

**Contract Documents and Specifications
for the
City of Stockbridge, Georgia
Community Arts Center
Design/Build**



November, 2013



CITY OF STOCKBRIDGE, GEORGIA

COMMUNITY ARTS CENTER

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INSTRUCTIONS TO BIDDERS

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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. Architect (INNOVO, Inc.)** – INNOVO, Inc. is the Architect and is the contact for all questions related to the project design, materials, finishes, and technical specifications and narratives. The Architect will serve as the Owner’s Representative during the construction period and be responsible for interpretation of Contact Documents and conformance with same. Phone No.: 678-438-5778
- B. Issuing Office (Falcon Design Consultants)** – The office from which the Bidding Documents are to be issued if not obtained from the City’s website and where the bidding procedures are to be administered.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents in the number and for the amount, if any, stated in the advertisement or invitation to bid may be obtained from the Owner’s website or the Issuing Office.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Architect assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Architect, 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 authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder’s qualifications to perform the Work, Bidder shall submit written evidence with bid such as financial data, previous experience, present commitments, and such other data as may be called for below.
 - A. Required Bidder Qualification Statement with Supporting Data**
 - B. Contractor’s License No.**
 - C. List of Proposed Subcontractors;**
 - D. List of Proposed Suppliers;**
 - E. List of 5 Project References;**

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

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, if any, 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 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. Bid documents may be obtained for the City’s website or purchased from Falcon Design Consultants office at, 235 Corporate Center Drive, Suite 200, Stockbridge, Georgia 30281 for a cost of \$200 per set. The office number is 770-389-8666.

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 Architect by owners of such Underground Facilities, including Owner, or others.

4.03 *Hazardous Environmental Condition*

- A.** The Supplementary Conditions identify any reports and drawings known to Owner relating to a Hazardous Environmental Condition identified at the Site.
- B.** Copies of reports and drawings, if any, 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 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.

- 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 subsurface or physical 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 *Not Used*
- 4.07 It is the responsibility of each Bidder before submitting a Bid to:
- A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents;
 - 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. *Not used*
 - E. consider 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 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 required, 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. promptly give Architect written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Architect is acceptable to Bidder; and
 - I. 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 Architect written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Architect 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 will be held at 10:00 AM local time on Thursday, December 19, 2013 at Stockbridge City Hall. Representatives of Owner and Architect will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. Architect will transmit to all prospective Bidders such Addenda as Architect considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

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 Adam Price at aprice@fdc-llc.com or faxed to 770-389-8656. Interpretations or clarifications considered necessary by Architect in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Architect as having received the Bidding Documents. Questions received after 5:00 PM., Friday, December 20, 2013 may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Architect.

ARTICLE 8 – BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five percent (5%) of Bidder's maximum Bid price, for both Phase I and Phase II identified in the Bid Form, and in the form of a certified check, 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 to be 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 61 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 seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

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, or those substitute or “or-equal” materials and equipment approved by Architect and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function and quality to be met by any proposed substitute or “or-equal” item. No item of material or equipment will be considered by Architect as a substitute or “or-equal” unless written request for approval has been submitted by Bidder and has been received by Architect at least 10 days prior to the date for receipt of Bids. Each such request shall conform to the requirements of Paragraph 6.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Architect’s decision of approval or disapproval of a proposed item will be final. If Architect approves any proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

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 Architect, 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, without an increase in the Bid.

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 Architect makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Architect 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. Additional copies may be obtained from the Owner's website or the Issuing Office.
- 13.02 All blanks on the Bid Form shall be completed in ink and the Bid Form 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 listed therein.
- 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 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, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS

14.01 *Lump Sum – Design/Build*

- A.** Bidders shall submit a Bid on a lump sum basis for all of the Work required for a complete project.
- B.** The value of items required by the Contract Documents but not show on the Bid Form shall be included in price for the required work. All costs associated with the design and construction are to be included in the overall cost of the work.

14.02 *Allowances*

- A.** Not Used

14.03 *Completion Time Comparisons*

- A.** Not Used

ARTICLE 15 – SUBMITTAL OF BID

15.01 Bidders are required to submit an original set of Bid Documents with original signatures and seals as required along with one full set of copies of all document submitted.

15.02 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 documents:

- A.** Required Bid security;
- B.** List of Proposed Subcontractors;
- C.** List of Proposed Suppliers;
- D.** List of 5 Project References;
- E.** Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;
- F.** Contractor’s License No.: _____ [or] Evidence of Bidder’s ability to obtain a State Contractor’s License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;
- G.** Required Bidder Qualification Statement with Supporting Data;
- H.** Certificate of Insurance

I. Contractor Affidavit and Agreement

J. Subcontractor Affidavit

- 15.03 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 plainly marked package 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, the bidder's Utility Contractor License Number, 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 package plainly marked on the outside with the notation "BID CITY OF STOCKBRIDGE, GEORGIA – COMMUNITY ARTS CENTER", A mailed Bid shall be addressed to City of Stockbridge; Attention: City Clerk; 4640 North Henry Boulevard, Stockbridge, Georgia 30281.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

- 16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the same 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 rebid, 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.

- 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 or 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 proposed for those portions of the Work in accordance with the Contract Documents.
- 19.06 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in the best interests of the Owner.

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 issues a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement along 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.



**CITY OF STOCKBRIDGE
STOCKBRIDGE COMMUNITY ARTS CENTER
ITB #2013-012**

INVITATION TO BID

**NOVEMBER 25, 2013
REVISED: DECEMBER 13, 2013**

Sealed Lump Sum – Design Build bids will be received by the City of Stockbridge, Georgia from prospective contractors for the **Stockbridge Community Arts Center**. This project includes the renovation of an existing 22,000 square foot building located at 146 Burke Street, Stockbridge, Georgia in accordance with the Contract Documents. The Contractor will complete the Work; The work consists of furnishing all materials, labor, tools, equipment and services for construction of the project including but not limited to demolition, renovation and construction, plumbing, electrical, lighting, HVAC, sound systems, control systems, fire protection, and related appurtenances in accordance with the Contract Documents.

Bidders may obtain the Contract Documents for this project from the City's website at: <http://www.cityofstockbridge.com/bids.aspx?id=0&catid=0>. Hard copies of the Contract Documents may also be obtained from the Issuing Office: INNOVO, Inc. at: 125 Stratford Circle; Stockbridge, GA 30281; Phone No.: 678-438-5778 for a non-refundable cost of \$200 per set.

Any questions pertaining to the Contract Documents shall be **in writing** and are to be submitted to INNOV, Inc.; Attention: Todd Ernst via email at innovo.inc@gmail.com **by 5:00 PM on Friday, December 20, 2013**. A pre-bid conference will be held **at 10:00 AM on Thursday, December 19, 2013 at the Stockbridge City Hall** to discuss the project. Contract Document Addendums addressing all questions will be provided to all Registered Plan Holders. Sealed Bids will be received by the City of Stockbridge at 4640 North Henry Boulevard, Stockbridge, Georgia 30281 **until 10:00 AM, Friday, December 27, 2013 at the Stockbridge City Hall**, and then publicly opened and read aloud. Only bids presented with a certification from the bidder that the bid submitted is based upon the current and complete Contract Documents will be accepted and opened.

No bid may be modified, withdrawn, or canceled for a period of sixty (60) days after the time designated for the receipt of Bids or until the Bidder is notified by the City whichever is sooner.

The City reserves the right to reject any and all bids and to waive irregularities, technicalities, and formalities.

Each bid shall be accompanied by a Bid Bond in an amount of not less than five percent (5%) of the total bid amount. The Bid Bond may be in the form of a bond issued by a surety acceptable to the City or a cashier's check made payable to the City of Stockbridge, Georgia. The entire Bid Bond shall be forfeited to the City of Stockbridge, Georgia as liquidated damages if the bidder fails to execute the Contract and provide Performance and Payment Bonds within ten (10) days after being notified that he has been awarded the Contract.

The successful bidder will be required to furnish a contract Performance Bond and a Payment Bond, each in the sum of one hundred percent (100%) of the total amount bid and provide insurance coverage as required in the Contract Documents.

Note: For more information please refer to the Instruction to Bidders and the Contract Documents, which govern and supersede this Invitation to Bid.

BID FORM

For

CITY OF STOCKBRIDGE COMMUNITY ARTS CENTER ITB #2013-012



Bid Date: December 27, 2013

Bid Time: 10:00 AM

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

City of Stockbridge

1.02 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.

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 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of 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, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

<u>Addendum No.</u>	<u>Addendum Date</u>
_____	_____
_____	_____
_____	_____

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

D. 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.

- E. Based on the information and observations referred to in Paragraph 3.01.D 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.
- F. 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.
- G. 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.
- 1. 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 – BIDDER’S CERTIFICATION

4.01 Bidder certifies 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 any thing 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 Lump Sum – Design/Build

Sealed Lump Sum – Design Build bids will be received by the City of Stockbridge, Georgia from prospective contractors for the **Stockbridge Community Arts Center**. This project includes the renovation of an existing 22,000 square foot building located at 146 Burke Street, Stockbridge, Georgia in accordance with the Contract Documents. The Contractor will complete the Work; The work consists of furnishing all materials, labor, tools, equipment and services for construction of the project including but not limited to demolition, renovation and construction, plumbing, electrical, lighting, HVAC, sound systems, control systems, fire protection, and related appurtenances in accordance with the Contract Documents.

Total Bid in Words:

_____ Dollars

In Numbers: \$ _____

ARTICLE 6 – TIME FOR COMPLETION

6.01 Bidder agrees that the Work will be substantially complete within 180 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 210 calendar days after the date when the Contract Times commence to run.

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

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

- A. Required Bid security;**
- B. List of Proposed Subcontractors;**
- C. List of Proposed Suppliers;**
- D. List of 5 Project References;**
- E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;**

F. Contractor's License No.: _____ [or] Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;

G. Required Bidder Qualification Statement with Supporting Data;

H. Certificate of Insurance

I. Contractor Affidavit and Agreement

J. Subcontractor Affidavit

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 – BID SUBMITTAL

9.01 This Bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual’s signature)

Doing business as: _____

A Partnership

Partnership Name: _____

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

Name (typed or printed): _____

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 _____

Date of Qualification to do business in _____ is ____/____/____.

A Joint Venture

Name of Joint Venture: _____

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.)

Bidder's Business Address _____

Phone No. _____ Fax No. _____

E-mail _____

SUBMITTED on _____, 20____.

State Contractor License No. _____.

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)*:

BID

Bid Due Date:

Description *(Project Name and Include Location)*:

BOND

Bond Number:

Date *(Not earlier than Bid due date)*:

Penal sum _____ \$ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

Bidder's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

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 Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be 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 of 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.

completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within 210 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 as stated in Paragraph 4.01 above 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 \$250 for each day that expires after the time specified in Paragraph 4.02 above 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 \$250 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

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 pursuant to Paragraphs 5.01.A below:

For all Work , a base sum of: \$ _____

All specific cash allowances are included in the above price in accordance with Paragraph 11.02 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 Architect as provided in the General Conditions.

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 on or about the 25th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 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 Architect may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions.
 - a. 90 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Architect, and if the character and progress of the Work have been satisfactory to Owner and Architect, then as long as the character and progress of the Work remain satisfactory to Owner and Architect, there will be no additional retainage; and
 - b. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 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 200percent of Architect'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 Architect 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 of 1.0 percent per annum.

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 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.
- E. Based on the information and observations referred to in Paragraph 8.01.D 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.
- F. 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.
- G. Contractor has given Architect written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Architect is acceptable to Contractor.
- H. 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.
 - 2. Performance bond.
 - 3. Payment bond.
 - 4. General Conditions.
 - 5. Supplemental General Conditions.
 - 6. Specifications (Project Manual for the Stockbridge Community Arts Center – INNOV, Inc.).
 - 7. Specifications (Nix, Wieters, and Associates, LLC – Stockbridge Theatre Mechanical Narrative)

8. Specifications (Nix, Wieters, and Associates, LLC – Stockbridge Theatre Electrical Narrative)
 9. Technical Specifications included in these documents.
 10. Drawings listed on attached sheet index.
 11. Addenda.
 12. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor’s Bid.
 - b. Documentation submitted by Contractor prior to Notice of Award.
 - c. Certificate of Insurance.
 13. 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.
 - b. Work Change Directives.
 - c. Change Orders.
- 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*

- 1. Indemnification:* The CONTRACTOR shall indemnify and hold harmless the OWNER and Consulting ARCHITECT (also known as Falcon Design Consultants, LLC) and their agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of the WORK, provided that any such claim, damage, loss, expense or attorney's fees is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom, and is caused in whole or in part by any negligent act or omission of the CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not the negligent act is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Clause. In any and all claims against the OWNER or the Consulting ARCHITECT (Falcon Design Consultants, LLC) or any of their agents or employees, by any employee of the CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation set forth in this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any Subcontractor under workers' or workman's compensation acts, disability benefit acts or other employee benefit acts.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

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

OWNER:

CONTRACTOR

City of Stockbridge _____

By: _____

By: _____

Title: _____

Title: _____

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

Attest: _____

Attest: _____

Title: _____

Title: _____

Address for giving notices:
4640 North Henry Boulevard
Stockbridge, GA 30281
Phone: (770) 389-7900

Address for giving notices:

License No.: _____

(Where applicable)

Agent for service of process:

CONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation that is contracting with the City of Stockbridge, Georgia, has registered with and is participating in a federal work authorization program* [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services pursuant to this contract with City of Stockbridge, Georgia, contractor will secure from each subcontractor(s) similar verification of compliance with O.C.G.A. 13-10-91 on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees to maintain records of such compliance and provide a copy of each verification to City of Stockbridge, Georgia at the time the subcontractor(s) is retained to perform such service.

EEV/Basic Pilot Program* User Identification Number

BY: Authorized Officer or Agent
(Contractor Name)

Date

Title of Authorized Officer of Contractor

Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON
THIS THE _____ DAY OF _____, 20_____

Notary Public I
My Commission Expires:_____

*As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

RETURN THIS FORM WITH PROPOSAL DOCUMENTS

SUBCONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. §13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with _____ (name of contractor) on behalf of City of Stockbridge, Georgia, has registered with and is participating in a federal work authorization program*[or any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

EEV/Basic Pilot Program* User Identification Number

BY: Authorized Officer or Agent
(Subcontractor Name)

Date

Title of Authorized Officer or Agent of Subcontractor

Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS
THE _____ DAY OF _____, 20_____

Notary Public

My Commission Expires: _____

*As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

RETURN THIS FORM WITH PROPOSAL DOCUMENTS

Notice to Proceed

Date: _____

Project: City of Stockbridge – **Stockbridge Community Arts Center**

Owner: City of Stockbridge

Owner's Contract No.:

Contract:

Engineer's Project No.:

Contractor:

Contractor's Address:

You are notified that the Contract Times under the above Contract will commence to run on _____ . On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement, the date of Substantial Completion is _____, and the number of days to achieve Substantial Completion is 150, and the number of days to achieve readiness for final payment is 180.

