by him.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Division 1.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.6 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 260200

SECTION 260519 - CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.
3. Sleeves and sleeve seals for cables.

1.3 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylonitrile-butadiene rubber.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

1.5 COORDINATION

A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

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

1. American Insulated Wire Corp.; a Leviton Company.
2. General Cable Corporation.
3. Senator Wire & Cable Company.
4. Southwire Company.

B. Copper Conductors: Comply with NEMA WC 70.

C. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN.

2.2 CONNECTORS AND SPLICES

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

1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SLEEVES FOR CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- thickness as indicated and of length to suit application.

D. Coordinate sleeve selection and application with selection and application of firestopping.

2.4 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.

1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
2. Pressure Plates: Plastic. Include two for each sealing element.

3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

C. Minimum size: Minimum conductor size for power and lighting circuits shall be No. 12 AWG.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: Type THHN-THWN, single conductors in raceway.

B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.

C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-THWN, single conductors in raceway.

D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.

E. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway. MC cable shall be permitted. Where MC cable is used, provide conduit homeruns from panel to a junction box above ceiling in the area of the branch circuits.

F. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.

G. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.

H. Class 1 Control Circuits: Type THHN-THWN, in raceway.

I. Class 2 Control Circuits: Type THHN-THWN, in raceway, unless indicated otherwise.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Install cables in raceways, concealed in finished walls, ceilings, and floors, unless otherwise indicated.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means; including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway.

D. Identify and color-code conductors and cables.

E. No more than three phase conductors, three neutral and ground shall be installed in any raceway unless specifically shown on the drawings.

F. Conductors for 20A branch circuiting of 120V, more than 75 feet long, (to the first fixture or other current-consuming outlet), and of 277V, more than 150 feet long (to the first fixture or other current consuming outlet) shall be No. 10 AWG, unless larger size indicated on drawings.

G. Support all conductors in vertical raceways, as specified in Section 300-19 NEC.

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.5 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

B. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

C. Rectangular Sleeve Minimum Metal Thickness:

1. For sleeve rectangle perimeter less than 50 inches and no side greater than 16 inches, thickness shall be 0.052 inch.
2. For sleeve rectangle perimeter equal to, or greater than, 50 inches and 1 or more sides equal to, or greater than, 16 inches, thickness shall be 0.138 inch.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both wall surfaces.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and cable unless sleeve seal is to be installed.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint.

J. Fire and Smoke Rated-Assembly Penetrations: Maintain indicated fire and smoke rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with firestop materials.

K. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

3.6 SLEEVE-SEAL INSTALLATION

A. Install to seal underground exterior-wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.7 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

3.8 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

B. Tests and Inspections:

1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors, for compliance with requirements.
2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

3. Infrared Scanning: Perform an infrared scan of each splice in cables and conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner.

    a. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
    b. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

C. Test Reports: Prepare a written report to record the following:

1. Test procedures used.
2. Test results that comply with requirements.
3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

D. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 260519

SECTION 260526 – GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes: Grounding systems and equipment.

1.3 SUBMITTALS

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

B. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

2.2 CONNECTORS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, pressure type with at least two bolts.

1. Pipe Connectors: Clamp type, sized for pipe.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

D. Bus-bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad (13 mil); 3/4 inch by 10 feet (19 mm by 3 m) in diameter.

B. Concrete Encased Grounding Electrode: Electrically conductive rebar (not less than 1/2" diameter) or #4 AWG bare copper conductor of at least 20 foot length.

C. Metal Frame of Building: Metal frame that is connected to earth by hold down bolts.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.

B. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors.
3. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

3.3 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.

2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

D. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

3.4 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, at ground test wells, and at individual ground rods. Make tests at ground rods before any conductors are connected.

    a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
    b. Perform tests by fall-of-potential method according to IEEE 81.

B. Grounding system will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

D. Report measured ground resistances that exceed the following values:

1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 5 ohms.
2. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 ohms.
3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
4. Power Distribution Units or Panelboards Serving Electronic Equipment: 3 ohm(s).
5. Substations, Pad-Mounted Equipment, and main facility grounding field electrode system: 5 ohms.
6. Manhole Grounds: 5 ohms.

E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. IMC: Intermediate metal conduit.

C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

B. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.5 QUALITY ASSURANCE

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

B. Comply with NFPA 70.

1.6 COORDINATION

A. Coordinate installation of roof curbs, equipment supports, and roof penetrations.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

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

a. Allied Tube & Conduit.
b. Cooper B-Line, Inc.; a division of Cooper Industries.
c. ERICO International Corporation.
d. GS Metals Corp.
e. Thomas & Betts Corporation.
f. Unistrut; Tyco International, Ltd.
g. Wesanco, Inc.

2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
3. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
4. Channel Dimensions: Selected for applicable load criteria.
5. Nonmetallic Coatings: Manufacturer’s standard PVC, polyurethane, or polyester coating applied according to MFMA-4.

B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

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

1) Hilti Inc.
2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
3) MKT Fastening, LLC.
4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.

2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

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

1) Cooper B-Line, Inc.; a division of Cooper Industries.
2) Empire Tool and Manufacturing Co., Inc.
3) Hilti Inc.
4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
5) MKT Fastening, LLC.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

2.3 MATERIALS: SUPPORTS AND ALL COMPONENTS

A. Indoor (Dry): Galvanized steel.

B. Indoor (Wet): Stainless steel.

C. Outdoor, above grade: Stainless steel.

D. Outdoor, below grade: Non-metallic with stainless steel hardware.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with single-bolt conduit clamps using spring friction action for retention in support channel.

D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.

5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or

greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.

6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

B. Field Welding: Comply with AWS D1.1/D1.1M.

C. Install hangers, anchors, sleeves and seals, in accordance with manufacture's written instructions and with recognized industry practices to insure supporting devices comply with requirements. Comply with requirements of NECA, NEC and ANSI/NEMA for installations of supporting devices.

D. Coordinate with other electrical work, including raceway and wiring work, as necessary to interface installation of supporting devices with other work.

E. Install hangers, supports, clamps and attachments to support conduit properly from building structure. Arrange for grouping of parallel runs of horizontal to be supported together on trapeze type hangers where possible.

F. Groups of three or more conduits shall be supported by metallic slotted support system and threaded hanger rods. Wire hangers and conduit as supports will not be acceptable.

G. Support all equipment covered by this specification directly from building structural members independent of any ceiling or any other installed item. Panelboards and switches may be attached to suitably reinforced walls. Ground or slab mounted equipment shall be mounted on a separate four inch high concrete housekeeping steel reinforced slab.

H. Do not attach items of this specification to HVAC ductwork, ceiling grids and ceiling support members, piping or other equipment unless specifically shown otherwise. Position all supports and equipment such that access through lay-in ceilings or panels is not impaired and all Code required clearances are maintained.

I. Where applicable, under no circumstances is the Electrical Contractor to attach to support from any bar joist bridging. Any supports to the bar joists or any structural systems are to be approved by the Architect.

J. Wire shall not be used with or without spring steel fasteners, clips, or clamps for the support of any conduit. Wood products shall not be used for the support or attachment of conduit or electrical equipment unless specifically noted otherwise.

3.4 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

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

END OF SECTION 260529

SECTION 260533 - RACEWAYS AND BOXES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. ENT: Electrical nonmetallic tubing.

C. FMC: Flexible metal conduit.

D. IMC: Intermediate metal conduit.

E. LFMC: Liquidtight flexible metal conduit.

F. LFNC: Liquidtight flexible nonmetallic conduit.

G. RNC: Rigid nonmetallic conduit.

1.4 SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

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

1. AFC Cable Systems, Inc.
2. Alflex Inc.
3. Allied Tube & Conduit; a Tyco International Ltd. Co.
4. Anamet Electrical, Inc.; Anaconda Metal Hose.
5. Electri-Flex Co.
6. Manhattan/CDT/Cole-Flex.
7. Maverick Tube Corporation.
8. O-Z Gedney; a unit of General Signal.
9. Wheatland Tube Company.