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Owner: City of Stockbridge

Given by:

Authorized Signature

Title

Date

Copy to Architect

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

Effective Date of Agreement:
Amount:
Description (*Name and Location*):

BOND

Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

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.

1. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 2.1.
2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
 - 2.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 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
 - 2.2 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 2.1; and
 - 2.3 Owner has agreed to pay the Balance of the Contract Price to:
 1. Surety in accordance with the terms of the Contract; or
 2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.
3. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:
 - 3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
 - 3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
 - 3.3 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 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
 - 3.4 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.
4. If Surety does not proceed as provided in Paragraph 3 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 3.4, 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.
5. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 3.1, 3.2, or 3.3 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 the 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:

- 5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
- 5.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and
- 5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

6. 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.

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

8. 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.

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

10. 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.

11. Definitions.

- 11.1 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.
- 11.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
- 11.4 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 otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – *(Name, Address and Telephone)*

Surety Agency or Broker:

Owner's Representative *(Engineer or other party)*:

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

Effective Date of Agreement:

Amount:

Description (*Name and Location*):

BOND

Bond Number:

Date (*Not earlier than Effective Date of Agreement*):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

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 address 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 (at the address described in Paragraph 12) 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 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 otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – *(Name, Address, and Telephone)*

Surety Agency or Broker:

Owner’s Representative *(Engineer or other)*:

Certificate of Owner's Attorney

I, the undersigned, _____, the duly authorized and acting legal representative of the City of Stockbridge, Georgia, do hereby certify as follows:

I have examined the attached Contract and Performance and Payment Bond and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements are adequate and have been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with the terms, conditions, and provisions thereof.

Signature: _____

Date: _____

**STANDARD GENERAL CONDITIONS OF THE
CONSTRUCTION CONTRACT**

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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 Architect 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 Architect 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 Architect'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 Architect 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. *Architect*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Architect 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 critical path method 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 Architect 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 Architect, 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 Architect 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 Architect. 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 Architect 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 Architect 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 Architect’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 shall deliver to the Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which Owner or any additional insured may reasonably request) which Contractor is required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

- A. Owner shall furnish to Contractor one copy of the Drawings and Project Manual in electronic format. 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 15th 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 15 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the thirtieth day after the Effective Date of the Agreement.

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 Architect for timely review:
 - 1. a preliminary critical path method 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, Architect, 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, Architect, and others as appropriate will be held to review for acceptability to Architect 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 Architect.
 - 1. The Progress Schedule will be acceptable to Architect if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Architect 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 Architect if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Architect 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 Architect 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 Architect, 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, Architect, 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 within 48 hours of discovering any conflict, error, ambiguity, or discrepancy report such conflict, effort, ambiguity, or discrepancy in writing to Architect, and shall obtain a written interpretation or clarification from Architect 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 within 48 hours of discovering such conflict, error, ambiguity, or discrepancy report it to Architect 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 Architect for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof. Contractor shall be responsible for and shall indemnify Owner against any and all costs, expenses, damages, claims, and consequences arising out of any conflict, error, ambiguity, or discrepancy if Contractor fails to provide written notice thereof within 48 hours as required by the applicable provisions of the preceding sections of this Paragraph 0.03.A.

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).
2. If there is any inconsistency or conflict between the terms, conditions, or requirements contained in the Contract Documents,
 - a. Any Change Order shall govern and take precedence over
 - b. Any Addendum, which shall govern and take precedence over,
 - c. The Agreement, which shall govern and take precedence over,

- d. The General Conditions, which shall govern and take precedence over,
 - e. The Drawings, which shall govern and take precedence over,
 - f. The Specifications, which shall govern and take precedence over,
 - g. Exhibits to the Agreement, which shall govern and take precedence over,
 - h. The Performance Bond, which shall govern and take precedence over,
 - i. The Payment Bond.
3. Among documents having the same order of precedence, the most recent term shall control.
 4. Notwithstanding the order of precedence provided in the preceding paragraph, in the event of inconsistencies within or between parts of the Contract Documents, or between the Contract Documents and applicable standards, codes, and ordinances, the Contractor shall (i) provide the better quality or greater quantity of Work or (ii) comply with the more stringent requirement; either or both in accordance with the Architect's interpretation.
 5. In any case of omissions or errors in figures, drawings, or specifications, the Contractor shall immediately submit the matter to the Owner for clarification, with copy to the Architect. The Owner's clarifications are final and binding on all Parties.
 6. Where figures are given, they shall be preferred to scale dimensions.
 7. The omission or absence, in any of the Contract Documents, of information provided elsewhere in the Contract Documents shall not be considered a conflict or inconsistency.

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. Architect's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
 3. Architect'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 Architect 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 Architect and specific written verification or adaptation by Architect.
- 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 Architect to Contractor, or by Contractor to Owner or Architect, 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 therefore 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.

- 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. The reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site are as follows:
 - 1. N/A
 - 2. N/A
 - 3. N/A
- B. *The drawings known to Owner of physical conditions relating to existing surface are as follows:*
 - 1. N/A
 - 2. N/A
 - 3. N/A
- C. The reports and drawings identified above are not part of the Contract Documents, but the “technical data” contained therein upon which Contractor may rely, as expressly identified and established above, are incorporated in the Contract Documents by reference. Contractor is not entitled to rely upon any other information and data known to or identified by Owner or Architect.
- D. Copies of reports and drawings identified in SC 4.02.A and SC 4.02.B that are not included with the Bidding Documents may be examined at _____ during regular business hours.

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 require a change in the Contract Documents; or
 - 2. differs materially from that shown or indicated in the Contract Documents; or
 - 3. 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 Architect 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. *Architect's Review*: After receipt of written notice as required by Paragraph 4.03.A, Architect 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 Architect's findings and conclusions.

C. *Possible Price and Times Adjustments*:

1. The Contract Price will be equitably adjusted to the extent that the existence of differing subsurface or physical condition causes an increase or decrease in Contractor's direct cost of performance of the Work and the Contract Times will be equitably adjusted to the extent that the existence of differing subsurface or physical condition causes an increase or decrease in Contractor's 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 Architect, 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 Architects, 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 Architect 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 Architect 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 Architect. Architect 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 Architect 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 Architecting surveys to establish reference points for construction which in Architect'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 Architect 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 Architect, 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, 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 Architect (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Architect concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Architect, 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. Not Used
- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Architect, 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 Architects, 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 Architect 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 Architect, 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*

Not Used

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Architect, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective 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 or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Architect, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Architect, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Architect, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Not Used
- B. Not Used

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*

Not Used

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 Architect 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 Architect 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 Architect.

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 Architect, 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 Architect 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 Architect for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Architect'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 Architect as an "or-equal" item, in which case review and approval of the proposed item may, in Architect'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 Architect 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 Architect'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 Architect 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 Architect from anyone other than Contractor.

- c. The requirements for review by Architect will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Architect may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Architect 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 Architecting, 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 Architect. Contractor shall submit sufficient information to allow Architect, in Architect'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 Architect will be similar to those provided in Paragraph 6.05.A.2.

- C. *Architect's Evaluation:* Architect 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. Architect may require Contractor to furnish additional data about the proposed substitute item. Architect will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Architect'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." Architect 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. *Architect's Cost Reimbursement:* Architect will record Architect'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 Architect approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Architect for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Architect 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 Architect to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Architect 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 Architect and any such Subcontractor, Supplier or other individual or entity; nor
 2. shall create any obligation on the part of Owner or Architect 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 Architect 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 Architect. 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, Architect, 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 Architect, 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. Not Used
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Architect, 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 Architects, 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 Architect 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 Architects, 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 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.

2. 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 Architect, 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 Architects, 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, Architect, 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 Architect for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Architect 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 Architect of the specific requirements of Contractor's safety program with which Owner's and Architect'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 Architect 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 Architect 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 Architect 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 Architect 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 Architect for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Architect 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 Architect the services, materials, and equipment Contractor proposes to provide and to enable Architect 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 Architect may require to enable Architect 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 Architect'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 Architect 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 Architect for review and approval of each such variation.

D. Architect's Review:

1. Architect will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Architect. Architect'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. Architect'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. Architect'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 Architect has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Architect'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 Architect 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 Architect 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. Architect 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
 - 2. 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 Architect;
 - 2. recommendation by Architect or payment by Owner of any progress or final payment;
 - 3. the issuance of a certificate of Substantial Completion by Architect 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 Architect;
 - 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 Architect, 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 Architects, 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 Architect 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 Architect and Architect'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 Architect 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 Architect.
- C. Owner and Architect 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 Architect have specified to Contractor all performance and design criteria that such services must satisfy.

- D. Pursuant to this Paragraph 6.21, Architect'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. Architect'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 Architect 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 Architect 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 Architect.

8.02 *Replacement of Architect*

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

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 Architecting 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. Not Used

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 – ARCHITECT’S STATUS DURING CONSTRUCTION

9.01 *Owner’s Representative*

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

9.02 *Visits to Site*

- A. Architect will make visits to the Site at intervals appropriate to the various stages of construction as Architect 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, Architect, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Architect will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Architect’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, Architect will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Architect’s visits and observations are subject to all the limitations on Architect’s authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Architect’s visits or observations of Contractor’s Work, Architect 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 Architect agree, Architect will furnish a Resident Project Representative to assist Architect 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 Architect’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. Architect 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. Architect will have authority to reject Work which Architect believes to be defective, or that Architect 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. Architect 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 Architect's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Architect'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 Architect's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Architect's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. Architect will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Architect will review with Contractor the Architect's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise).

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Architect 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 Architect in writing within 30 days of the event giving rise to the question.
- B. Architect 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 Architect's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

- C. Architect'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, Architect 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 Architect's Authority and Responsibilities*

- A. Neither Architect's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Architect 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 Architect shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Architect 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. Architect 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. Architect will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Architect 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. Architect'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, Architect's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Architect 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 Architect 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 Architect 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. *Architect's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Architect for decision. A decision by Architect 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 Architect 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 Architect and the other party to the Contract within 60 days after the start of such event (unless Architect 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 Architect and the claimant within 30 days after receipt of the claimant's last submittal (unless Architect allows additional time).
- C. *Architect's Action:* Architect 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 Architect is unable to resolve the Claim if, in the Architect's sole discretion, it would be inappropriate for the Architect to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Architect does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Architect'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 Architect, 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 Architects, 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 Architect, 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, Architects, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, 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 Architect 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 Architect.
- 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 Architect 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 Architect 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 Architect 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 Architect 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, Architect, 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, Architect, 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 Architects, 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 Architect 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, Architect, 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 Architect 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 Architect 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 Architect'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 Architect.
- 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 Architect, Contractor shall, if requested by Architect, 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 Architect timely notice of Contractor's intention to cover the same and Architect 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 Architect, it must, if requested by Architect, be uncovered for Architect's observation and replaced at Contractor's expense.
- B. If Architect considers it necessary or advisable that covered Work be observed by Architect or inspected or tested by others, Contractor, at Architect's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Architect 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 Architects, 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 Architect, 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 Architects, 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 Architects, 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 Architect's recommendation of final payment, Architect) 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 Architects, 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 Architect 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 Architect'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 Architect to correct defective Work, or to remove and replace rejected Work as required by Architect 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 Architect and Architect'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 Architects, 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 Architect. 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 Architect 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. Architect 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 Architect's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Architect's recommendation of any payment requested in an Application for Payment will constitute a representation by Architect to Owner, based on Architect's observations of the executed Work as an experienced and qualified design professional, and on Architect's review of the Application for Payment and the accompanying data and schedules, that to the best of Architect'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 Architect's responsibility to observe the Work.
3. By recommending any such payment Architect 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 Architect 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 Architect's review of Contractor's Work for the purposes of recommending payments nor Architect's recommendation of any payment, including final payment, will impose responsibility on Architect:
- 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. Architect may refuse to recommend the whole or any part of any payment if, in Architect's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Architect 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 Architect'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. Architect has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

- 1. Twenty days after presentation of the Application for Payment to Owner with Architect'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 Architect 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 Architect, Owner will give Contractor immediate written notice (with a copy to Architect) 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 Architect in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Architect issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Architect shall make an inspection of the Work to determine the status of completion. If Architect does not consider the Work substantially complete, Architect will notify Contractor in writing giving the reasons therefor.
- C. If Architect considers the Work substantially complete, Architect 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 Architect as to any provisions of the certificate or attached list. If, after considering such objections, Architect concludes that the Work is not substantially complete, Architect 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, Architect considers the Work substantially complete, Architect 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 Architect believes justified after consideration of any objections from Owner.

- D. At the time of delivery of the tentative certificate of Substantial Completion, Architect 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 Architect in writing prior to Architect's issuing the definitive certificate of Substantial Completion, Architect'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, Architect, 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 Architect 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 Architect in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Architect 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 Architect shall make an inspection of that part of the Work to determine its status of completion. If Architect does not consider that part of the Work to be substantially complete, Architect will notify Owner and Contractor in writing giving the reasons therefor. If Architect 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. Not Used

14.06 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Architect 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 Architect, 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. *Architect's Review of Application and Acceptance:*

1. If, on the basis of Architect's observation of the Work during construction and final inspection, and Architect's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Architect is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Architect will, within ten days after receipt of the final Application for Payment, indicate in writing Architect's recommendation of payment and present the

Application for Payment to Owner for payment. At the same time Architect will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Architect 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 Architect, less any sum Owner is entitled to set off against Architect'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 Architect so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Architect, 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 Architect 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*

- A. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

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 Architect 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 Architect; 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 Architects, 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 Architect as to their reasonableness and, when so approved by Architect, 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 7 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 Architect, 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;
 - 3. Not Used
 - 4. 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) Architect 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 Architect, and provided Owner or Architect 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 Architect 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 Architect, 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 Architect 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, Architect'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 State of Georgia.