B. Rigid Steel Conduit: ANSI C80.1.

C. Aluminum Rigid Conduit: ANSI C80.5.

D. IMC: ANSI C80.6.

E. EMT: ANSI C80.3.

F. FMC: Zinc-coated steel or aluminum.

G. LFMC: Flexible steel conduit with PVC jacket.

H. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.

1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
2. Fittings for EMT: Steel or die-cast, compression type.
3. Coating for Fittings for PVC-Coated Conduit: Minimum thickness, 0.040 inch (1 mm), with overlapping sleeves protecting threaded joints.

I. Joint Compound for Rigid Steel Conduit or IMC: Listed for use in cable connector assemblies, and compounded for use to lubricate and protect threaded raceway joints from corrosion and enhance their conductivity.

2.2 NONMETALLIC CONDUIT AND TUBING

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

1. AFC Cable Systems, Inc.

2. Anamet Electrical, Inc.; Anaconda Metal Hose.
3. Arnco Corporation.
4. CANTEX Inc.
5. CertainTeed Corp.; Pipe & Plastics Group.
6. Condux International, Inc.
7. ElecSYS, Inc.
8. Electri-Flex Co.
9. Lamson & Sessions; Carlon Electrical Products.
10. Manhattan/CDT/Cole-Flex.
11. RACO; a Hubbell Company.
12. Thomas & Betts Corporation.

B. ENT: NEMA TC 13.

C. RNC: NEMA TC 2, Type EPC-40-PVC, unless otherwise indicated.

D. LFNC: UL 1660.

E. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.

F. Fittings for LFNC: UL 514B.

2.3 METAL WIREWAYS

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

1. Cooper B-Line, Inc.
2. Hoffman.
3. Square D; Schneider Electric.

B. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type [1], unless otherwise indicated.

C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Wireway Covers: Hinged type for interior use only.

E. Finish: Manufacturer's standard enamel finish.

2.4 SURFACE RACEWAYS

A. Surface Metal Raceways: Galvanized steel with snap-on covers. Manufacturer's standard enamel finish in color selected by Architect.

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

    a. Thomas & Betts Corporation.
    b. Walker Systems, Inc.; Wiremold Company (The).
    c. Wiremold Company (The); Electrical Sales Division.

2.5 BOXES, ENCLOSURES, AND CABINETS

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

1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
2. EGS/Appleton Electric.
3. Erickson Electrical Equipment Company.
4. Hoffman.
5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
6. O-Z/Gedney; a unit of General Signal.
7. RACO; a Hubbell Company.
8. Robroy Industries, Inc.; Enclosure Division.
9. Scott Fetzer Co.; Adalet Division.
10. Spring City Electrical Manufacturing Company.
11. Thomas & Betts Corporation.
12. Walker Systems, Inc.; Wiremold Company (The).
13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.

B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, aluminum, Type FD, with gasketed cover.

D. Metal Floor Boxes: Cast or sheet metal, fully adjustable, rectangular.

E. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

F. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.

G. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Plastic.

H. Cabinets:

1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.

4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

2.6 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

A. Description: Comply with SCTE 77.

1. Color of Frame and Cover: Gray.

2. Configuration: Units shall be designed for flush burial and have open bottom, unless otherwise indicated.
3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
5. Cover Legend: Molded lettering, as indicated for each service.

6. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.
7. Handholes 48 inches wide by 48 inches long and larger shall have inserts for cable racks and pulling-in irons installed before concrete is poured.

B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel or fiberglass or a combination of the two.

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

a. Armorcast Products Company.
b. Carson Industries LLC.
c. CDR Systems Corporation.
d. NewBasis.

2.7 SOURCE QUALITY CONTROL FOR UNDERGROUND ENCLOSURES

A. Handhole and Pull-Box Prototype Test: Test prototypes of handholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.

1. Tests of materials shall be performed by an independent testing agency.
2. Strength tests of complete boxes and covers shall be by either an independent testing agency or manufacturer. A qualified registered professional engineer shall certify tests by manufacturer.
3. Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012, and traceable to NIST standards.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:

1. Exposed Conduit: Rigid steel conduit.
2. Concealed Conduit, Aboveground: Rigid steel conduit.
3. Underground Conduit: RNC, Type EPC-40-PVC, direct buried.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R unless otherwise noted.
6. Application of Handholes and Boxes for Underground Wiring:
    a. Handholes and Pull Boxes in Driveway, Parking Lot, and Off-Roadway Locations, Subject to Occasional, Nondeliberate Loading by Heavy Vehicles: Polymer concrete, SCTE 77, Tier 15 structural load rating.
    b. Handholes and Pull Boxes in Sidewalk and Similar Applications with a Safety Factor for Nondeliberate Loading by Vehicles: Polymer-concrete units SCTE 77, Tier 8 structural load rating.
    c. Handholes and Pull Boxes Subject to Light-Duty Pedestrian Traffic Only: polymer concrete, structurally tested according to SCTE 77 with 3000-lbf vertical loading.

B. Comply with the following indoor applications, unless otherwise indicated:

1. Exposed: EMT.
2. Concealed in Ceilings and Interior Walls and Partitions: EMT.
3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
4. Damp or Wet Locations: Rigid steel conduit or IMC.
5. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in damp or wet locations.
6. Raceways in slab: RNC, Type EPC-40-PVC

C. Minimum Raceway Size: 3/4-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with that material. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer.

E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.

F. Do not install aluminum conduits in contact with concrete.

3.2 INSTALLATION

A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Properly support raceways.

E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.

F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.

G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.

H. Raceways Embedded in Slabs:

1. Verify with Structural Engineer if & where conduit can be installed within slab. All slab penetrations shall be coordinated with the Structural engineer prior to slab pour.

I. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

J. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

K. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.

L. Raceways for Optical Fiber and Communications Cable: Install raceways, metallic and nonmetallic, rigid and flexible, as follows:

1. 3/4-Inch Trade Size and Smaller: Install raceways in maximum lengths of 50 feet.
2. 1-Inch Trade Size and Larger: Install raceways in maximum lengths of 75 feet.
3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements. Use long radius elbows

M. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where otherwise required by NFPA 70.

N. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F, and that has straight-run length that exceeds 25 feet.

1. Install expansion-joint fittings for each of the following locations, and provide type and quantity of fittings that accommodate temperature change listed for location:

    a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
    b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
    c. Indoor Spaces: Connected with the Outdoors without Physical Separation: 125 deg F temperature change.
    d. Attics: 135 deg F temperature change.

2. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change.
3. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.

O. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for [recessed and semi-recessed lighting fixtures,]equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations subject to severe physical damage.
2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

P. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.

Q. Set metal floor boxes level and flush with finished floor surface.

R. Install exposed raceways parallel or at right angles to nearby surfaces or structural members.

S. Where raceways enter boxes or cabinets that do not have threaded hubs, raceways shall be secured in place with galvanized locknuts inside and outside of the enclosure, and shall have a bushing inside. All raceway ends, including those for empty conduits, shall have bushings.

T. Conduits leaving air handling units, fan coils, air conditioners, outside air units or any other pressurized tempered air moving equipment shall be sealed with Ductseal #203. The conduit is to be sealed inside of the junction box or as it leaves the equipment.

U. Avoid installing boxes back to back in walls. Provide not less than 12 inches separation.

V. Position recessed boxes accurately to allow for surface finish thickness.

W. Secure boxes firmly and rigidly to substrates, or structural surfaces to which attached.

X. Raceways and concrete encased duct banks under structural slabs shall be adequately supported from the slab using 3/8 inch diameter stainless steel rods properly spaced (not greater than 5 feet between rods) to support the load. Exposed sections of rods shall be coated with waterproof mastic.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit.
2. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction.

3. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.

    a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
    b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.

B. Underground Duct Banks

1. Install top of duct bank minimum 24 inches below finished grade for systems 600 volts and below, and minimum 36 inches below finished grade for systems over 600 volts. Terminate raceways in end bell at manholes.
2. Use suitable separators and chairs installed not greater than 4 feet on center. Separators shall space raceways per NEC, unless indicated otherwise. Band raceways together with banding devices. Securely anchor raceways to prevent movement during concrete pour.
3. Provide minimum of 4 inches concrete cover on all sides, unless indicated otherwise.

3.4 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.

B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.

C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch above finished grade.

D. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables, but short enough to preserve adequate working clearances in the enclosure.

E. Field-cut openings for conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

3.5 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

3.6 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

SECTION 260553 - ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Identification for conductors.
   2. Underground-line warning tape.
   3. Instruction signs.
   4. Equipment identification labels.
   5. Miscellaneous identification products.

1.3 QUALITY ASSURANCE

A. Comply with ANSI A13.1 and IEEE C2.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.4 COORDINATION

A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Coordinate installation of identifying devices with location of access panels and doors.

D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 UNDERGROUND-LINE WARNING TAPE

A. Tape:

1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
2. Printing on tape shall be permanent and shall not be damaged by burial operations.
3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.

B. Color and Printing:

1. Comply with ANSI Z535.1 through ANSI Z535.5.
2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.
3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE.
4. Pigmented polyolefin, bright-colored, compounded for direct-burial service.
5. Thickness: 4 mils
6. Weight: 18.5 lb/1000 sq. ft.
7. 3-Inch Tensile According to ASTM D 882: 30 lbf and 2500 psi.

2.2 INSTRUCTION SIGNS

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.

1. Engraved legend with white letter on black face.
2. Punched or drilled for mechanical fasteners.
3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.3 EQUIPMENT IDENTIFICATION LABELS

A. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. Equipment connected to normal power to be white letters on a black background. Equipment connected to emergency power to be white letters on red background. Minimum letter height shall be 3/8 inch.

2.4 CABLE TIES

A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black except where used for color-coding.

B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black.

C. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F, According to ASTM D 638: 7000 psi.
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F.
5. Color: Black.

2.5 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in Division 9 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

B. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

C. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.

D. Painted Identification: Comply with requirements in Division 9 painting Sections for surface preparation and paint application.

3.2 IDENTIFICATION SCHEDULE

A. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:

1. Panel Name.
2. Circuit Number.

B. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.

1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder, and branch-circuit conductors.

a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
b. Colors for 208/120-V Circuits:

1) Phase A: Black.
2) Phase B: Red.
3) Phase C: Blue.
4) Neutral: White.

c. Colors for 480/277-V Circuits:

1) Phase A: Brown.
2) Phase B: Orange.
3) Phase C: Yellow.
4) Neutral: Gray.

d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

e. Green colored tape shall only be used for equipment grounding conductors.

C. Power-Circuit Conductor Identification, More than 600 V: For conductors in vaults, pull and junction boxes, manholes, and handholes, use nonmetallic plastic tag holder with adhesive-backed phase tags, and a separate tag with the circuit designation.

D. Conductors to Be Extended in the Future: Attach marker tape to conductors and list source.

E. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.

2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.

F. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.

1. Install underground-line warning tape for both direct-buried cables and cables in raceway.

G. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Baked-enamel warning signs.

1. Comply with 29 CFR 1910.145.
2. Apply to exterior of door, cover, or other access.
3. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:

a. Power transfer switches.
b. Controls with external control power connections.
c. Elevator controllers.

H. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

I. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:

a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2-inch- high label; where two lines of text are required, use labels 2 inches high.
b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

2. Equipment to Be Labeled:

a. Panelboards: Update typewritten directory of circuits. Panel directories are to reflect the final signage, approved by owner, and not the names or numbers

reflected on the Construction Documents. Panelboard identification shall be engraved, laminated acrylic or melamine label.

b. Enclosures and electrical cabinets.
c. Disconnect Switches
d. Access doors and panels for concealed electrical items.

END OF SECTION 260553

SECTION 260923 - LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Indoor occupancy and vacancy sensors.
   2. Switchbox-mounted occupancy sensors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each type of lighting control device to include in operation and maintenance manuals.

B. Software and Firmware Operational Documentation:

   1. Software operating and upgrade manuals.
   2. Program Software Backup: On USB media. Provide names, versions, and website addresses for locations of installed software.
   3. Device address list.
   4. Printout of software application and graphic screens.

1.5 WARRANTY

A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace lighting control devices that fail(s) in materials or workmanship within specified warranty period.

   1. Failures include, but are not limited to, the following:

      a. Faulty operation of lighting control software.
      b. Faulty operation of lighting control devices.

   2. Warranty Period: Five year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 INDOOR OCCUPANCY AND VACANCY SENSORS

A. General Requirements for Sensors:

1. Wall or Ceiling-mounted as indicated on drawings, solid-state indoor occupancy and vacancy sensors.
2. Passive infrared, Ultrasonic and Dual technology.
3. Low voltage with separate power pack, except where line voltage sensors are indicated on the drawings.
4. Hardwired connection to switch.

5. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
6. Operation:

    a. Occupancy Sensor: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn them off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 20 minutes.
    b. Vacancy Sensor: Unless otherwise indicated, lights are manually turned on and sensor turns lights off when the room is unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 20 minutes.
    c. Combination Sensor: Unless otherwise indicated, sensor shall be programmed to turn lights on when coverage area is occupied and turn them off when unoccupied, or to turn off lights that have been manually turned on; with a time delay for turning lights off, adjustable over a minimum range of 1 to 20 minutes.

7. Sensor Output: Sensor is powered from the power pack.

8. Power Pack: Dry contacts rated for 20-A LED load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Sensor has 24-V dc, 150-mA, Class 2 power source, as defined by NFPA 70.
9. Mounting:

    a. Sensor: Suitable for mounting in any position on a standard outlet box.
    b. Relay: Externally mounted through a 1/2-inch (13-mm) knockout in a standard electrical enclosure.
    c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.

10. Indicator: Digital display, to show when motion is detected during testing and normal operation of sensor.
11. Bypass Switch: Override the "on" function in case of sensor failure.
12. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc (21.5 to 2152 lux); turn lights off when selected lighting level is present.

B. PIR Type: detect occupants in coverage area by their heat and movement.

1. Detector Sensitivity: Detect occurrences of 6-inch- (150-mm-) minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. (232 sq. cm).

2. Detection Coverage (Room, Ceiling Mounted): Detect occupancy anywhere in a circular area of 1000 sq. ft. (93 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.
3. Detection Coverage (Corridor, Ceiling Mounted): Detect occupancy within 90 feet (27.4 m) when mounted on a 10-foot- (3-m-) high ceiling.
4. Detection Coverage (Room, Wall Mounted): Detect occupancy anywhere within a 180-degree pattern centered on the sensor over an area of 1200 square feet when mounted 48 inches (1200 mm) above finished floor.

C. Ultrasonic Type: detect occupants in coverage area through pattern changes of reflected ultrasonic energy.

1. Detector Sensitivity: Detect a person of average size and weight moving not less than 12 inches (305 mm) in either a horizontal or a vertical manner at an approximate speed of 12 inches/s (305 mm/s).