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

These Supplementary Conditions amend or supplement the Standard General Conditions of the Contract Documents. All provisions which 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 meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

SC-2.02 *Copies of Documents*

SC-2.02 Delete Paragraph 2.02.A in its entirety and insert the following in its place:

- A. Owner shall furnish to Contractor up to 2 printed or hard copies of the Drawings and Project Manual and one set in electronic format. Additional copies will be furnished upon request at the cost of reproduction.**

SC-4.02 *Subsurface and Physical Conditions*

SC-4.02 Paragraph 4.02.A and Paragraph 4.02.B in its entirety and insert the following:

- A. No reports or drawings related to Subsurface and Physical Conditions at the Site are known to Owner.**

SC-4.06 *Hazardous Environmental Conditions*

SC-4.06 Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the following:

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.**

SC-5.04 *Contractor's Liability Insurance*

SC-5.04 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 coverage for not less than**

the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 5.04.A.1 and A.2 of the General Conditions:

- a. State: Statutory
- b. Applicable Federal (e.g., Longshoreman's): Statutory
- c. Employer's Liability: \$1,000,000

2. Contractor's General Liability under Paragraphs 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
- b. Products - Completed Operations Aggregate \$1,000,000
- c. Personal and Advertising Injury \$1,000,000
- d. Each Occurrence (Bodily Injury and Property Damage) \$1,000,000
- e. Property Damage liability insurance will provide Explosion, Collapse, and Under-ground coverages where applicable.
- f. Excess or Umbrella Liability
 - o General Aggregate \$1,000,000
 - o Each Occurrence \$1,000,000
 - o Builders Risk \$5,000,000

3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:

- a. Bodily Injury:
 - Each person \$1,000,000
 - Each Accident \$1,000,000

b. **Property Damage:**
Each Accident **\$1,000,000**

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**
Each Accident **\$1,000,000**

b. **Property Damage:**
Each Accident **\$1,000,000**
Annual Aggregate **\$1,000,000**

SC-6.11 *Use of Site and Other Areas*

SC-6.11 Add the following new paragraphs immediately after Paragraph 6.11.D:

E. Contractor shall work with Owner and Architect as required by law to comply with current State of Georgia Department of Natural Resources permit requirements. Contractor shall be responsible for developing and implementing a land disturbing activity plan, erosion control plan and temporary erosion control measures which comply with the State of Georgia Sediment and Erosion Control BMP standards, as set forth in manuals, practices and procedures promulgated by the State and local governing authorities, including but not limited to the most recent edition of the Manual for Erosion and Sediment Control in Georgia.

F. From the issuance date of a notice to proceed, or the date the Contractor begins work, whichever event occurs first, the Contractor shall be responsible for the project site. The escape of sediment from the site shall be prevented by Contractor's installation and maintenance of temporary erosion control measures and practices at the Contractor's expense. All appropriate erosion control measures shall be installed prior to any land disturbing activity. Erosion control measures shall be monitored by Contractor on a daily basis and repaired or restored until permanent erosion control measures are established and the Work is complete.

SC-6.17 *Shop Drawings and Samples*

SC-6.17 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. Architect will record Architect's time for reviewing subsequent submittals of Shop Drawings, samples, or other items requiring approval and Contractor shall reimburse Owner for Architect's charges for such time.

G. In the event that Contractor requests a change of a previously approved item, Contractor shall reimburse Owner for Architect's charges for its review time unless the need for such change is beyond the control of Contractor.

SC-7 *Technical Specifications*

CONTRACT TECHNICAL SPECIFICATION INDEX

SECTION 01200 - PRICE AND PAYMENT PROCEEDURES

SECTION 01323 - CONSTRUCTION PROGRESS SCHEDULE

SECTION 01330 - SUBMITAL PROCEDURES

SECTION 01400 - QUALITY REQUIREMENTS

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

SECTION 01600 - PRODUCT REQUIREMENTS

SECTION 01700 - EXECUTION AND CLOSEOUT REQUIREMENTS

SPECIFICATIONS - (PROJECT MANUAL FOR THE STOCKBRIDGE COMMUNITY ARTS CENTER – INNOVO, INC.).

SPECIFICATIONS - (NIX, WIETERS, AND ASSOCIATES, LLC – STOCKBRIDGE THEATRE MECHANICAL NARRATIVE)

SPECIFICATIONS - (NIX, WIETERS, AND ASSOCIATES, LLC – STOCKBRIDGE THEATRE ELECTRICAL NARRATIVE)

CONTRACT DRAWING SHEET INDEX

A000 - COVER SHEET

A001 - OCCUPANT LOADS, EGRESS PLANS & CODE SUMMARY

A100 - 3D VIEWS (FOR REFERENCE ONLY)

A101 - FIRST FLOOR DEMO AND PROPOSED PLAN

A102 - SECOND FLOOR DEMO AND PROPOSED PLAN

A300 - RESTROOM STANDARDS

A301 - RESTROOM FIXTURE PLANS

A501 - SECTIONS

A601 - WALL TYPE SCHEDULE

A602 - DOOR SCHEDULE

SECTION 01200

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Schedule of Values.
- B. Application for Payment.
- C. Change procedures.
- D. Defect assessment.

1.2 SCHEDULE OF VALUES

- A. Submit printed schedule on Contractor's standard form or electronic media printout will be considered for this use.
- B. Submit Schedule of Values in duplicate within ten (10) days after date of Owner-Contractor Agreement.
- C. Format: Use Table of Contents of this Project Manual. Identify each line item with number and title of major Specification Section. Also identify Site mobilization, bonds and insurance, and closeout documents.
- D. Revise schedule to list approved Change Orders with each Application for Payment.

1.3 APPLICATION FOR PAYMENT

- A. Submit three (3) copies of each Application for Payment on Contractor's Standard Application for Payment form to be approved by the Architect/Engineer.
- B. Content and Format: Use Schedule of Values for listing items in Application for Payment.
- C. Submit updated construction schedule with each Application for Payment.
- D. Payment Period: Application for Payment will be submitted monthly by/on the 25th of each month for review and approval.
- E. Submit three (3) copies of the Waiver of Liens form with the final Application for Payment
- F. Substantiating Data: When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
 - 1. Current construction photographs specified in Section 01330 - Submittal Procedures.
 - 2. Partial release of liens from major Subcontractors and vendors.
 - 3. Record Documents as specified in Section 01700 - Execution Requirements for review by Owner, which will be returned to Contractor.
 - 4. Affidavits attesting to off-Site stored products.
 - 5. Construction Progress Schedule, revised and current as specified in Section 01330 - Submittal Procedures.

1.4 CHANGE PROCEDURES

- A. Submittals: Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Architect/Engineer of any error, inconsistency, omission, or apparent discrepancy.
- C. Requests for Interpretation (RFI) and Clarifications: Allot time in construction scheduling for liaison with Architect/Engineer; establish procedures for handling queries and clarifications.
 - 1. Use AIA G716 - Request for Information for requesting interpretations.
 - 2. Architect/Engineer may respond with a direct answer on the Request for Interpretation form, EJCDC C-942 - Field Order, or Proposal Request.
- D. Architect/Engineer will advise of minor changes in the Work not involving adjustment to Contract Price or Contract Time by issuing supplemental instructions on EJCDC C-942.
- E. Architect/Engineer may issue Proposal Request including a detailed description of proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change with the period of time during which the requested price will be considered valid. Contractor will prepare and submit estimate within three (3) days.
- F. Contractor may propose changes by submitting a request for change to Architect/Engineer, describing proposed change and its full effect on the Work. Include a statement describing reason for the change and the effect on Contract Price and Contract Time with full documentation.
- G. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed price quotation for Change Order as approved by Architect/Engineer.
- H. Work Directive Change: Architect/Engineer may issue directive, on EJCDC C-940 - Work Change Directive signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work and designate method of determining any change in Contract Price or Contract Time. Promptly execute change.
- I. Document each quotation for change in Project Cost or Time with sufficient data to allow evaluation of quotation.
- J. Change Order Forms: EJCDC C-941 - Change Order.
- K. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
- L. Correlation of Contractor Submittals:
 - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Price.
 - 2. Promptly revise Progress Schedules to reflect change in Contract Time, revise subschedules to adjust times for other items of Work affected by the change, and resubmit.
 - 3. Promptly enter changes in Record Documents.

1.5 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of Architect/Engineer, it is not practical to remove and replace the Work, Architect/Engineer will direct appropriate remedy or adjust payment.
- C. The defective Work may remain, but unit sum/price will be adjusted to new sum/price at discretion of Owner.
- D. Individual Specification Sections may modify these options or may identify specific formula or percentage sum/price reduction.
- E. Authority of Architect/Engineer to assess defects and identify payment adjustments is final.
- F. Nonpayment for Rejected Products: Payment will not be made for rejected products for any of the following reasons:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from transporting vehicle.
 - 4. Products placed beyond lines and levels of the required Work.
 - 5. Products remaining on hand after completion of the Work.
 - 6. Loading, hauling, and disposing of rejected products.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Definitions.
- B. Submittal procedures.
- C. Construction progress schedules.
- D. Proposed product list.
- E. Product data.
- F. Use of electronic CAD files of Project Drawings.
- G. Shop Drawings.
- H. Samples.
- I. Other submittals.
- J. Design data.
- K. Test reports.
- L. Certificates.
- M. Manufacturer's instructions.
- N. Manufacturer's field reports.
- O. Construction photographs.
- P. Contractor review.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect/Engineer's responsive action.
- B. Informational Submittals: Written and graphic information and physical Samples that do not require Architect/Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Architect/Engineer-accepted form.

- B. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.
- C. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.
- D. Schedule submittals to expedite Project, and deliver to Architect/Engineer at business address. Coordinate submission of related items.
- E. For each submittal for review, allow fifteen (15) days excluding delivery time to and from Contractor.
- F. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.
- G. Allow space on submittals for Contractor and Architect/Engineer review stamps.
- H. When revised for resubmission, identify changes made since previous submission.
- I. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- J. Submittals not requested will not be recognized nor processed.
- K. Incomplete Submittals: Architect/Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Architect/Engineer.

1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Comply with Section 01323 - Construction Progress Schedules.

1.5 PROPOSED PRODUCT LIST

- A. Within fifteen (15) days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.6 PRODUCT DATA

- A. Product Data: Action Submittal: Submit to Architect/Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Submit number of copies Contractor requires, plus two (2) copies Architect/Engineer will retain.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01700 - Execution Requirements.

1.7 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

- A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.
- B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:
 - 1. Use of files is solely at receiver's risk. Architect/Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Architect/Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
 - 2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
 - 3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
 - 4. Receiver shall not hold Architect/Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
 - 5. Receiver shall understand that even though Architect/Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
 - 6. Receiver shall not hold Architect/Engineer responsible for such viruses or their consequences, and shall hold Architect/Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.
- C. Costs: \$75 per file, plus administrative fee of \$25 per request paid in advance by certified check or money order payable to Architect/Engineer.

1.8 SHOP DRAWINGS

- A. Shop Drawings: Action Submittal: Submit to Architect/Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Architect/Engineer responsible for designing components shown on Shop Drawings.
 - 1. Include signed and sealed calculations to support design.
 - 2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
 - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- C. Submit number of opaque reproductions Contractor requires, plus two (2) copies Architect/Engineer will retain.
- D. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01700 - Execution Requirements.

1.9 SAMPLES

- A. Samples: Action Submittal: Submit to Architect/Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Samples for Selection as Specified in Product Sections:
 - 1. Submit to Architect/Engineer for aesthetic, color, and finish for the Owner's selection.
 - 2. Submit Samples of finishes, textures, and patterns to the Architect/Engineer for the Owner's selection.
- C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.
- D. Include identification on each Sample, with full Project information.
- E. Submit number of Samples specified in individual Specification Sections; Architect/Engineer will retain one (1) Sample.
- F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.
- G. Samples will not be used for testing purposes unless specifically stated in Specification Section.
- H. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01700 - Execution Requirements.

1.10 OTHER SUBMITTALS

- A. Closeout Submittals: Comply with Section 01700 - Execution Requirements.
- B. Permits: Within fifteen (15) days after date of Owner-Contractor Agreement, submit a list of permits and licenses to be obtained, identifying the granting agency and the required date of permit submittal.

1.11 DESIGN DATA

- A. Informational Submittal: Submit data for Architect/Engineer's knowledge as Contract administrator or for Owner.
- B. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.12 TEST REPORTS

- A. Informational Submittal: Submit reports for Architect/Engineer's knowledge as Contract administrator or for Owner.
- B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.13 CERTIFICATES

- A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Architect/Engineer, in quantities specified for Product Data.

- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product but must be acceptable to Architect/Engineer.

1.14 MANUFACTURER'S INSTRUCTIONS

- A. Informational Submittal: Submit manufacturer's installation instructions for Architect/Engineer's knowledge as Contract administrator or for Owner.
- B. Submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to Architect/Engineer in quantities specified for Product Data.
- C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.15 MANUFACTURER'S FIELD REPORTS

- A. Informational Submittal: Submit reports for Architect/Engineer's knowledge as Contract administrator or for Owner.
- B. Submit report in duplicate within 24 hours of observation to Architect/Engineer for information.
- C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.16 CONSTRUCTION PHOTOGRAPHS

- A. Provide photographs of Site and construction throughout progress of Work produced by photographer acceptable to Architect/Engineer.
- B. Each month submit photographs with Application for Payment.
- C. Take photographs as evidence of existing Project conditions as follows:
 - 1. Exterior views:
- D. Identify each print on back. Identify name of Project, orientation of view, date and time of view, name and address of photographer, and photographer's numbered identification of exposure.
- E. Digital Images: Deliver complete set of digital image electronic files on CD-ROM to Owner with Project record documents. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as sensor, uncropped.
 - 1. Digital Images: Uncompressed TIFF format, produced by digital camera with minimum sensor size of 4.0 megapixels, and image resolution of not less than 1600 by 1200 pixels.
 - 2. Date and Time: Include date and time in filename for each image.

1.17 CONTRACTOR REVIEW

- A. Review for compliance with Contract Documents and approve submittals before transmitting to Architect/Engineer.

- B. Contractor: Responsible for:
 - 1. Determination and verification of materials including manufacturer's catalog numbers.
 - 2. Determination and verification of field measurements and field construction criteria.
 - 3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
 - 4. Determination of accuracy and completeness of dimensions and quantities.
 - 5. Confirmation and coordination of dimensions and field conditions at Site.
 - 6. Construction means, techniques, sequences, and procedures.
 - 7. Safety precautions.
 - 8. Coordination and performance of Work of all trades.
- C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.
- D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Architect/Engineer.