2. Detection Coverage (Small Room): Detect occupancy anywhere within a circular area of 600 sq. ft. (56 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. (93 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.
4. Detection Coverage (Large Room): Detect occupancy anywhere within a circular area of 2000 sq. ft. (186 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.
5. Detection Coverage (Corridor): Detect occupancy anywhere within 90 feet (27.4 m) when mounted on a 10-foot- (3-m-) high ceiling in a corridor not wider than 14 feet (4.3 m).
6. Detection Coverage (Room, Wall Mounted): Detect occupancy anywhere within a 180-degree pattern centered on the sensor over an area of 1200 square feet when mounted84 inches (2100 mm) above finished floor.

D. Dual-Technology Type: detect occupants in coverage area using PIR and ultrasonic detection methods. The particular technology or combination of technologies that control on-off functions is selectable in the field by operating controls on unit.

1. Sensitivity Adjustment: Separate for each sensing technology.
2. Detector Sensitivity: Detect occurrences of 6-inch- (150-mm-) minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. (232 sq. cm), and detect a person of average size and weight moving not less than 12 inches (305 mm) in either a horizontal or a vertical manner at an approximate speed of 12 inches/s (305 mm/s).
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. (93 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.
4. Detection Coverage (Room, Wall Mounted): Detect occupancy anywhere within a 180-degree pattern centered on the sensor over an area of 1200 square feet when mounted48 inches (1200 mm) above finished floor.

2.2 SWITCHBOX-MOUNTED OCCUPANCY SENSORS

A. General Requirements for Sensors: Automatic-wall-switch occupancy sensor with manual on-off switch, suitable for mounting in a single gang switchbox using hardwired connection.

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Occupancy Sensor Operation: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn lights off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 20 minutes.
3. Operating Ambient Conditions: Dry interior conditions, 32 to 120 deg F (0 to 49 deg C).
4. Switch Rating: Not less than 800-VA LED load at 120 V, 1200-VA LED load at 277 V.

B. Wall-Switch:

1. Standard Range: 180-degree field of view, field adjustable from 180 to 40 degrees; with a minimum coverage area of 2100 sq. ft (196 sq. m).
2. Sensing Technology: Dual technology.
3. Switch Type: SP, dual circuit where noted on plans. [manual "on," automatic "off."]
4. Capable of controlling load in three-way application.
5. Voltage: Dual voltage - 120 and 277 V.
6. Ambient-Light Override: Concealed, field-adjustable, light-level sensor from 10 to 150 fc (108 to 1600 lux). The switch prevents the lights from turning on when the light level is higher than the set point of the sensor.

7. Concealed, field-adjustable, "off" time-delay selector at up to 30 minutes.
8. Concealed, "off" time-delay selector at 30 seconds and 5, 10, and 20 minutes.
9. Adaptive Technology: Self-adjusting circuitry detects and memorizes usage patterns of the space and helps eliminate false "off" switching.

10. Color: White.
11. Faceplate: Color matched to switch.

2.3 CONDUCTORS AND CABLES

A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 24 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine lighting control devices before installation. Reject lighting control devices that are wet, moisture damaged, or mold damaged.

B. Examine walls and ceilings for suitable conditions where lighting control devices will be installed.

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

3.2 WIRING INSTALLATION

A. Comply with NECA 1.

B. Wiring Method: Install in conduit. Comply with Section 260519 "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size is 1/2 inch (13 mm).

C. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.

D. Size conductors according to lighting control device manufacturer's written instructions unless otherwise indicated.

E. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.3 LIGHTING CONTROL SEQUENCE OF OPERATIONS

A. Enclosed Offices
   1. Manual on/off of lighting

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to evaluate lighting control devices and perform tests and inspections.

B. Perform the following tests and inspections:

   1. Operational Test: After installing controls and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
   2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
   3. See Testing and Commissioning requirements in Part 3.9 of this section.

C. Lighting control devices will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.5 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting lighting control devices to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.
2. For daylighting controls, adjust set points and deadband controls to suit Owner's operations.
3. Align high-bay occupancy sensors using manufacturer's laser aiming tool.

END OF SECTION 260923

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Receptacles, receptacles with integral GFCI, and associated device plates.
2. Snap switches and wall-box dimmers.
3. Pendant cord-connector devices.
4. Cord and plug sets.

1.3 DEFINITIONS

A. EMI: Electromagnetic interference.

B. GFCI: Ground-fault circuit interrupter.

C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

D. RFI: Radio-frequency interference.

E. TVSS: Transient voltage surge suppressor.

F. UTP: Unshielded twisted pair.

1.4 ACTION SUBMITTALS

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

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NFPA 70.

1.7 COORDINATION

A. Receptacles for Owner-Furnished Equipment: Match plug configurations.

1. Cord and Plug Sets: Match equipment requirements.

PART 2 - PRODUCTS

2.1 STRAIGHT BLADE RECEPTACLES

A. Convenience Receptacles, 125 V: Comply with NEMA WD 1, NEMA WD 6 configurations 5-20R, and UL 498.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Hubbell HBL5362 series.
b. Leviton 5362 series.
c. Pass & Seymour PS5362 series.

2.2 GFCI RECEPTACLES

A. General Description: Straight blade, feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include power on indicator light and ground fault indicator light or reset lockout device.

B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

1. Products: Subject to compliance with requirements, provide one of the following:

a. Pass & Seymour; 2095 series.
b. Hubbell; GFR5362 series.

C. Weather-Resistant GFI Receptacles, 125V, 20A.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Hubbell GFR5362TR series.
b. Pass & Seymour 2095TRWR series.

2.3 PENDANT CORD-CONNECTOR DEVICES

A. Description: Matching, locking-type plug and receptacle body connector; NEMA WD 6 configurations L5-20P and L5-20R, heavy-duty grade.

1. Body: Nylon with screw-open cable-gripping jaws and provision for attaching external cable grip.
2. External Cable Grip: Woven wire-mesh type made of high-strength galvanized-steel wire strand, matched to cable diameter, and with attachment provision designed for corresponding connector.

2.4 CORD AND PLUG SETS

A. Description: Match voltage and current ratings and number of conductors to requirements of equipment being connected.

1. Cord: Rubber-insulated, stranded-copper conductors, with Type SOW-A jacket; with green-insulated grounding conductor and equipment-rating ampacity plus a minimum of 30 percent.
2. Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection.

2.5 SNAP SWITCHES

A. Comply with NEMA WD 1 and UL 20.

B. Switches, 120/277 V, 20 A:

1. Products: Subject to compliance with requirements, provide one of the following:

a. Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).
b. Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 1224-2 (four way).
c. Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).

C. Key-Operated Switches, 120/277 V, 20 A:

1. Products: Subject to compliance with requirements, provide one of the following:

a. Pass & Seymour; PS372010KL (single pole) and PS372030KL (three way). Equal by Hubbell and Leviton.

2. Description: Operated by cam lock, with key removable in both positions.

D. Wall Box Dimmers
1. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on-off switches, with audible frequency and EMI/RFI suppression filters.
2. Control: Continuously adjustable slider; with single-pole or three-way switching. Comply with UL 1472.
3. LED Dimmers: 120 or 277 V; 0-10 volt control, no flicker/strobing at low end. Provide 0-10 volt control cable between dimmer and each dimmable light fixture. Dimmer shall provide full range dimming of LED fixtures.

2.6 WALL PLATES

A. Single and combination types to match corresponding wiring devices

1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material:
a. Finished Spaces: Smooth nylon, 0.035 thick.
b. Unfinished Spaces: Galvanized Steel

B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, thermoplastic with lockable “WHILE IN USE” cover.

2.7 FINISHES

A. Color: Wiring device catalog numbers in Section Text do not designate device color.

1. Wiring Devices: Ivory, unless otherwise selected by Architect, or unless otherwise indicated or required by NFPA 70 or device listing.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.

B. Coordination with Other Trades:

1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.

2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Existing Conductors:

    a. Cut back and pigtail, or replace all damaged conductors.
    b. Straighten conductors that remain and remove corrosion and foreign matter.
    c. Pigtailing existing conductors is permitted provided the outlet box is large enough.

D. Device Installation:

1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles on bottom, and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening. Device plates shall be installed with all four edges in contact with finished wall surfaces.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

H. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

3.2 CONNECTIONS

A. Properly ground all wiring devices.

3.3 FIELD QUALITY CONTROL

A. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

END OF SECTION 262726

SECTION 262813 - FUSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Cartridge fuses rated 600-V ac and less for use in control circuits, enclosed switches, panelboards, switchboards, enclosed controllers, and motor-control centers.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material, dimensions, and descriptions of individual components.

B. Operation and Maintenance Data: For fuses to include in emergency, operation, and maintenance manuals.

1. Ambient temperature adjustment information.
2. Current-limitation curves for fuses with current-limiting characteristics.
3. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse.
4. Coordination charts and tables and related data.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain fuses, for use within a specific product or circuit, from single source from single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with NEMA FU 1 for cartridge fuses.

D. Comply with NFPA 70.

1.5 PROJECT CONDITIONS

A. Where ambient temperature to which fuses are directly exposed is less than 40 deg F (5 deg C) or more than 100 deg F (38 deg C), apply manufacturer's ambient temperature adjustment factors to fuse ratings.

1.6 COORDINATION

A. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and with system short-circuit current levels.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cooper Bussmann, Inc. LP Series.
2. Edison Fuse, Inc.
3. Ferraz Shawmut, Inc. AMP Trap 2000 Series.
4. Littelfuse, Inc. LLS-RK Series.

2.2 CARTRIDGE FUSES

A. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fuses before installation. Reject fuses that are moisture damaged or physically damaged.

B. Examine holders to receive fuses for compliance with installation tolerances and other conditions affecting performance, such as rejection features.

C. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.

D. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.

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

3.2 FUSE APPLICATIONS

A. Cartridge Fuses:

1. Service Entrance: Class L, time delay over 600A otherwise Class RK1, time delay.
2. Feeders: Class L, time delay over 600A otherwise Class RK1, time delay.
3. Motor Branch Circuits: Class RK1, time delay.
4. Other Branch Circuits: Class RK1, time delay.

3.3 INSTALLATION

A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

END OF SECTION 262813

SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Fusible switches.
2. Nonfusible switches.
3. Molded-case circuit breakers (MCCBs).
4. Enclosures.

1.3 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.4 SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

1. Enclosure types and details for types other than NEMA 250, Type 1.
2. Current and voltage ratings.
3. Short-circuit current ratings (interrupting and withstand, as appropriate).

4. Include evidence of NRTL listing for series rating of installed devices.
5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.

B. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section "Operation and Maintenance Data," include the following:

1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.

B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Comply with NFPA 70.

1.6 COORDINATION

A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Type HD, Heavy Duty, Single Throw, 240 or 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate [specified] [indicated] fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.

3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.

2.2 NONFUSIBLE SWITCHES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Type HD, Heavy Duty, Single Throw, 240 or 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.

2.3 MOLDED-CASE CIRCUIT BREAKERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.

C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

D. Adjustable, Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.

E. Electronic Trip Circuit Breakers: Field-replaceable rating plug, rms sensing, with the following field-adjustable settings:

1. Instantaneous trip.
2. Long- and short-time pickup levels.

3. Long- and short-time time adjustments.
4. Ground-fault pickup level, time delay, and I^2t response.

F. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller, and let-through ratings less than NEMA FU 1, RK-5.

G. Ground-Fault, Circuit-Interrupter (GFCI) Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).

H. Features and Accessories:

1. Standard frame sizes, trip ratings, and number of poles.

2. Lugs: Mechanical type, suitable for number, size, trip ratings, and conductor material.
3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.

4. Ground-Fault Protection: Comply with UL 1053; integrally mounted, self-powered type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.
5. Shunt Trip: Trip coil energized from separate circuit, with coil-clearing contact.

2.4 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
2. Outdoor Locations: NEMA 250, Type 3R.
3. Kitchen and Wash-Down Areas: NEMA 250, Type 4X, stainless steel.
4. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.

B. Circuit breakers installed in existing panelboards shall be of the proper type to be installed therein, shall include bussing kits/alterations as required, and shall have an interrupting capacity of not less than that of the existing circuit breakers. Where circuit breakers are not available to fit the existing panelboard, the panelboard shall be removed and replaced with new.

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

D. Install fuses in fusible devices.

E. Comply with NECA 1.

3.3 IDENTIFICATION

A. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.4 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
3. Perform the following infrared scan tests and inspections and prepare reports:

    a. Infrared Scanning: Perform an infrared scan of each enclosed switch and circuit breaker. Remove front panels so joints and connections are accessible to portable scanner.
    b. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

B. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.5 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges as specified in Division 16 Section "Overcurrent Protective Device Coordination".

END OF SECTION 262816

SECTION 265119 - LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes LED luminaires.

1.3 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color Rendering Index.

C. Fixture: See "Luminaire."

D. IP: International Protection or Ingress Protection Rating.

E. LED: Light-emitting diode.

F. Lumen: Measured output of lamp and luminaire, or both.

G. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Arrange in order of luminaire designation.
2. Include data on features, accessories, and finishes.
3. Include physical description and dimensions of luminaires.
4. Include emergency lighting units, including batteries and chargers.
5. Include life, output (lumens, CCT, and CRI), and energy-efficiency data.
6. Photometric data and adjustment factors based on laboratory tests[, complying with IES "Lighting Measurements Testing and Calculation Guides" for each luminaire type. The adjustment factors shall be for lamps and accessories identical to those indicated for the luminaire as applied in this Project IES LM-79 and IES LM-80.

a. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
b. Testing Agency Certified Data: For indicated luminaires, photometric data certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.

B. Product Schedule: For luminaires.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Luminaires.
2. Suspended ceiling components.
3. Partitions and millwork that penetrate the ceiling or extend to within 12 inches (300 mm) of the plane of the luminaires.
4. Structural members to which equipment and or luminaires will be attached.
5. Initial access modules for acoustical tile, including size and locations.
6. Items penetrating finished ceiling, including the following:

a. Other luminaires.
b. Air outlets and inlets.
c. Speakers.
d. Sprinklers.
e. Access panels.
f. Ceiling-mounted projectors.

7. Moldings.

B. Qualification Data: For testing laboratory providing photometric data for luminaires.

C. Product Certificates: For each type of luminaire.

D. Product Test Reports: For each type of luminaire, for tests performed by manufacturer and witnessed by a qualified testing agency.

E. Sample warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.

1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

1.7 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.

B. Provide luminaires from a single manufacturer for each luminaire type.

C. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.9 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.

B. Warranty Period: Five year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Luminaires and lamps shall be labeled vibration and shock resistant.

1. The term "withstand" means "the luminaire will remain in place without separation of any parts when subjected to the seismic forces specified and the luminaire will be fully operational during and after the seismic event"

B. Ambient Temperature: 41 to 104 deg F (5 to 40 deg C).

1. Relative Humidity: Zero to 95 percent.

C. Altitude: Sea level to 1000 feet (300 m).

2.2 LUMINAIRE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following lamp characteristics:

    a. "USE ONLY" and include specific lamp type.
    b. Lamp diameter, shape, size, wattage, and coating.
    c. CCT and CRI.

C. Recessed luminaires shall comply with NEMA LE 4.

D. See drawings for lighting fixture schedule and fixture type model numbers. These model numbers set the basis for quality, appearance, and performance for each fixture type.