1.18 ARCHITECT/ENGINEER REVIEW

- A. Do not make "mass submittals" to Architect/Engineer. "Mass submittals" are defined as six (6) or more submittals or items in one day or fifteen (15) or more submittals or items in one week. If "mass submittals" are received, Architect/Engineer's review time stated above will be extended as necessary to perform proper review. Architect/Engineer will review "mass submittals" based on priority determined by Architect/Engineer after consultation with Owner and Contractor.
- B. Informational submittals and other similar data are for Architect/Engineer's information, do not require Architect/Engineer's responsive action, and will not be reviewed or returned with comment.
- C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.
- D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order, Field Order, or Work Change Directive.
- E. Owner may withhold monies due to Contractor to cover additional costs beyond the second submittal review.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01400

QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality control.
- B. Mockup requirements.
- C. Testing and inspection services.

1.2 QUALITY CONTROL

- A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Perform Work using persons qualified to produce required and specified quality.
- D. Products, materials, and equipment may be subject to inspection by Architect/Engineer and Owner at the project site. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.
- E. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current as of date for receiving Bids except where specific date is established by code.

- C. Obtain copies of standards and maintain on Site when required by product Specification Sections.
- D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Architect/Engineer shall be altered from Contract Documents by mention or inference in reference documents.

1.5 LABELING

- A. Attach label from agency approved by authorities having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
- B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label:
 - 1. Model number.
 - 2. Serial number.
 - 3. Performance characteristics.
- C. Manufacturer's Nameplates, Trademarks, Logos, and Other Identifying Marks on Products: Not allowed on surfaces exposed to view in public areas, interior or exterior.

1.6 MOCK-UP REQUIREMENTS

- A. Tests will be performed under provisions identified in this Section and identified in individual product Specification Sections.
- B. Assemble and erect specified or indicated items with specified or indicated attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mockups shall be comparison standard for remaining Work.
- D. Required mockup for typical wall section with all surfaces represented including flashings and attachments.
- E. Where mockup has been accepted by Architect/Engineer and is specified in product Specification Sections to be removed, remove mockup and clear area when directed to do so by Architect/Engineer.

1.7 TESTING AND INSPECTION SERVICES

- A. Owner will employ and pay for specified services of an independent geotechnical firm to perform required testing.
- B. Owner's Independent geotechnical firm will perform tests and other services specified in individual Specification Sections and as required by Architect/Engineer.
- C. Testing, inspections, and source quality control may occur on or off Project Site. Perform off-Site testing as required by Architect/Engineer.

- D. Reports shall be submitted by independent firm to Architect/Engineer, Contractor, and authorities having jurisdiction, indicating observations and results of tests and compliance or noncompliance with Contract Documents.
 - 1. Submit final report indicating correction of Work previously reported as noncompliant.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Architect/Engineer and independent firm 24 hours before expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional Samples and tests required for Contractor's use.
- F. Employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.
- G. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Architect/Engineer. Payment for retesting or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
- H. Agency Responsibilities:
 - 1. Test Samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at Site. Cooperate with Architect/Engineer and Contractor in performance of services.
 - 3. Perform indicated sampling and testing of products according to specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Architect/Engineer and Contractor of observed irregularities or nonconformance of Work or products.
 - 6. Perform additional tests required by Architect/Engineer.
 - 7. Attend preconstruction meetings and progress meetings.
- I. Agency Reports: After each test, promptly submit two copies of report to Architect/Engineer, Contractor, and authorities having jurisdiction. When requested by Architect/Engineer, provide interpretation of test results. Include the following:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Name of inspector.
 - 4. Date and time of sampling or inspection.
 - 5. Identification of product and Specification Section.
 - 6. Location in Project.
 - 7. Type of inspection or test.
 - 8. Date of test.
 - 9. Results of tests.
 - 10. Conformance with Contract Documents.
- J. Limits on Testing Authority:
 - 1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency or laboratory may not approve or accept any portion of the Work.
 - 3. Agency or laboratory may not assume duties of Contractor.
 - 4. Agency or laboratory has no authority to stop the Work.

1.8 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, testing and adjusting, as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect/Engineer 10 days in advance of required observations. Observer is subject to approval of Architect/Engineer.
- C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary facilities under Construction Management Agreement.
- B. Temporary Utilities:
 - 1. Temporary electricity.
 - 2. Temporary lighting for construction purposes.
 - 3. Temporary water service.
 - 4. Temporary sanitary facilities.
- C. Construction Facilities:
 - 1. Vehicular access.
 - 2. Parking.
 - 3. Progress cleaning and waste removal.
 - 4. Project identification.
 - 5. Traffic regulation.
- D. Temporary Controls:
 - 1. Barriers.
 - 2. Enclosures and fencing.
 - 3. Security.
 - 4. Water control.
 - 5. Dust control.
 - 6. Erosion and sediment control.
 - 7. Noise control.
 - 8. Pest and rodent control.
- E. Removal of utilities, facilities, and controls.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
 - 3. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

1.3 PERMANENT FACILITIES BY OWNER

- A. Owner to provide permanent utility services for the following:
 - 1. Electrical Service through Georgia Power
 - 2. Water Service City of Stockbridge

1.4 TEMPORARY FACILITIES UNDER AGREEMENT BY CONTRACTOR

- A. Contractor: Coordinate provisions with Architect/Engineer and provide the following items as necessary for execution of the Work including associated costs:
 - 1. Construction aids.
 - 2. Temporary fire protection, dust control, erosion and sediment control, water control, noise control, and other necessary temporary controls.
 - 3. Temporary barriers, barricades, and similar devices as necessary for safety and protection of construction personnel and public.
 - 4. Temporary tree and plant protection.
 - 5. Temporary electrical service required.
 - 6. Temporary provisions for protection of installed Work.
 - 7. Temporary electrical service for limited power.
 - 8. Temporary water service.

1.5 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of Project mobilization.

1.6 FIELD OFFICES AND SHEDS

- A. Do not use existing facilities for field offices or for storage.
- B. Locate temporary field offices and sheds a minimum distance of fifty (50) feet from existing structures.
- C. Storage Areas and Sheds: Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and inspection of products to suit requirements in Section 01600 - Product Requirements.
- D. Preparation: Fill and grade Sites for temporary structures sloped for drainage away from buildings.
- E. Removal: At completion of Work remove buildings, foundations, utility services, and debris. Restore areas to same or better condition as original condition.

1.7 VEHICULAR ACCESS

- A. Locate as approved by Owner.
- B. Provide unimpeded access for emergency vehicles.
- C. Provide and maintain access to fire hydrants and control valves free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Use designated existing on-Site roads for construction traffic.

1.8 PARKING

- A. Arrange for temporary surface parking areas to accommodate construction personnel.

- B. Locate as acquired by the Contractor and approved by Owner.
- C. If Site space is not adequate, provide additional off-Site parking at no expense to the Owner.
- D. Use of designated areas of existing on-Site streets and driveways used for construction traffic is not permitted. Tracked vehicles are not allowed on paved areas.
- E. Maintenance:
 - 1. Maintain traffic and parking areas in sound condition.
 - 2. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original condition.
- F. Removal, Repair:
 - 1. Remove temporary materials and construction.
 - 2. Repair permanent facilities damaged by use, to original condition.
- G. Mud from Site vehicles: Provide means of removing mud from vehicle wheels before entering streets.

1.9 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.
- C. Broom and vacuum clean interior areas before starting surface finishing, and continue cleaning to eliminate dust.

1.10 TRAFFIC REGULATION

- A. Signs, Signals, and Devices:
 - 1. Post-Mounted Traffic Control and Informational Signs: As approved by authorities having jurisdiction.
 - 2. Traffic Cones, Drums, and Lights: As approved by authorities having jurisdiction.
 - 3. Flag Person Equipment: As required by authorities having jurisdiction.
- B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.
- C. Traffic Signs and Signals:
 - 1. Provide signs at approaches to Site and on Site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
 - 2. Relocate signs and signals as Work progresses, to maintain effective traffic control.
- D. Removal:
 - 1. Remove equipment and devices when no longer required.
 - 2. Repair damage caused by installation.

1.11 FIRE-PREVENTION FACILITIES

- A. Prohibit smoking within the property of the Owner.

- B. Establish fire watch for cutting, welding, and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
- C. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60B: C UL rating.
 - 1. Provide minimum of one fire extinguisher in every piece of construction equipment.

1.12 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Tree and Plant Protection: Preserve and protect existing trees and plants designated to remain.
 - 1. Protect areas within drip lines from traffic, parking, storage, dumping, chemically injurious materials and liquids, ponding, and continuous running water.
 - 2. Replace trees and plants damaged by construction operations.
- C. Protect non-owned vehicular traffic, stored materials, Site, and structures from damage.

1.13 ENCLOSURES AND FENCING

- A. Construction: Contractor's option at no expense to and approved by Owner.

1.14 SECURITY

- A. Security Program:
 - 1. Protect Work on existing premises from theft, vandalism, and unauthorized entry.
- B. Entry Control:
 - 1. Restrict entrance of persons and vehicles to Project Site.
- C. Restrictions:
 - 1. Do not allow cameras on Site or photographs taken except by written approval of Owner.
 - 2. Do no work on days indicated in Owner-Contractor Agreement.

1.15 WATER CONTROL

- A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.
- B. Protect Site from puddles or running water.

1.16 DUST CONTROL

- A. Execute Work by methods that minimize raising dust from construction operations.
- B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into Owner-occupied areas.

1.17 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.

- B. Minimize surface area of bare soil exposed at one time.
- C. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow as shown on the plans and as directed by the Owner at no additional expense to the Owner.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts and clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation. Promptly apply corrective measures.
- F. Comply with sediment and erosion control plan indicated on Drawings.

1.18 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by construction operations.

1.19 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.
- B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.20 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials before Final Application for Payment inspection.
- B. Clean and repair damage caused by installation or use of temporary Work.
- C. Restore existing and permanent facilities used during construction to original condition.
Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.

1.2 PRODUCTS

- A. At minimum, comply with specified requirements and reference standards.
- B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.
- C. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.
- D. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.
- E. Furnish interchangeable components from same manufacturer for components being replaced.

1.3 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products according to manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products according to manufacturer's instructions.
- B. Store products with seals and labels intact and legible.
- C. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.
- D. For exterior storage of fabricated products, place products on sloped supports aboveground.

- E. Provide off-Site storage and protection when Site does not permit on-Site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01700

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Field Engineer/Architecting.
- B. Closeout procedures.
- C. Demonstration and instructions.
- D. Project record documents.
- E. Operation and maintenance data.
- F. Manual for materials and finishes.
- G. Manual for equipment and systems.
- H. Spare parts and maintenance products.
- I. Product warranties and product bonds.
- J. Examination.
- K. Preparation.
- L. Execution.
- M. Cutting and patching.
- N. Protecting installed construction.
- O. Final cleaning.

1.2 FIELD ENGINEER/ARCHITECTING

- A. Owner will provide initial survey control and project staking and Contractor shall protect survey control and reference points. Promptly notify Engineer/Architect of discrepancies discovered.
- B. Control datum for survey is established by Owner-provided survey.
- C. Maintain complete and accurate log of control and survey Work as Work progresses.
- D. On completion of foundation walls and major Site improvements, prepare certified survey illustrating dimensions, locations, angles, and elevations of construction and Site Work.
- E. Protect survey control points prior to starting Site Work; preserve permanent reference points during construction.

- F. Promptly report to Engineer/Architect loss or destruction of reference point or relocation required because of changes in grades or other reasons. Additional staking of the project will be at the Contractor's expense.
- G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer/Architect.
- H. Final Property Survey: Prior to Substantial Completion, prepare final property survey illustrating locations, dimensions, angles, and elevations of Site Work that have resulted from construction indicating their relationship to permanent bench marks.
 - 1. Show significant features (real property) for Project.

1.3 CLOSEOUT PROCEDURES

- A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
 - 1. Submit maintenance manuals, Project record documents, digital images of construction photographs, and other similar final record data in compliance with this Section.
 - 2. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
 - 3. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
 - 4. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities.
 - 5. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
 - 6. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools and similar elements.
 - 7. Perform final cleaning according to this Section.
- B. Substantial Completion Inspection:
 - 1. When Contractor considers Work to be substantially complete, submit to Engineer/Architect:
 - a. Written certificate that Work, or designated portion, is substantially complete.
 - b. List of items to be completed or corrected (initial punch list).
 - 2. Within seven (7) days after receipt of request for Substantial Completion, Engineer/Architect will make inspection to determine whether Work or designated portion is substantially complete.
 - 3. Should Engineer/Architect determine that Work is not substantially complete:
 - a. Engineer/Architect will promptly notify Contractor in writing, stating reasons for its opinion.
 - b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Engineer/Architect.
 - c. Engineer/Architect will reinspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer/Architect's inspection.
 - 4. When Engineer/Architect finds that Work is substantially complete, Engineer/Architect will:
 - a. Prepare Certificate of Substantial Completion on EJCDC C-625 - Certificate of Substantial Completion accompanied by Contractor's list of items to be completed or

- corrected as verified and amended by Engineer/Architect and Owner (final punch list).
 - b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.
 - 5. After Work is substantially complete, Contractor shall:
 - a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
 - b. Complete Work listed for completion or correction within time period stipulated.
- C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.
 - 1. When Contractor considers Work to be complete, submit written certification that:
 - a. Contract Documents have been reviewed.
 - b. Work has been examined for compliance with Contract Documents.
 - c. Work has been completed according to Contract Documents.
 - d. Work is completed and ready for final inspection.
 - 2. Submittals: Submit following:
 - a. Final punch list indicating all items have been completed or corrected.
 - b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 - c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
 - d. Accounting statement for final changes to Contract Sum.
 - e. Contractor's affidavit of payment of debts and claims on form approved by the Engineer/Architect.
 - f. Contractor affidavit of release of liens on form approved by the Engineer/Architect.
 - g. Consent of surety to final payment on form approved by the Engineer/Architect.
 - h. Perform final cleaning for Contractor-soiled areas according to this Section.
- D. Final Completion Inspection:
 - 1. Within seven (7) days after receipt of request for final inspection, Engineer/Architect will make inspection to determine whether Work or designated portion is complete.
 - 2. Should Engineer/Architect consider Work to be incomplete or defective:
 - a. Engineer/Architect will promptly notify Contractor in writing, listing incomplete or defective Work.
 - b. Contractor shall remedy stated deficiencies and send second written request to Engineer/Architect that Work is complete.
 - c. Engineer/Architect will reinspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer/Architect's inspection.