2.3 EXIT SIGNS

A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.

B. Internally Lighted Signs:

1. Lamps for AC Operation: LEDs, 50,000 hours minimum rated lamp life.
2. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.

    a. Battery: Sealed, maintenance-free, nickel-cadmium type.
    b. Charger: Fully automatic, solid-state type with sealed transfer relay.
    c. Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
    d. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    e. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

    f. Remote Test: Switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.

    g. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.4 MATERIALS

A. Metal Parts:

1. Free of burrs and sharp corners and edges.
2. Sheet metal components shall be steel unless otherwise indicated.
3. Form and support to prevent warping and sagging.

B. Steel:

1. ASTM A 36/A 36M for carbon structural steel.
2. ASTM A 568/A 568M for sheet steel.

C. Stainless Steel:

1. 1. Manufacturer's standard grade.
2. 2. Manufacturer's standard type, ASTM A 240/240 M.

D. Galvanized Steel: ASTM A 653/A 653M.

E. Aluminum: ASTM B 209.

2.5 LUMINAIRE SUPPORT

A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: 1/2-inch (13-mm) steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.

C. Wires: ASTM A 641/A 641 M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm).

D. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.

E. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

F. Provide Unistrut where necessary to support light fixtures from structure.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.

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

3.2 TEMPORARY LIGHTING

A. If approved by the Architect, use selected permanent luminaires for temporary lighting. When construction is sufficiently complete, clean luminaires used for temporary lighting and install new lamps.

3.3 INSTALLATION

A. Comply with NECA 1.

B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.

C. Install lamps in each luminaire.

D. Supports:

1. Sized and rated for luminaire weight.
2. Able to maintain luminaire position after cleaning and relamping.
3. Provide support for luminaire without causing deflection of ceiling or wall.
4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.

E. Flush-Mounted Luminaires:

1. Secured to outlet box.
2. Attached to ceiling structural members with wire or rods at four points equally spaced around circumference of luminaire.
3. Trim ring flush with finished surface.

F. Wall-Mounted Luminaires:

1. Attached to structural members in walls.
2. Do not attach luminaires directly to gypsum board.

G. Suspended Luminaires:

1. Ceiling Mount:

    a. Two 5/32-inch- (4-mm-) diameter aircraft cable supports adjustable to 10 feet (3 m) in length.
    b. Hook mount.

2. Pendants and Rods: Where longer than 48 inches (1200 mm), brace to limit swinging.
3. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
4. Continuous Rows of Luminaires: Provide support for each fixture as required.
5. Do not use ceiling grid as support for pendant luminaires. Connect support wires or rods to building structure.

H. Ceiling-Grid-Mounted Luminaires:

1. Secure to any required outlet box.

2. Use approved devices, wires or rods, and support components to connect luminaire to ceiling grid and building structure in a minimum of four locations, spaced near corners of luminaire.

I. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.

3.4 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

B. Luminaire will be considered defective if it does not pass operation tests and inspections.

C. Prepare test and inspection reports.

3.6 STARTUP SERVICE

A. Comply with requirements for startup specified in Section 260943.16 "Addressable-Luminaire Lighting Controls."

3.7 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting the direction of aim of luminaires to suit occupied conditions. Make up to two visits to Project during other-than-normal hours for this purpose. Some of this work may be required during hours of darkness.

1. During adjustment visits, inspect all luminaires. Replace lamps or luminaires that are defective.
2. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
3. Adjust the aim of luminaires in the presence of the Architect.

END OF SECTION 265119

SECTION 271300 - TELECOMMUNICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Mounting Elements.
2. Workstation Outlets.

1.3 SUBMITTALS

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

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Telecommunications Pathways and Spaces: Comply with TIA/EIA-569-A.

1.5 COORDINATION

A. Coordinate final location of outlets with Architect/Owner prior to rough-in.

PART 2 - PRODUCTS

2.1 PATHWAYS

A. Conduit and Boxes: Comply with requirements in Division 26 Section "Raceway and Boxes for Electrical Systems."

1. Outlet boxes shall be two-gang with single gang trim ring unless noted otherwise on drawings.

2. Conduit shall be provided from outlet box and stubbed into accessible ceiling space. A complete path shall be provided from the data closet/telecom backboard to each outlet. The path may include accessible ceiling space, however, where full height partitions are encountered, provide sleeves for future cable pass-through. Fire rated sleeves shall be

provided in fire/smoke rated walls. Sleeves shall be sized to allow four (4) CAT 6A cables for each outlet box

3. Minimum conduit size shall be 3/4".

4. Provide pull strings in all empty conduits.

5. Terminate all empty conduits with insulated bushings.

2.2 MOUNTING ELEMENTS

A. Backboards: Interior-grade, void free plywood, fire-retardant treated, ¾ by 48 by 96 inches. Existing backboards may be re-used.

PART 3 - EXECUTION

3.1 INSTALLATION OF PATHWAYS

A. Comply with TIA/EIA-569-A for pull-box sizing and length of conduit and number of bends between pull points.

B. Install manufactured conduit sweeps and long-radius elbows whenever possible.

C. Pathway Installation in Communications Equipment Rooms:

1. Position conduit ends adjacent to a corner on backboard where a single piece of plywood is installed, or in the corner of room where multiple sheets of plywood are installed around perimeter walls of room.
2. Secure conduits to backboard when entering room from overhead.
3. Extend conduits 3 inches above finished floor.
4. Install metal conduits with grounding bushings and connect with grounding conductor to grounding system.

D. Backboards: Install backboards with 96-inch dimension vertical. Butt adjacent sheets tightly, and form smooth gap-free corners and joints.

E. Prepare wall penetrations and verify the penetrations of fire rated walls are made using products labeled for use of wall penetrations.

END OF SECTION 271300

SECTION 321313
CAST-IN-PLACE CONCRETE (SITE WORK)

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Cast-in-place concrete for site work only.

B. Control, and expansion and contraction joint devices associated with concrete work for site work only.

C. Equipment pads, drainage structures, thrust blocks, and mechanical supports for site work only.

D. See structural specifications for cast-in-place concrete related to building or other structures.

1.02 RELATED SECTIONS

A. Division 32 - Concrete Formwork: Formwork and accessories.

1.03 REFERENCES

A. ACI 212 - Chemical Admixtures for Concrete.

B. ACI 301 - Structural Concrete for Buildings.

C. ACI 302 - Guide for Concrete Floor and Slab Construction.

D. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

E. ACI 305R - Hot Weather Concreting.

F. ACI 306R - Cold Weather Concreting.

G. ACI 308 - Standard Practice for Curing Concrete.

H. ACI 309R - Guide for Consolidation of Concrete.

I. ACI 318 Building Code Requirements for Reinforced Concrete.

J. ANSI/ASTM D994 - Preformed Expansion Joint Filler for Concrete (Bituminous Type).

K. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

L. ASTM C31 - Standard Method of Making and Curing Concrete Test Speciment in the field.

M. ASTM C33 - Concrete Aggregates.

N. ASTM C39 - Compressive Strength of Cylindrical Concrete Specimens.

O. ASTM C94 - Ready-Mixed Concrete.

P. ASTM C109 - Standard Test Method for Hydraulic Cement Mortars.

Q. ASTM C138 - Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.

R. ASTM C143 - Test for Slump of Portland Cement Concrete.

S. ASTM C150 - Portland Cement.

T. ASTM C171 - Sheet Materials for Curing Concrete.

U. ASTM C172 - Compressive Strength of Cylindrical Concrete Specimens.

V. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

W. ASTM C231 - Test Method for Air Content of Freshly Mixed Concrete by Pressure Method.

X. ASTM C260 - Air Entraining Admixtures for Concrete.

Y. ASTM C309 - Liquid Membrane - Forming Compounds for Curing Concrete.

Z. ASTM C494 - Chemical Admixtures for Concrete.

AA. ASTM C618 - Fly Ash and Raw or Calcinated Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.