1.4 STARTING OF SYSTEMS

- A. Coordinate schedule for startup of various equipment and systems.
- B. Notify Engineer/Architect and Owner seven (7) days prior to startup of each item.
- C. Verify that each piece of equipment or system has been checked for proper control sequence, and for conditions which may cause damage.
- D. Submit a written report according to Section 01330 - Submittal Procedures that equipment or system has been properly installed and is functioning correctly.

1.5 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel ten (10) days prior to date of final inspection.
- B. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- C. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment.
- D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

1.6 PROJECT RECORD DOCUMENTS

- A. Maintain on Site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, product data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates used.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:
 - 1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
 - 2. Include locations of concealed elements of the Work.
 - 3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
 - 4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
 - 5. Identify and locate existing buried or concealed items encountered during Project.
 - 6. Measured depths of foundations in relation to finish datum.
 - 7. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 8. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 9. Field changes of dimension and detail.
 - 10. Details not on original Drawings.

- G. Submit marked-up paper copy documents to Engineer/Architect with claim for final Application for Payment.

1.7 OPERATION AND MAINTENANCE DATA

- A. Submit in PDF composite electronic indexed file.
- B. Submit data bound in 8-1/2 x 11-inch (A4) text pages, three D side ring binders with durable plastic covers.
- C. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of Project, and subject matter of binder when multiple binders are required].
- D. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- E. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- F. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer/Architect, Contractor, Subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Include the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Safety precautions to be taken when operating and maintaining or working near equipment.
 - 3. Part 3: Project documents and certificates, including the following:
 - a. Shop Drawings and product data.

1.8 MANUAL FOR MATERIALS AND FINISHES

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Engineer/Architect will review draft and return one copy with comments.
- B. For equipment or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes ten (10) days prior to final inspection Draft copy be reviewed and returned after final inspection, with Engineer/Architect comments. Revise content of document sets as required prior to final submission.
- D. Submit two (2) sets of revised final volumes within ten (10) days after final inspection.
- E. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations.

- F. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- G. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.
- H. Additional Requirements: As specified in individual product Specification Sections.
- I. Include listing in table of contents for design data, with tabbed fly sheet and space for insertion of data.

1.9 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- B. Submit two (2) sets of final volumes within ten (10) days after final inspection.
- C. Each Item of Equipment and Each System: Include description of unit or system and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with Engineer/Architecting data, and complete nomenclature and model number of replaceable parts.
- D. Operating Procedures: Include startup, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Include manufacturer's printed operation and maintenance instructions.
- G. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- H. Include control diagrams by controls manufacturer as installed.
- I. Include Contractor's coordination drawings with color-coded piping diagrams as installed.
- J. Additional Requirements: As specified in individual product Specification Sections.
- K. Include listing in table of contents for design data with tabbed dividers and space for insertion of data.

1.10 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.
- B. Deliver to place in location as directed by Owner; obtain receipt prior to final payment.

1.11 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in by responsible Subcontractors, suppliers, and manufacturers within ten (10) days after completion of applicable item of Work.
- B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Submit prior to final Application for Payment.
- F. Time of Submittals:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten (10) days after acceptance.
 - 2. Make other submittals within ten (10) days after date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten (10) days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available with correct characteristics and in correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer-required or -recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.3 EXECUTION

- A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.
- B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Engineer/Architect before proceeding.
- C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.
- D. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.
 - 1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
 - 2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.
- E. Adjust operating products and equipment to ensure smooth and unhindered operation.
- F. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

3.4 CUTTING AND PATCHING

- A. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.
- B. Cut masonry and concrete materials using masonry saw or core drill.
- C. Restore Work with new products according to requirements of Contract Documents.
- D. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
- E. Identify hazardous substances or conditions exposed during the Work to Engineer/Architect for decision or remedy.

3.5 PROTECTING INSTALLED CONSTRUCTION

- 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. Prohibit traffic from landscaped areas.

3.6 FINAL CLEANING

- A. Clean debris from gutters, downspouts, and drainage systems.
- B. Clean all surfaces and materials in accordance with manufacturer's recommendations and industry standards.

- C. Clean Site; sweep paved areas, rake clean landscaped surfaces.
- D. Remove waste and surplus materials, rubbish, and construction facilities from Site.

END OF SECTION

Project Manual
for the

Stockbridge Community Arts Center

**146 Burke Street
Stockbridge, GA 30281**

4 December 2013



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SECTION 011000 - SUMMARY

1.1 PROJECT INFORMATION

- A. Project Identification: 1322 – Stockbridge Community Arts Center.
 - 1. Project Location: 146 Burke St., Stockbridge, GA 30281.
- B. Owner: City of Stockbridge, GA.
 - 1. Owner's Representative: City Manager David Milliron, Public Works Director Kevin Walters, Economic Development Director Elizabeth 'BJ' Mathis.
- C. Architect: Innovo, Inc., Todd Ernst, 678-438-5778.
- D. Architect's Consultants: The Architect has retained the following design professionals who have prepared designated Mechanical and Electrical Narratives:
 - 1. Mechanical Engineer: Nix Wieters & Assoc., LLC, Bryan Nix.
 - 2. Electrical Engineer: Nix Wieters & Assoc., LLC, John Wieters.
- E. Other Owner Consultants:
 - 1. Academy Theatre, theatre design group.
- F. Contractor: To be determined.
- G. Construction Manager: To be determined.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project: The Work of Project: Redevelopment of a vacant building, recently purchased by the City, into a Theatre/Cultural Arts Center. The existing building is one-story building comprised of 22,000 square feet, a portion of which will have: A Proscenium Theater with fixed seating for approximately 200; a Blackbox theater with fixed seating for no more than 99 and back of house support areas to be shared by both theater components. The City of Stockbridge has retained the services of a Theater Group to assist with this project. Coordination will be required by the selected architectural firm with this Theater Group.
- B. Work by Owner:
 - 1. Preceding Work: Installation of sprinkler system.
 - 2. Preceding Work: Mechanical, electrical and plumbing systems tested for working conditions.

C. Owner-Furnished Products:

1. Theatre seating.
2. Catwalk system ('SkyDeck' by InterAmerica, or equivalent).
3. Low voltage and CCTV, if required.
4. Door hardware to be selected and coordinated by Owner, to match existing or desired hardware systems for doors in the building.
5. Other items or systems identified by Owner.

END OF SECTION 011000

SECTION 024119 - SELECTIVE DEMOLITION

1.1 PROJECT CONDITIONS

- A. Owner will not occupy portions of building immediately adjacent to selective demolition area.
- B. Hazardous Materials: Not expected.

1.2 WARRANTY

- A. Existing Warranties: None known.

1.3 EXECUTION

- A. Professional engaged to survey condition of building.
 - 1. Recorded by use of measured as-built floor plan.
- B. Utility Services and Mechanical/Electrical Systems: Maintained to occupied facilities.
 - 1. Shut Off: Coordinated between Owner and Contractor.
- C. Site Access and Temporary Controls: Minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities
- D. Temporary Facilities:
 - 1. Temporary barricades to prevent injury to people.
 - 2. Temporary weather protection if required.
 - 3. Protection of existing finish work to remain.
 - 4. Protection of unaffected equipment.
- E. Temporary bracing and support of existing walls if affected by construction process.
- F. Reuse of Building Elements:
 - 1. Building Structure and Shell: Maintain in entirety.
 - 2. Nonshell Elements: Maintain as indicated.
- G. Removed and Salvaged Items: Cleaned, crated, stored, and transported to Owner's [on] [off]-site storage area.
- H. Removed and Reinstalled Items: Cleaned, repaired, crated, stored, and reinstalled.
- I. Existing Items to Remain: Existing construction protected against damage.
- J. Disposal of Demolished Items:

1. Burning: Not permitted.
2. Disposal: Off Owner's property.

1.4 SELECTIVE DEMOLITION SCHEDULE

- A. See Mechanical and Electrical narratives for existing mechanical and electrical systems and impacted construction (i.e., ceilings, grilles, ducts, etc.) required to be removed, removed and salvaged, removed and reinstalled, and to remain.

END OF SECTION 024119

SECTION 055113 - METAL PAN STAIRS

1.1 SUMMARY

- A. Preassembled steel stairs with concrete-filled/abrasive-coating-finished, formed-metal treads.
- B. Steel tube railings attached to metal stairs.
- C. Steel tube handrails attached to walls adjacent to metal stairs.
- D. Railing gates at the level of exit discharge.

1.2 PERFORMANCE REQUIREMENTS

- A. Engineering design of steel stairs and railings by Contractor.
- B. Shop drawings submitted to Architect for review.

1.3 MATERIALS

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

1.4 STEEL-FRAMED STAIRS

- A. Stair Standard: NAAMM AMP 510, "Metal Stairs Manual," Commercial Class.
- B. Stringers: Steel plates or channels.
- C. Metal Pan Stairs: Uncoated cold-rolled or Galvanized steel sheet.
- D. Steel Tube Railings:
 - 1. Rails and Posts: 1-5/8-inch-square top and bottom rails and 1-1/2-inch-square posts.
 - 2. Picket Infill: 1/2-inch-square pickets spaced less than 4 inches clear.
 - 3. Expanded-Metal Infill: Expanded-metal panels edged with U-shaped channels made from steel sheet.
 - 4. Perforated-Metal Infill: Perforated-metal panels edged with U-shaped channels made from metal sheet.
 - 5. Mesh Infill: Woven wire mesh crimped into steel channel frames.

END OF SECTION 055113

SECTION 055213 - PIPE AND TUBE RAILINGS

1.1 SUMMARY

- A. Steel pipe railings.
 - 1. Recycled Content of Steel: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Aluminum pipe railings.
- C. Stainless-steel pipe railings; Type 304.

1.2 PERFORMANCE REQUIREMENTS

- A. Engineering design of railings by Contractor.

1.3 FABRICATION

- A. Changes in Direction of Members: By bending or by inserting prefabricated fittings.
- B. Connections: Welded.

1.4 FINISHES

- A. Low-Emitting Materials.
- B. Steel and Iron Verticals and Brackets: Primed with universal shop primer and field painted.
- C. Stainless Steel Hand- and Guard-Rail: Dull satin, No. 6.

END OF SECTION 055213

SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY

1.1 MATERIALS

A. Wood Products, General:

1. Lumber and Plywood: FSC-certified.
2. Maximum Moisture Content of Lumber: 15 percent.

B. Wood-Preservative-Treated Materials:

1. Preservative Treatment: AWWPA U1; use Category UC2].
 - a. Preservative Chemicals: Containing no arsenic or chromium.
2. Application: Items indicated and the following:
 - a. Items in contact with roofing or waterproofing.
 - b. Items in contact with concrete or masonry.
 - c. Floor plates installed over concrete slabs-on-grade.

C. Fire-Retardant-Treated Materials:

1. Interior Type A, High Temperature (HT) for enclosed roof framing and where indicated.
2. Interior Type A unless otherwise indicated.
3. Application: Items indicated and the following:
 - a. Framing for raised platforms.
 - b. Concealed blocking.
 - c. Roof framing and blocking.
 - d. Items in contact with roofing.
 - e. Plywood backing panels.

D. Dimension Lumber Framing:

1. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade mixed southern pine or spruce-pine-fir (south).
2. Other Framing: Construction or No. 2 grade mixed southern pine or spruce-pine-fir (south).

E. Miscellaneous Lumber:

1. Dimension Lumber: Construction or No. 2 grade mixed southern pine or spruce-pine-fir (south).
2. Utility Shelving: 19 percent maximum moisture content.
 - a. White, lodgepole, ponderosa, or sugar pine; Standard or No. 3 Common.
 - b. Mixed southern pine, No. 2.
 - c. Spruce-pine-fir, Construction or No. 2 Common.
3. Concealed Boards: 19 percent maximum moisture content.

- a. Mixed southern pine, No. 3.
 - b. Spruce-pine-fir, Standard or No. 3 Common.
 - F. Plywood Backing Panels: Exposure 1, C-D Plugged, fire-retardant treated.
 - 1. Low-emitting materials.
 - G. Fasteners: Hot-dip galvanized steel where exposed to weather, in ground contact, in contact with treated wood, or in area of high relative humidity.
 - H. Metal Framing Anchors:
 - 1. Metal: Galvanized steel; hot-dip heavy galvanized steel for wood-preservative-treated lumber and where indicated.
 - I. Adhesives: Low VOC.
- 1.2 INSTALLATION
- A. Furring to Receive Plywood or Hardboard Paneling: 1-by-3-inch nominal-size furring at 24 inches o.c.
 - B. Furring to Receive Gypsum Board: 1-by-2-inch nominal-size furring at 16 inches o.c.

END OF SECTION 061053

SECTION 072500 - WEATHER BARRIERS

1.1 MATERIALS – For use on “Box Office” at existing exterior colonnade.

- A. Building Paper: Asphalt-saturated kraft building paper.
- B. Building wrap.
- C. Building-wrap tape.
- D. Flexible Flashing: Butyl rubber.

END OF SECTION 072500

SECTION 078413 - PENETRATION FIRESTOPPING

1.1 QUALITY ASSURANCE

- A. Installer Qualifications: An FM Global-approved firestop contractor or a UL-qualified firestop contractor.
- B. Fire-Test-Response Characteristics: UL (Underwriters Laboratories).

1.2 PENETRATION FIRESTOPPING

- A. Penetrations in Fire-Resistance-Rated Walls: F-ratings per ASTM E 814 or UL 1479.
- B. Penetrations in Horizontal Assemblies: F- and T-ratings per ASTM E 814 or UL 1479:
- C. Penetrations in Smoke Barriers: L-ratings per UL 1479.
- D. W-Ratings: Per UL 1479.

1.3 INSTALLATION

- A. Identification: Preprinted metal or plastic labels.

1.4 FIELD QUALITY CONTROL

- A. Inspection of Installed Firestopping: By Owner-engaged agency according to ASTM E 2174.

1.5 SUMMARY

- A. This Section includes through-penetration firestop systems for penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items.