1.04 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Provide data on joint devices, attachment accessories, and proposed admixtures.

C. Concrete Manufacturer shall perform and submit the following:

1. Mix Design - In advance of concrete operations, materials proposed for use

in concrete will be sampled and tested to determine their compliance with these specifications. Mix proportions shall be reviewed by the laboratory for each strength and type of concrete required and reports submitted to the Engineer for approval, showing the mix designs. Submit mix design in accordance with ACI 301.

2. Include the following information in concrete mix design:

   a. Proportions of cement, fine and coarse aggregate, and water.
   b. Water-cement ratio, 3-day and/or 28-day compressive and design strength, slump, and air content.
   c. Type of cement and aggregate.
   d. Aggregate gradation.
   e. Type and dosage of admixtures.
   f. Special requirements for pumping.
   g. Range of ambient temperature and humidity for which design is valid.
   h. Special characteristics of mix which require precautions in mixing, placing, or finishing techniques to achieve finished product specified.

1.05 TESTS

A. Required testing will be performed in accordance with ACI 301 by Testing Laboratory approved by Owner and paid for by Contractor.

1. Provide free access to Work and cooperate with appointed firm.

2. Submit proposed mix design of each class of concrete to testing firm for review prior to commencement of Work. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.

3. Notify Testing Laboratory 24 hours prior to proposed concrete pour. Testing Laboratory shall be present at every concrete pour.

B. Testing firm will:

1. Review the Contractor's proposed materials and mix design.

2. Conduct strength tests:

   a. Secure composite samples (ASTM C172).

   b. Mold, cure specimens from each sample (ASTM C31). A minimum of four concrete test cylinders shall be taken for every 100 or less cu. yds. of each class of concrete placed each day and not less than once for each 5000 sq. ft. of surface area for slabs.

   c. Test cylinders in accordance with ASTM C39. Two specimens will be tested at 28 days for acceptance and one will be tested at 7 days for

information. One specimen will be retained in reserve for later testing if required.

3. Conduct slump tests: At least one slump test will be taken for each set of four test cylinders taken (ASTM C143).

4. Conduct air content tests: At least one air content test will be made when slump test is taken in accordance with either ASTM C231, ASTM C173, or ASTM C138.

5. Conduct temperature tests: Determine temperature of concrete sample for each strength test.

1.06 PROJECT RECORD DOCUMENTS

A. Contractor shall keep a record of “As-Builts” drawings to the satisfaction of the Engineer which is to be submitted at the end of project to the City Engineer.

B. Accurately record actual locations of embedded utilities and components which are concealed from view.

1.07 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301 and ACI 304.

B. Maintain one copy of each document on site.

C. Acquire cement and aggregate from same source for all work.

D. Conform to ACI 305R when concreting during hot weather.

E. Conform to ACI 306R when concreting during cold weather.

1.08 COORDINATION

A. Coordinate work under provisions of Section 01041.

B. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 – PRODUCTS

2.01 GENERAL

All concrete shall be placed to the line and grade as directed by the Engineer and to a thickness as indicated on the typical details shown on the plans. Portland Cement

Concrete Requirements for roadway pavements shall be per the Parish's standard mix design. The concrete shall be placed, shaped, compacted, and finished to establish grade and cross section by practicable means which will result in a dense, uniform-textured pavement.

2.02 CONCRETE MATERIALS

A. Cement: ASTM C150, Type II.

B. Fine and Coarse Aggregates: ASTM C33.

C. Water: Clean potable water.

2.03 ADMIXTURES

A. Air Entrainment: ASTM C260.

B. Chemical: Admixtures for normal weight concrete may be used providing the requirements of ACI 212 are met and written approval from the Engineer is obtained by the Contractor.

2.04 ACCESSORIES

A. Bonding Agent: Two component modified epoxy resin; n-solvent two component polysulphide epoxy manufactured by Sika Chemical Corporation.

B. Vapor Barrier: 6 mil thick clear polyethylene film type recommended for below grade application.

C. Non-Shrink Grout: Premixed, non-shrinking, high strength grout compound consisting of non-metallic aggregate, cement, water reducing, plasticizing agents and free of gypsum; compressive strength of 5,000 psi in 28 days.

D. Epoxy Bonding Agent: ASTM C881
1. Concessive 1001 LPL by Adhesive Engineering Co.
2. Uniweld by Permagile.
3. EVA-POX HI MOD GEL #23 by E-Poxy Industries, Inc.

2.05 CURING COMPOUNDS

A. Membrane Curing Compound ASTM C309 Type 1.

B. Manufacturers -
1. Curecrete Chemical Company; Ashford Formula
2. Sonneburn-Contech; Kure-N-Seal
3. W. R. Grace; Clear Seal 150
4. L & M Construction Chemicals; Seal Hard

5. Gifford-Hill; Sealco.

C. Water: Potable and not detrimental to concrete.

2.06 CONCRETE MIX

A. Mix and deliver concrete in accordance with ACI 304 and ASTM C94.

B. Provide concrete to the following criteria per cubic yard of concrete:

1. 28-day strength concrete – 4,000 psi
2. Cement (ASTM C-150, Type I/II): 4.64 sacks (436 lbs.)
3. Fly Ash (ASTM C-618): 1.16 sacks (109 lbs.)
4. Gravel (ASTM C-33, Grade A): 1,775 lbs.
5. Sand (ASTM C-33): 1,226 lbs.
6. Water (potable): 30 gallons (250 lbs.)
7. Type A Water Reducer (ASTM C-494): 16.35 lbs.
8. Air Entrainment: 5% by volume, use per manufacturers specifications
9. Fiber reinforcement: 1.0 lbs./CY microfibers (Matrix Monofilament Microfiber as manufactured by FRC industries or approved equal). Fiber reinforcement shall be applied at the plant. Bag size shall be one (1) pound.

C. Concrete pavement shall be cured at seven (7) days unless otherwise approved by the Engineer. If a Contractor uses “High Early” strength concrete (3-day curing period) at his discretion, pavement shall be made under the regular (7-day curing) concrete paving item.

D. Use accelerating admixtures in cold weather only when approved by Engineer. Use of admixtures will not relax cold weather placement requirements.

E. Use calcium chloride only when approved by Engineer.

F. Use set retarding admixtures during hot weather only when approved by Engineer.

G. Admixtures:

1. Air Entraining Admixtures: ASTM C260. Add to concrete mix for concrete work subject's freeze-thaw cycling. Air Content: See above.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing site conditions.

B. Verify requirements for concrete cover over reinforcement.

C. Verify that anchors, seats, plates, reinforcement and other items to be cast into

concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.02 PREPARATION

A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

B. In locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout in accordance with manufacturer's instructions.

3.03 PLACING CONCRETE

A. Place concrete in accordance with ACI 304, ACI 301, ACI 350 and ACI 318.

B. Notify Engineer minimum 24 hours prior to commencement of operations.

C. Ensure reinforcement, inserts, embedded parts, formed joint fillers, and joint devices are not disturbed during concrete placement.

D. Install vapor barrier under slabs on grade. Lap joints minimum 6 inches and seal watertight by sealant applied between overlapping edges and ends taping edges and ends.

E. Repair vapor barrier damaged during placement of concrete reinforcing. Repair with vapor barrier material; lap over damaged areas minimum 6 inches and seal watertight.

F. Install joint fillers in accordance with manufacturer's instructions.

G. Separate slabs on grade from vertical surfaces with 1/2 inch thick joint filler.

H. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface.

I. Install joint devices in accordance with manufacturer's instructions.

J. Install joint covers in longest practical length, when adjacent construction activity is complete.

K. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

L. Place concrete continuously between predetermined expansion, control, and construction joints.

M. Do not interrupt successive placement; do not permit cold joints to occur.

N. Vibration: As soon as concrete is deposited, thoroughly agitate with mechanical vibrators and suitable hand tools to work mixture into corners of forms and around reinforcing and embedded items. Use mechanical vibrators with minimum frequency of 9000 revolutions/minute. Do not over vibrate or use vibrators to transport concrete within forms. Insert and withdraw vibrators at approximately 18 inches apart. At each insertion, vibrate generally 5-15 seconds, sufficient to consolidate concrete but not long enough to cause segregation. Keep spare vibrator on job site during concrete placement operations. Do not insert vibrator into lower courses that have begun to set.

O. Saw cut joints within 24 hours after placing. Using 3/16 inch thick blade, cut into 1/4 depth of slab thickness.

P. Contractor shall be responsible for proper oversight and protection of the pavement, sidewalk, or drives, during the initial curing time until the concrete is sufficiently set to resist marring or vandalism.

3.04 CONCRETE FINISHING

A. Finish concrete surfaces to requirements ACI 301.

B. Provide formed concrete surfaces to be left exposed with smooth rubbed finish.

C. Provide exterior, exposed concrete slabs with broomed finish.

3.05 FORMED SURFACES

A. Forms shall not be stripped before the concrete has attained a strength of at least 30 percent of the ultimate design strength. This is equivalent of approximately "100 day-degrees" of moist curing.

B. Care shall be exercised to prevent damaging edges or obliterating the lines of chambers or corners when removing the forms or doing any work or work adjacent thereto.

C. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete, to the satisfaction of the Engineer.

D. Smooth Rubbed finish. Fins and other projections shall be removed as approved.

3.06 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. Cure concrete floor surfaces to requirements ACI 308.

D. Horizontal Surfaces

1. Spraying: Fog spray water over floor slab areas and maintain wet for 7 days.

2. Membrane Curing Compound: Apply curing compound in accordance with manufacturer's instructions in 2 coats with second coat at right angles to first. However, the rate of application shall never be less than one (1) gallon per 100 ft^2 of exposed area.

E. Vertical Surfaces

1. Spraying: Spray water over surfaces and maintain wet for 7 days.

2. Membrane Curing Compound: Apply curing compound in accordance with manufacturer's instructions in 2 coats with second coat at right angles to first. However, the rate of application shall never be less than one (1) gallon per 100 ft^2 of exposed area.

3.07 PATCHING

A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.

B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.

C. Patch imperfections in accordance with ACI 301.

3.08 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

B. Repair or replacement of defective concrete will be determined by the Engineer.

C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express written direction of Engineer for each individual area.

END OF SECTION

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SECTION 321313.10
CONCRETE FORMWORK (SITE WORK)

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Formwork for cast-in place concrete, with shoring, bracing and anchorage for site work only.

B. Form accessories for site work only.

C. Form stripping for site work only.

D. See structural specifications for concrete formwork related to building or other structures.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

A. Division 03: Supply of concrete accessories for placement by this Section.

1.03 RELATED SECTIONS

A. Division 32 - Cast-in-Place Concrete (site work).

1.04 REFERENCES

A. ACI 347 - Recommended Practice For Concrete Formwork.

B. PS-1 - Construction and Industrial Plywood.

1.05 DESIGN REQUIREMENTS

A. Design, engineer, and construct formwork, shoring and bracing to conform to design and code requirements; resultant concrete to conform to required shape, line and dimension.

1.06 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Shop Drawings: Submit diagram of proposed construction joints not shown on Drawings.

C. Product Data: Provide data on form release agent, void form materials and installation requirements.

1.07 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 347, 301, and 318.

B. Maintain one copy of each document on site.

1.08 QUALIFICATIONS

A. Design, engineer and construct forms, shores, bracing and other temporary supports to support loads imposed during construction in accordance with ACI 347.

1.09 REGULATORY REQUIREMENTS

A. Conform to applicable code for design, fabrication, erection and removal of formwork.

1.10 FIELD SAMPLES

A. Provide under provisions of Section 014523. Coordinate with requirements stated in Section 321313.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Delivery, storage, and handing of products shall be in accordance with provisions of Section 016000.

B. Deliver void forms and installation instructions in manufacturer's packaging.

C. Store materials off ground in ventilated and protected manner to prevent deterioration from moisture.

1.12 COORDINATION

A. Coordinate this Section with other Sections of work which require attachment of components to formwork.

PART 2 - PRODUCTS

2.01 WOOD FORM MATERIALS

A. Plywood: New, waterproof, synthetic resin bonded, exterior type Douglas Fir or Southern Pine plywood manufactured especially for concrete formwork and shall conform to the requirements of PS 1 for concrete forms, Class I, and shall be edge sealed. Face adjacent to concrete Grade B or better.

B. Lumber: Southern Pine species; No. 2 grade; with grade stamp clearly visible.

2.02 MANUFACTURERS - RELEASE AGENTS

A. Richmand Screw Anchor Co.

B. Superior Concrete Accessories, Inc.; Strip-eez Form Release.

C. Preco Industries, LTD; Preco Slip-Off.

D. Substitutions: Under provisions of Section 016000.

2.03 PREFABRICATED FORMS

A. Preformed Steel Forms: Minimum 16 gage matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.

B. Glass Fiber Fabric Reinforced Plastic Forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished concrete surfaces.

C. Void Forms: Moisture resistant treated paper faces, biodegradable, structurally sufficient to support weight of wet concrete mix until initial set; 4 inches thick.

2.04 FORMWORK ACCESSORIES

A. Form Release Agent: Colorless liquids which will not stain concrete, or absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.

B. Corners: Chamfered rigid plastic or wood strip type; 1/2 x 1/2 inch size unless noted otherwise; maximum possible lengths.

C. Nails, Spikes, Lag Bolts, Through Bolts, and Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

D. Joint Filler: Preformed type, 1/2 inch thick, unless shown otherwise.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with Drawings.

3.02 EARTH FORMS

A. Earth forms shall not be used.

3.03 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

D. Align joints and make watertight. Keep form joints to a minimum.

E. Obtain approval before framing openings in structural members which are not indicated on Drawings.

F. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.

3.04 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces soaked prior to placement of concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in or passing through concrete work.

B. Locate and set in place items which will be cast directly into concrete.

C. Coordinate work of other Sections in forming and placing openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.

D. Install accessories in accordance with manufacturer's instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.

3.06 FORM CLEANING

A. Clean and remove foreign matter within forms as erection proceeds.

B. Clean formed cavities of debris prior to placing concrete.

C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts or water to clean out forms. Use compressed air or other means to remove foreign matter.

3.07 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 301.

3.08 FIELD QUALITY CONTROL

A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

B. Do not reuse wood formwork more than 3 times for concrete surfaces to be exposed to view. Do not patch formwork.

3.09 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Minimum Curing Period Prior to Form Removal:

1. Air Temperature: Above 60°F: 3 days.
2. Air Temperature: 50°F to 60°F: 5 days.
3. Air Temperature: 40°F to 50°F: 7 days.
4. Air Temperature: Less than 40°F: When temperature below 40°F prevails, leave forms until concrete reaches 75% of 28-day design strength.

C. Observance of minimum curing periods listed above does not relieve Contractor of responsibility for safety of structure during construction.

D. Remove wood forms from under floors, ramps, steps, and similar places (through temporary openings if necessary) so no material will be left to rot or to be infested by termites.

E. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

F. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

END OF SECTION