1.6 PERFORMANCE REQUIREMENTS

- A. General: For penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
- B. Rated Systems: Provide through-penetration firestop systems with the following ratings determined per ASTM E 814:

1. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.
- C. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 2. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

1.7 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

- A. Firestopping for Metallic Pipes, Conduit, or Tubing:
1. F-Rating: 1 hour minimum (existing to be verified).
 2. T-Rating: 0 hours.
 3. L-Rating at Ambient: Less than 1 cfm/sq. ft.
 4. L-Rating at 400 deg F: Less than 4 cfm/sq. ft.
 5. W-Rating: No leakage of water.
 6. Type of Fill Materials: As required to achieve rating.
- B. Firestopping for Insulated Pipes:
1. F-Rating: 1 hour minimum (existing to be verified).
 2. T-Rating: 0 hours.
 3. L-Rating at Ambient: Less than 1 cfm/sq. ft.
 4. L-Rating at 400 deg F: Less than 4 cfm/sq. ft.
 5. W-Rating: No leakage of water.
 6. Type of Fill Materials: As required to achieve rating.
- C. Firestopping for Miscellaneous Electrical Penetrants:
1. F-Rating: 1 hour minimum (existing to be verified).
 2. T-Rating: 0 hours.
 3. W-Rating: No leakage of water.
 4. Type of Fill Materials: As required to achieve rating.
- D. Firestopping for Miscellaneous Mechanical Penetrants:
1. F-Rating: 1 hour minimum (existing to be verified).
 2. T-Rating: 0 hours.
 3. W-Rating: No leakage of water.
 4. Type of Fill Materials: As required to achieve rating.

1.8 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each through-penetration firestop system, submit documentation, including illustrations, from a qualified testing and inspecting agency, showing each type of

construction condition penetrated, relationships to adjoining construction, and type of penetrating item.

- C. Qualification Data: For Installer.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FMG according to FMG 4991, "Approval of Firestop Contractors."
- B. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.
- C. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until each installation has been examined by building inspector, if required by authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the through-penetration firestop systems indicated for each application that are produced by one of the following manufacturers:
 - 1. A/D Fire Protection Systems Inc.
 - 2. Hilti, Inc.
 - 3. Johns Manville.
 - 4. NUCO Inc.
 - 5. 3M; Fire Protection Products Division.
 - 6. USG Corporation.

2.2 FIRESTOPPING

- A. Compatibility: Provide through-penetration firestop systems that are compatible with one another; with the substrates forming openings; and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.
- B. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for firestop systems indicated.

PART 3 - EXECUTION

3.1 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

- A. General: Install through-penetration firestop systems to comply with Part 1 "Performance Requirements" Article and with firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
- C. Install fill materials for firestop systems by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.
- D. Identification: Identify through-penetration firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. Include the following information on labels:
 - 1. The words "Warning - Through-Penetration Firestop System - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Through-penetration firestop system designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Through-penetration firestop system manufacturer's name.
 - 6. Installer's name.

END OF SECTION 078413

SECTION 078446 - FIRE-RESISTIVE JOINT SYSTEMS

1.1 QUALITY ASSURANCE

- A. Installer Qualifications: An FM Global-approved firestop contractor or a UL-qualified firestop contractor.
- B. Fire-Test-Response Characteristics: UL (Underwriters Laboratories).

1.2 FIRE-RESISTIVE JOINT SYSTEMS

- A. Joints in or between Fire-Resistance-Rated Construction: ASTM E 1966 or UL 2079.

1.3 INSTALLATION

- A. Identification: Preprinted metal or plastic labels.

1.4 FIELD QUALITY CONTROL

- A. Inspection of Installed Firestopping: By Owner-engaged agency according to ASTM E 2393.

1.5 FIRE-RESISTIVE JOINT SYSTEMS SCHEDULE

- A. Wall-to-Wall, Fire-Resistive Joint Systems:
 - 1. Existing Assembly Rating: 1 hour, minimum (assumed).
 - 2. Existing rating to be maintained if new wall(s) intersect.
- B. Head-of-Wall, Fire-Resistive Joint Systems:
 - 1. Existing assembly rating of wall if new wall(s) intersect: 1 hour, minimum (assumed).
 - 2. Existing rating to be maintained if new wall(s) intersect.
- C. Bottom-of-Wall, Fire-Resistive Joint Systems:
 - 1. Existing assembly rating of wall if new wall(s) intersect: 1 hour, minimum (assumed).
 - 2. Existing rating to be maintained if new wall(s) intersect.
- D. Wall-to-Wall, Fire-Resistive Joint Systems Intended for Use as Corner Guards:
 - 1. Existing assembly rating of wall if new wall(s) intersect: 1 hour, minimum (assumed).
 - 2. Existing rating to be maintained if new wall(s) intersect.
- E. Perimeter Fire-Resistive Joint Systems:
 - 1. Existing assembly rating of wall if new wall(s) intersect: 1 hour, minimum (assumed).
 - 2. Existing rating to be maintained if new wall(s) intersect.

END OF SECTION 078446

SECTION 079200 - JOINT SEALANTS

1.1 PRECONSTRUCTION TESTING

- A. Preconstruction laboratory testing.
- B. Preconstruction field-adhesion testing.

1.2 WARRANTY

- A. Installer Warranty: Two years.
- B. Special Manufacturer's Warranty: Five years.

1.3 JOINT SEALANTS

- A. VOC Content of Interior Sealants:
 - 1. Architectural Sealants: 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 3. Sealant Primers for Porous Substrates: 775 g/L.
- B. Low-Emitting Interior Sealants.
- C. Silicone joint sealants.
- D. Nonstaining silicone joint sealants.
- E. Urethane joint sealants.
- F. Mildew-resistant joint sealants.
- G. Polysulfide joint sealants.
- H. Butyl joint sealants.
- I. Latex joint sealants.
- J. Joint-sealant backing.

1.4 FIELD QUALITY CONTROL

- A. Field-adhesion testing.

1.5 SCHEDULE

- A. Interior joints in horizontal traffic surfaces.
 - 1. Joint-Sealant Color: As selected by Owner from manufacturer's full range of colors.
- B. Interior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint-Sealant Color: Match to adjacent surfaces.
- C. Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
 - 1. Joint-Sealant Color: As selected by Owner from manufacturer's full range of colors.
- D. Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint-Sealant Color: Match to adjacent surfaces.

END OF SECTION 079200

SECTION 081213 - HOLLOW METAL FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Standard hollow metal frames.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include elevations, door edge details, frame profiles, metal thicknesses, preparations for hardware, and other details.

1.3 QUALITY ASSURANCE

- 1. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated.
- B. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency, for fire-protection ratings indicated. Label each individual glazed lite.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Amweld Building Products, LLC.
 - 2. Ceco Door Products; an Assa Abloy Group company.
 - 3. Deansteel Manufacturing Company, Inc.
 - 4. Firedoor Corporation.
 - 5. Habersham Metal Products Company.
 - 6. Kewanee Corporation (The).
 - 7. Steelcraft; an Ingersoll-Rand company.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, CS, Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, CS, Type B.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum A40 (ZF120) metallic coating.
- D. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z (12G) coating designation; mill phosphatized.
 - 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- F. Mineral-Fiber Insulation: ASTM C 665, Type I.

2.3 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8.
- B. Interior Frames: Fabricated from cold-rolled steel sheet.
 - 1. Fabricate frames with mitered or coped corners.
 - 2. Fabricate frames as knocked down.
 - 3. Fabricate knocked-down, drywall slip-on frames for in-place gypsum board partitions.
 - 4. Frames for Wood Doors: 0.053-inch- (1.3-mm-) minimum thick steel sheet.
- C. Hardware Reinforcement: ANSI/SDI A250.6.

2.4 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch (1.0 mm) thick.
 - 2. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
- B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch (1.0 mm) thick, and as follows:
 - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.5 ACCESSORIES

- A. Grout Guards: Formed from same material as frames, not less than 0.016 inch (0.4 mm) thick.

2.6 FABRICATION

- A. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 117.
- B. Hollow Metal Frames: Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 - 1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - 2. Sidelight 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.
 - 3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 4. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 - 5. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 - 6. 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) Four anchors per jamb from 60 to 90 inches high.
 - 2) Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.
 - b. Compression Type: Not less than two anchors in each jamb.
 - 7. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers.
 - a. Single-Door Frames: Three door silencers.
 - b. Double-Door Frames: Two door silencers per leaf.
- C. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware according to the Door Hardware Schedule.
 - 1. Locate hardware as indicated according to ANSI/SDI A250.8.
 - 2. Reinforce doors and frames to receive nontemplated, 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 with owner for locking system.
- D. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
 - 1. Single or Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
 - 2. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 - 3. Provide loose stops and moldings on inside of hollow metal work.

4. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

2.7 STEEL FINISHES

A. Factory-Applied Paint Finish: ANSI/SDI A250.3.

1. Color and Gloss: Match existing frames.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Hollow Metal Frames: Comply with ANSI/SDI A250.11.

1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-protection-rated openings, install frames according to NFPA 80.
 - b. Install frames with removable glazing stops located on secure side of opening.
 - c. Install door silencers in frames before grouting.
 - d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - e. Check plumbness, squareness, and twist of frames as walls are constructed. 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 postinstalled expansion anchors.
3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
4. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

3.2 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. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION 081213

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

- A. Manufacturer and Vendor: FSC certified for chain of custody.
- B. Wood doors shall comply with the following standards:
 - 1. Architectural Woodwork Institute (AWI) "Quality Standards and Guide Specifications".
 - 2. National Wood Window & Door Association Industry Standards (NWWDAIS) 1 Series.

1.2 DELIVERY AND STORAGE

- A. Protect doors during delivery against damage to edge and face veneer and warping. Store in a dry place and stack as directed by the manufacturer to prevent warpage.

1.3 DOOR CONSTRUCTION, GENERAL

- A. Quality Standard: Architectural Woodwork Standards.
 - 1. AWI Quality Certification Labels.
- B. Regional Materials: Doors manufactured within 500 miles from wood grown within 500 miles.
- C. Forest Certification: Doors certified as "FSC Pure."
- D. Low-Emitting Materials: Made with adhesives and composite wood products that do not contain urea formaldehyde.
- E. WDMA I.S.1-A Performance Grade:
 - 1. Heavy Duty unless otherwise indicated.

1.4 GUARANTEE

- A. Doors shall be guaranteed against defects or warping for a period of one year, in accordance with standard requirements of the National Woodwork Manufacturers Association.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Solid Core Wood Doors shall conform to NWWDAIS 1 and AWI Section 1300 PC-7.

1. Face and finish: To match existing interior doors.
2. Core: Particleboard with density of 28-32 lbs. per cubic foot, and complying with the requirements of Grade "1-L-1" Particleboard as described in the latest edition of ANSI S208.1 "Mat-Formed Wood Particleboard.
3. Adhesive: Type II, interior water-resistant.
4. Edge strips: 1-1/8" minimum top and bottom rails, 1-3/8" minimum vertical stiles, bonded to the core.
5. Ratings, where applicable: Refer to Door Schedule.

PART 3 - EXECUTION

3.1 WOOD DOORS

- A. Fit doors to frames, hang plumb and true to within allowable warpage tolerances. Provide clearance of 1/16" at sides and top. Lock edge shall have required bevel to clear frame.
- B. Where door must be planed more than 1/16" to fit the door frame, remove equal amounts from both stiles rather than all from one stile.
- C. Provide the minimum adequate clearance at the bottom for the specified finish floor covering and/or threshold.
- D. Slightly round all door edges with fine sandpaper to eliminate sharp corners.
- E. Seal doors on all four sides immediately after fitting as required by the type of finish they are to receive.

END OF SECTION 081416

SECTION 085113 - ALUMINUM WINDOWS

1.1 QUALITY ASSURANCE

- A. Mockups for windows at new Box Office.

1.2 WARRANTY

- A. Windows: 10 years from date of Substantial Completion.
- B. Glazing Units: 10 years from date of Substantial Completion.
- C. Aluminum Finish: 10 years from date of Substantial Completion.

1.3 WINDOW PERFORMANCE REQUIREMENTS

- A. Product Standard: AAMA/WDMA/CSA 101/I.S.2/A440.
 - 1. Minimum Performance Class: Forced-Entry Resistance, Class II per ASTM F 1233.
- B. Thermal Transmittance: 0.35 Btu/sq. ft. x h x deg F maximum.
- C. Solar Heat-Gain Coefficient: 0.30 maximum.
- D. Condensation-Resistance Factor: 52 complying with AAMA 1503.
- E. Sound Transmission Class: 30 minimum.
- F. Outside-Inside Transmission Class: 26 minimum.
- G. Windborne-Debris Resistance: Passing ASTM E 1886 and requirements of authorities having jurisdiction.

1.4 ALUMINUM WINDOWS

- A. Frames and Sashes: Thermally improved aluminum extrusions.
- B. Glazing:
 - 1. Glass: Clear, insulating, with low-E coating.
 - 2. Glazing System: Manufacturer's standard to meet Forced-entry Resistance, Class II.
- C. Aluminum Finish: Class II, clear anodic.

1.5 FIELD QUALITY CONTROL

- A. Testing: By Owner-engaged agency.

END OF SECTION 085113

SECTION 087100 - DOOR HARDWARE

- 1.1 SUMMARY – Coordinate with Owner for hardware and cylinders to match existing and/or Owner’s typical system.
 - A. Mechanical door hardware for swinging doors.
 - B. Cylinders for door hardware.
 - C. Door hardware furnished as part of Door Hardware Allowance.

- 1.2 WARRANTY
 - A. Materials and Workmanship: Three years.

- 1.3 MAINTENANCE SERVICE
 - A. Full-Maintenance Service: Six months.

- 1.4 PRODUCTS
 - A. Scheduled Door Hardware: Products scheduled in "Door Hardware Schedule" on Drawings.

- 1.5 FIELD QUALITY CONTROL
 - A. Independent Architectural Hardware Consultant: Owner-engaged to perform inspections.
 - B. Occupancy Adjustment: After three months.

END OF SECTION 087100

SECTION 088853 - SECURITY GLAZING

1.1 SUMMARY

- A. Security glazing for windows.

1.2 QUALITY ASSURANCE

- A. Mockups: Security glazing installed in mockups specified in Section 085113 "Aluminum Windows."

1.3 WARRANTY

- A. Insulating Security Glazing: Five years, minimum.

1.4 PERFORMANCE REQUIREMENTS

- A. Engineering design of security glazing by Contractor.

1.5 MATERIALS

- A. Silicone Glazing Sealants: Neutral curing, Class 100/50.
 - 1. Sealants: Low VOC emitting.
- B. Glazing Tapes: Back-bedding-mastic type.

1.6 INSULATING SECURITY GLAZING SCHEDULE

- A. Security Glazing Clear insulating security glazing. Outdoor lite is monolithic glass and indoor lite is glass-clad polycarbonate with spall-resistant film on inside face.
 - 1. Forced-Entry Resistance: Class II per ASTM F 1233.

END OF SECTION 088853

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes non-load-bearing steel framing members for the following applications:
 - 1. Interior framing systems (e.g., supports for partition walls, framed soffits, furring, etc.).
 - 2. Interior suspension systems (e.g., supports for ceilings, suspended soffits, etc.).

PART 2 - PRODUCTS

2.1 NON-LOAD-BEARING STEEL FRAMING, GENERAL

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.
 - 2. Protective Coating: ASTM A 653/A 653M, G40 (Z120), hot-dip galvanized, unless otherwise indicated.

2.2 SUSPENSION SYSTEM COMPONENTS

- A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch- (1.59-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.
- B. Hanger Attachments to Concrete:
 - 1. Powder-Actuated Fasteners: Suitable for application indicated, fabricated from corrosion-resistant materials with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 10 times that imposed by construction.
- C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.162-inch (4.12-mm) diameter.
- D. Furring Channels (Furring Members):
 - 1. Steel Studs: ASTM C 645.
 - a. Minimum Base-Metal Thickness: 0.0179 inch (0.45 mm).
 - b. Depth: As needed.
 - 2. Hat-Shaped, Rigid Furring Channels (if used): ASTM C 645, 7/8 inch (22.2 mm) deep.

- E. Grid Suspension System for Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.
 - 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. Armstrong World Industries, Inc.; Drywall Grid Systems.
 - b. USG Corporation; Drywall Suspension System.

2.3 STEEL FRAMING FOR FRAMED ASSEMBLIES

- A. Steel Studs and Runners: ASTM C 645.
 - 1. Minimum Base-Metal Thickness: 0.0179 inch (0.45 mm).
 - 2. Depth: To match wall framing or furring conditions.
- B. Slip-Type Head Joints: Where indicated, provide the following:
 - 1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch-deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
- C. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Fire Trak Corp.; Fire Trak.
 - b. Metal-Lite, Inc.; The System.
- D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
 - 1. Minimum Base-Metal Thickness: 0.0179 inch (0.45 mm).
- E. Cold-Rolled Channel Bridging: 0.0538-inch (1.37-mm) bare-steel thickness, with minimum 1/2-inch-wide flanges.
 - 1. Depth: Not less than 1-1/2 inches.
 - 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch- (1.73-mm-) thick, galvanized steel.
- F. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
 - 1. Depth: 7/8 inch (22.2 mm).

2.4 AUXILIARY MATERIALS

- A. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide one of the following:
 - 1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
 - 2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.
 - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

3.2 INSTALLING SUSPENSION SYSTEMS

- A. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- B. Suspend hangers from building structure as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
 - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
 - 3. Do not attach hangers to steel roof deck.
 - 4. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- C. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- D. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

- E. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet, measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3.3 INSTALLING FRAMED ASSEMBLIES

- A. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- B. Install studs so flanges within framing system point in same direction.
- C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb, unless otherwise indicated.
 - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 - 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 - 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
 - 6. Curved Partitions:
 - a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
 - b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of not less than 2 studs at ends of arcs, place studs 6 inches o.c.
- D. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

1.1 QUALITY ASSURANCE

A. Mockups for the following:

1. Levels of gypsum board finish for use in exposed locations.

1.2 MATERIALS

A. Low Emitting Materials.

B. Gypsum Board, General:

1. Minimum Recycled Content: Postconsumer plus one-half of preconsumer recycled content not less than 15 percent.
2. Manufactured within 500 miles of Project site.

C. Interior Gypsum Board:

1. Gypsum wallboard.
2. Gypsum board, Type X.
3. Moisture- and mold-resistant gypsum board.

D. Trim Accessories:

1. Interior.

E. Auxiliary materials:

1. Laminating Adhesive: Low VOC.
2. Acoustical Joint Sealant: Low VOC.

END OF SECTION 092900

SECTION 093013 - CERAMIC TILING

1.1 QUALITY ASSURANCE

- A. Mockup for floor tile installation.

1.2 TILE PRODUCTS

- A. Tile Type porcelain tile.
 - 1. Size: 6 by 6 inches.
 - 2. Description: General Contractor to provide allowance; coordinate with Owner.
 - 3. Trim Shapes: Base cove and coved internal and external corners.

1.3 ACCESSORY MATERIALS

- A. Thresholds: Granite.
- B. Tile Backing Panels: Fiber-cement underlayment.
- C. Waterproof Membrane: PVC sheet, Fabric-reinforced, modified-bituminous sheet, Fluid-applied membrane or Latex-portland cement.
- D. Crack Isolation Membrane: PVC sheet, Fabric-reinforced, modified-bituminous sheet, Fluid-applied membrane or Latex-portland cement.
- E. Installation Adhesives: Low VOC emitting.
- F. Metal edge strips.

1.4 INTERIOR TILE INSTALLATION SCHEDULE

- A. Interior Floors on Concrete:
 - 1. TCNA F113: Thinset mortar. Sand-portland cement grout.
 - 2. TCNA F114: Cement mortar bed with cleavage membrane, epoxy grout.
 - 3. TCNA F115: Thinset mortar, epoxy grout.
 - 4. TCNA F121: Cement mortar bed on waterproof membrane. Sand-portland cement grout.
 - 5. TCNA F122: Thinset mortar on waterproof membrane. High-performance grout.
 - 6. TCNA F131: Water-cleanable, tile-setting epoxy; epoxy grout.

END OF SECTION 093013

SECTION 096816 - SHEET CARPETING

1.1 QUALITY ASSURANCE

- A. Samples: For each material required.
 - 1. Carpet: 12-inch-square Sample.
 - 2. Exposed Edge, Transition, and other Accessory Stripping: 12-inch-long Samples.
 - 3. Carpet Cushion: 6-inch-square Sample.
- B. Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.
- C. Maintenance data.

1.2 WARRANTY

- A. Carpet: 10 years.
- B. Carpet Cushion: 10 years.

1.3 PRODUCTS

- A. Woven Carpet:
- B. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Shaw, commercial: Provide reasonable allowance.
 - 2. Color: Selected by Owner from Manufacturer's list within allowance.
 - 3. Applied Soil-Resistance Treatment: Manufacturer's standard material
 - 4. Performance Characteristics:
 - VOC Limits: Provide carpet that complies with the following limits for VOC content when tested according to ASTM D 5116:
 - a. Total VOCs: 0.5 mg/sq. m x h.
 - b. 4-PC (4-Phenylcyclohexene): 0.05 mg/sq. m x h.
 - c. Formaldehyde: 0.05 mg/sq. m x h.
 - d. Styrene: 0.4 mg/sq. m x h.
- C. Carpet Cushion:
 - 1. Products: Subject to compliance with requirements, provide an optimal product designed to work with the carpet product specified above.
 - 2. Traffic Classification: CCC Class I, moderate traffic.

3. Provide a Fiber, Rubber or Polyurethane-Foam Cushion capable of the traffic classification above.
4. Performance Characteristics: As follows (minimum):

VOC Limits: Provide carpet cushion that complies with the following limits for VOC content when tested according to ASTM D 5116:

- a. Total VOCs: 1.00 mg/sq. m x h.
- b. BHT (Butylated Hydroxytoluene): 0.30 mg/sq. m x h.
- c. 4-PC (4-Phenylcyclohexene): 0.05 mg/sq. m x h.
- d. Formaldehyde: 0.05 mg/sq. m x h.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI 104, Section 5, "Storage and Handling."

1.5 PROJECT CONDITIONS

- A. Comply with CRI 104, Section 7.2, "Site Conditions; Temperature and Humidity" and Section 7.12, "Ventilation."

1.6 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet cushion manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet and is recommended or provided by carpet and carpet cushion manufacturers.

1. VOC Limits: Provide adhesives that comply with the following limits for VOC content when tested according to ASTM D 5116:

- a. Total VOCs: 10.00 mg/sq. m x h.
- b. Formaldehyde: 0.05 mg/sq. m x h.
- c. 2-Ethyl-1-Hexanol: 3.00 mg/sq. m x h.

- C. Tackless Carpet Stripping: Water-resistant plywood, in strips as required to match cushion thickness and that comply with CRI 104, Section 12.2.
- D. Seam Adhesive: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for sealing and taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.

1.7 EXECUTION

- A. Comply with CRI 104 and carpet and carpet cushion manufacturers' written installation instructions for the following:

1. Direct-Glue-Down Installation: Comply with CRI 104, Section 9, "Direct Glue-Down Installation."
 2. Double-Glue-Down Installation: Comply with CRI 104, Section 10, "Double Glue-Down Installation."
 3. Carpet with Attached-Cushion Installation: Comply with CRI 104, Section 11, "Attached-Cushion Installations."
 4. Preapplied Adhesive Installation: Comply with CRI 104, Section 11.4, "Pre-Applied Adhesive Systems (Peel and Stick)."
 5. Hook-and-Loop Installation: Comply with CRI 104, Section 11.5, "Hook and Loop Technology."
 6. Stretch-in Installation: Comply with CRI 104, Section 12, "Stretch-in Installation."
- B. Comply with carpet manufacturer's written recommendations for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.
- C. Extend carpet into door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- D. Install pattern parallel to walls and borders.

END OF SECTION 096816

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 MANUFACTURER

- A. Acceptable Manufacturer: The Sherwin-Williams Co.
- B. Requests for acceptance of alternate manufacturers shall be made in writing 15 days prior to bid opening and shall include complete product data specified under Submittals, for each substitute product.

1.2 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each paint and coating product including the following information:
 - 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.

1.3 DELIVERY

- A. Deliver manufacturer's unopened containers to the work site.

1.4 STORAGE

- A. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with the requirements of local authorities having jurisdiction. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.

1.5 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not apply coating under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.1 MATERIALS

A. INTERIOR DRYWALL (Gypsum Board) Latex, semi-gloss finish

1. 1st coat: S-W PrepRite 200 Latex Primer, B28W200 (4 mils wet, 1.2 mils dry).
2. 2nd coat: S-W ProMar 200 Latex Semi-Gloss, B31 Series.
3. 3rd coat: S-W ProMar 200 Latex Semi-Gloss, B31 Series (4 mils wet, 1.3 mils dry/coat).

B. INTERIOR METAL (Steel, hollow-metal frames) Alkyd system, semi-gloss finish

1. 1st coat: S-W All Surface Enamel Oil Primer, A11W210 (4 mils wet, 2.4 mils dry).
2. 2nd coat: S-W ProClassic Interior Low VOC Interior Alkyd, B34 Series.
3. 3rd coat: S-W ProClassic Interior Low VOC Interior Alkyd, B34 Series (4 mils wet, 1.7 mils dry per coat).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not begin application of coatings until substrates have been properly prepared. Notify Architect of unsatisfactory conditions before proceeding. Proceed with work only after conditions have been corrected, and approved by all parties, otherwise application of coating will be considered as an acceptance of surface conditions by the Contractor.

3.2 SURFACE PREPARATION

- A. The surface shall be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint, or other contamination to ensure good adhesion.
- B. Remove mildew before painting by washing with a solution of 1 part liquid household bleach to 3 parts warm water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow the surface to dry 48 hours before painting.
- C. No exterior painting shall be done immediately after a rain, during foggy weather, when rain is predicted or when the temperature is below 50 degrees Fahrenheit, unless the specified product is design application in such conditions.

3.3 INSTALLATION

- A. Apply coatings using methods recommended by manufacturer.
- B. Uniformly apply coating without runs, drips or sags, without brush marks and with consistent sheen.

- C. Apply coatings at spreading rate required to achieve the manufacturer's recommended dry film thickness.
- D. Regardless of number of coats specified, apply as many coats as necessary for complete hide and uniform appearance.

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 099123

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

1.1 WARRANTY

- A. Silver Spoilage for Mirrors: 15 years.

1.2 PRODUCTS

- A. Public-Use Washroom Accessories (See A301 for Restroom Fixture Schedule):

1. Toilet Tissue Dispenser.
2. Combination Towel Dispenser/Waste Receptacle.
3. Liquid-soap dispenser.
4. Grab bars (36" and 42").
5. Mirror unit.

6. Shower curtain rod (to be included, but not listed in Restroom Fixture Schedule on drawing A301).
7. Shower curtain (to be included, but not listed in Restroom Fixture Schedule on A301).
8. Bench (Folding shower seat).
9. Soap dish (to be included, but not listed in Restroom Fixture Schedule on A301).
10. Robe hook.

- B. Underlavatory guards.

- C. Custodial Accessories:

1. Utility shelf.
2. Mop and broom holder.
3. Paper Towel Dispenser: Folded towels.

1.3 FABRICATION

- A. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of four keys to Owner's representative.

PART 2 - EXECUTION

2.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated on Sheet A300 (ADA reach limitations).

END OF SECTION 102800

SECTION 104413 - FIRE EXTINGUISHERS & CABINETS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Fire extinguishers.
 - 2. Fire extinguisher cabinets.

1.2 SUBMITTALS

- A. Submit manufacturer's brochure of materials and installation details.

1.3 MANUFACTURER

- A. Manufacturer of fire extinguishers and fire extinguisher cabinets is JL Industries, 4450 W. 78th St. Circle, Bloomington MN 55435. 616.835.6850. Similar products by other manufacturers, when approved by the Owner, shall be acceptable.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. FEC: Semi-recessed cabinet for installation in metal stud partition. Ambassador series, full-glass door with Saf-T-Lok and clear safety glass.
- B. FE: Fire extinguisher shall be model Cosmic 10E, 10-pound nominal capacity, UL rating 4A-60BC. Provide one per fire extinguisher cabinet, and elsewhere as required by code.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install items included in this section in locations indicated. Mounting height shall be 42" above finished floor to the center of the cabinet door handle. Prepare recesses in walls for the fire extinguisher cabinets as required by type and size of cabinet and style of trim, and comply with manufacturer's instructions. Securely fasten mounting brackets and fire extinguisher cabinets to structure, square and plumb. Check extinguishers for proper charge and operation. Remove and replace damaged, defective or under-charged units.

END OF SECTION 104413

SECTION 15010

MECHANICAL GENERAL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This division and the accompanying drawings cover furnishing of all labor, equipment, appliances and materials and performing all operations in connection with the installation of complete HVAC and Plumbing systems as specified herein and shown on the drawings.
- B. The general provisions of the contract including Division 1 and other divisions as appropriate, apply to work specified in this division.

1.02 CODES AND REGULATIONS

- A. All mechanical equipment and workmanship shall comply with current versions the following codes and standards as applicable.
 - 1. The Georgia State Standard Building Code.
 - 2. The Georgia State Standard Mechanical Code.
 - 3. The Georgia State Standard Plumbing Code.
 - 4. The Georgia State Standard Gas Code.
 - 5. The Georgia State Energy Code.
 - 6. National Electric Code.
 - 7. The National Fire Code (NFC).

B. Applicable Publications:

The publication listed below form a part of this specification to the extent referenced and are referred to in the text by the basic designation only.

- 1. Air Conditioning and Refrigeration Institute Standards (ARI).

8. American Air Balance Council (AABC).
 9. American National Standards Institute, Inc. Standards (ANSI).
 10. American Society for Testing and Materials Publications (ASTM).
 11. American Society of Mechanical Engineers Code (ASME).
 12. American Gas Associations (AGA).
 13. National Fire Protection Association Standard (NFPA).
 14. Sheet Metal and Air Conditioned Contractor's National Association, Inc. (SMACNA).
 15. Underwriters Laboratories, Inc. (UL).
 16. Factory Mutual Underwriters (FM). Factory Mutual Approval Guide.
- C. All work done under this Contract shall comply with all state and local codes having jurisdiction and with the requirements of the Utility Companies whose services may be used. All modifications required by these codes shall be made by the contractor without additional charges. Where code requirements are less than those shown on the plans or in the Specifications, the Plans and Specifications shall be followed. Where applicable, NFPA requirements shall be met.
- D. In the Case of any conflicts between contract documents, the stricter/more stringent shall govern.
- E. The Contractor shall obtain all permits, inspections, and approvals as required by all authorities having jurisdiction and deliver certificates of approval to the Engineer. All fees and costs of any nature whatsoever incidental to these permits, inspections and approvals must be assumed and paid by the Contractor.
- F. The Contractor shall comply with all applicable provisions of the William-Steiger Occupational Safety and Health Act (O.S.H.A).
- G. Workmanship and Materials
1. The workmanship and materials covered by these specifications shall conform to all ordinances and regulations of the city, county and/or other authorities having jurisdiction.
- H. Contractor shall visit the site and examine existing conditions before submitted bid. No

allowance will be made for lack of knowledge of existing conditions when such conditions can be determined by observation.

1.03 SUBMITTALS

- A. The Contractor shall submit for review by the Architect data of materials and equipment to be incorporated in the work. Submittals shall be supported by descriptive material, catalogs, cuts, diagrams, performance curves and charts published by the manufacturer to show conformance to specification and drawing requirements; model numbers alone will not be acceptable.
- B. Refer to the individual sections for identified equipment and materials for which submittals are required.
- C. Refer to Division 1 for required procedures.
- D. Substitutions: Refer to Division 1 for required procedures.
- E. Mechanical Equipment
 - 1. Prior to submitting data for equipment requiring electrical service, the Contractor shall verify that electrical characteristics of equipment submittals comply with electrical service provided for the specified items of equipment.
 - 2. Upon receipt of the Contractor of reviewed submittals for equipment provided under this Division, the Contractor shall coordinate the electrical service requirements, i.e., motor horsepower and full load amps, electrical service characteristics (voltage and phase), and number of services for each item of equipment requiring electrical connections with the electrical drawings and specifications.
- F. Items on or projecting through the ceilings, roof, or walls shall be coordinated with other trades.
- G. Layout drawings shall be submitted for the following systems:
 - 1. Ductwork.
 - 2. Mechanical equipment rooms.
 - 3. Plumbing piping.
 - 4. Refrigerant Piping

The layout drawings shall be prepared at a scale of not less than 1/4" = 1'-0", and drawings sheet size shall be 30" wide by 42" long. The drawing submittals by the Contractor shall consist of one reproducible sepia and three blue-line prints. The sepia shall be mylar, not less than 3 mils, single matte (on front), reverse reading, and the image shall be clear and distinct. The layout drawings shall include: (1) a plan and elevations of each mechanical equipment room showing proposed piping, foundations, dimension of openings in floors, roofs and walls, and equipment to establish that the equipment will fit the allotted spaces with clearances for installation and maintenance; (2) plans, coordinated with all disciplines, with elevations and/or sections, where necessary, of all piping and duct distribution systems showing proposed piping, ductwork, terminal units, all dampers and all air inlets and outlets. Operating weights for equipment over 400 lbs. shall be indicated on the layout drawings. The drawing shall show proposed details for attachment, anchoring, and hanging to structural framing of the building; vibration isolation; foundations and supports; location and size of sleeves and openings for passage of pipes and ducts. If departures from the contract drawings are deemed necessary by the Contractor, details of such departures, including changes in related portions of the project and the reasons therefore, shall be submitted with the drawings for review by the Designer. Allowed departures shall be made at no additional cost to the Owner.

1.04 OPERATION AND MAINTENANCE INSTRUCTIONS

- A. Refer to Division 1 for Detail Requirements.
- B. The Contractor shall provide five Operation and Maintenance Manuals. The manuals shall be compiled in hard back, three ring note books. O&M manuals shall have permanent labels on front and side. The following information shall appear in each manual:
 - 1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, complete nomenclature and commercial numbers of replacement parts for each piece of equipment.
 - 2. Manufacturer's printed operating procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shutdown and emergency instructions; and summer and winter operating instructions.
 - 3. Maintenance procedures for routine preventative maintenance and trouble shooting; disassembly, repair and reassembly; aligning and adjusting instructions.
 - 4. Servicing instructions and lubrication charts and schedules.

5. Complete “as built” control diagrams showing cooling, heating and fire emergency systems. Clearly label equipment and/or device number, manufacturer, model number and function.
 6. Complete “as built” sequence of operation describing cooling, heating and fire emergency modes. Clearly reference equipment valves, relays, interlocks sensors and control devices illustrated in control diagrams.
 7. Piping and valve tag diagrams for mechanical rooms.
- C. The HVAC O&M manual shall be customized for each specific project and act as an easy-to-follow stand-alone operation guide for the building operator.
- D. The Contractor shall turn O&M manuals over to the Engineer. The manuals shall be reviewed and approved prior to final pay application. The Program Manager shall turn over all five (5) O&M manuals over to the owner.

1.05 INSTRUCTIONS OF OWNER PERSONNEL

- A. Before final inspection, at a time designated by the Designer, provide a competent representative to instruct Owner’s designated personnel in operation, adjustment and maintenance of products, equipment and systems under this Division of the specifications. For equipment requiring seasonal operations, perform instructions for other seasons within six months unless requested otherwise.
- B. Prepare and insert additional data in O&M manual when needed, for such data that becomes apparent during instructions.
- C. The Contractor shall prepare and submit a comprehensive plan for the training of the Owner’s personnel on all equipment provided under this section of the specification. This plan shall include a list of the equipment, the dates that training shall be provided and the manufacturers who will be providing each portion of the training.

This plan shall be submitted to the Owner and approved, at least 30 days prior to the time that the training is scheduled to begin. All training sessions will be conducted by using the actual O&M manuals which are provided by the Contractor on this project.

- D. The following items shall be discussed for each piece of equipment:
1. Sequence of normal operation for cooling and/or heating modes
 2. Routine maintenance schedule

3. Location and operation of resets

- 17. Location and operation of overrides
- 18. Location of service valves
- 19. Areas served by equipment

1.06 RECORD DOCUMENTS

- A. Refer to Division 1 for record documents and related submittals.

1.07 CERTIFICATES

- A. The Contractor shall assemble and submit a single comprehensive listing of all installation certifications which are required to be provided to the Owner at the completion of the project.

1.08 RECORD DRAWINGS

- A. The Contractor shall maintain on a daily basis at the project site a complete set of "Record Drawings", reflecting an accurate dimensional record of all buried or concealed work. In addition, the "Record Drawings" shall be marked to show the precise location of concealed work and equipment, including concealed or embedded piping and valves and all changes and deviations in the Mechanical work from that shown on the Contract Documents. This requirement shall not be construed as authorization for the Contractor to make changes in the layout or work without definite instructions from the Architect.
- B. Record dimensions shall clearly and accurately delineate the work as installed; locations shall be suitably identified by at least two (2) dimensions to permanent structures.
- C. The Contractor shall mark all "Record Drawings" on the front lower right hand corner with a rubber stamp impression that states the following:
 - "RECORD DRAWINGS (3/8" high letters)
To be used for recording Field Deviations
and Dimensional Data Only".
(5/16" high letters)
- D. Payment requisition will not be approved if the drawings are not kept current.
- E. Prior to leaving the job site once the work is complete, the Contractor shall furnish to the Engineer a complete marked-up mylar sepia set of final record drawings.

PART 2 PRODUCTS

2.01 COORDINATION

- A. The products of particular manufacturers have been used as the basis of design in preparation of these documents. Any modifications to the mechanical systems and their components, the electrical systems, the building structures and architecture, or any other portion of the building that result from the use of any other than that basis of design equipment shall be coordinated with all other trades. Such coordination shall occur before delivery of products from the manufacturer (before shop drawing submittals) and shall be performed without any additional cost to the Contract.

2.02 DESCRIPTION

- A. All products shall be new and bear the Underwriter's Laboratories, Inc. (UL) label where applicable unless specifically indicated otherwise.
- B. Do not use any product or material containing asbestos.

PART 3 EXECUTION

3.01 GENERAL

- A. The plans do not give exact elevations or locations of lines, nor do they show all the offsets, control lines, or other installation details. The Contractor shall carefully lay out his work at the site to conform to the structural conditions, to provide proper grading of lines, to avoid all obstructions, to conform to details of installation supplied by the manufacturer of the equipment to be installed, and to thereby provide and integrated, coordinated and satisfactory operating installation. Do not scale drawings.
- B. If the contractor proposes to install equipment, including piping and ductwork, requiring space conditions other than those shown, or to rearrange the equipment, he shall assume full responsibility for the rearrangement of the space and connect arrangement at no additional cost to the Owner, and shall have the Engineer review the change before proceeding with the work. The request for such changes shall be accomplished by shop drawings of the space in question.
- C. The Contractor is responsible for the proper location and size of all slots, holes or openings in the building structure pertaining to his work, and for the correct location of sleeves, inserts, cores, etc.
- D. The Contractor shall so coordinate the work of the several various trades that it may be installed in the most direct and workmanlike manner without hindering or handicapping the other trades. Piping interferences shall be handled by giving precedence to pipe lines

which require a stated grade for proper operation. For example sewer lines and condensate piping shall take precedence over water lines in determination of elevations. In all cases, lines requiring a stated grade for their proper operation shall have precedence over electrical conduit and ductwork.

- E. All piping and ductwork in finished areas, except where noted to the contrary, shall be installed in chases, furred spaces, above ceilings, etc. In all cases, pipes and ducts shall be installed as high as possible. Runs of piping shall be grouped whenever it is feasible to do so.
- F. Piping shall be installed to pass inspections by local plumbing inspection department, state and federal authorities and insurance company having jurisdiction. Any changes or additions which may be necessary to obtain such inspections and approval shall be made by the Contractor as part of this Contract and without additional cost to the Owner.
- G. Piping, ductwork or equipment shall not be installed in electrical equipment rooms or elevator machine rooms except as serving only those rooms. Outside of electrical equipment rooms, do not run piping or ductwork or locate equipment, with respect to switchboards, panelboards, power panels, motor control centers, dry type transformers or fan-coil unit electrical panels.
 - 1. Within 42" in front (and rear if free standing) of equipment; or
 - 2. Within 36" of sides of equipment.
- H. Provide access to equipment and apparatus requiring operation, service or maintenance. Including, but not limited to, motors, valves, filters, dampers, shock absorbers, etc.

3.02 ELECTRICAL WORK

- A. All electrical equipment provided under this division shall comply with the electrical system characteristics indicated on the Electrical Drawings and specified in Division 16.
- B. Equipment unit motor speed controls, starters, system controls, pilot lights, push-buttons, etc., shall be furnished complete as a part of the motor apparatus which it operates. All components shall be in conformance with the requirements of the National Electrical Code and Division 16. All motor starters shall be provided with an H-O-A switch and control transformer. All starters and disconnect switches shall be furnished under Division 15. Coordinate installation with Electrical Contractor prior to his wiring of equipment.
- C. All power wiring and final power connections to the system shall be provided under Division 16.

- D. Control wiring (120V and less) shall be provided under Division 15 and extended from the starters, control transformers or 120V power circuits indicated on the Electrical Drawings. All wiring for voltages higher than 25 volts shall be done by a licensed electrician.
- E. All electrical characteristics shall be taken from the Electrical drawings and specifications and coordinated before equipment is ordered or submitted.

3.03 MOTORS

- A. Unless specifically noted otherwise in other sections of this specification, all motors and motor controls shall meet the requirements specified in this Section. All motors shall be built in accordance with the current applicable IEEE and NEMA standards and shall have voltage, phase, frequency and service as scheduled. All motors 1 HP and larger shall be high efficiency type.
- B. Each motor shall be suitable for the brake horsepower of the driven unit, rated with 1.15 minimum service factor, and shall be NEMA design B. The motor temperature rise shall not exceed 40 degrees C for drip proof motors, 50 degrees C for splash proof motors, and 55 degrees C for totally enclosed or explosion proof motors. The motor shall be capable of operating continuously at such temperature rises, and shall be capable of withstanding momentary overloads of 25 percent without injurious overheating.
- C. Each item of motor driven equipment shall be furnished complete with the motors, drives, and starters as required to perform the specific function for which it is intended, scheduled and specified.
- D. Motors shall be ball bearing type selected for quiet operation and shall be manufactured for general purpose duty unless otherwise indicated. Each bearing shall be accessible for lubrication and designed for the load imposed by the V-belt drive or the driven apparatus. Direct drive motors shall be designed for the specific application with all necessary thrust bearings, shaft capacities, etc.
- E. Motors larger than ½ horsepower shall have bearings with pressure grease lubrications fittings or shall be permanently sealed type.
- F. Motors connected to drive equipment by belt shall be furnished with adjustable slide rail bases except for fractional horsepower motors which shall have slotted bases. Motor leads shall be permanently identified and supplied with connectors.
- G. Each motor to be installed outdoors shall be of the totally-enclosed fan-cooled type, or housed in a weatherproof housing.

- H. Unless otherwise indicated, motors smaller than ½ horsepower shall be capacitor start or split phase type designed for 120 volt, single phase, 60 cycle alternating current. Shaded pole motors are not acceptable except 35 watts and smaller. Motor ½ horsepower and larger shall be squirrel cage induction type, 3 phase, 60 cycle alternating current.
- I. Multi-speed motors shall, except as noted, be consequent pole, variable torque, single winding. When the speed ratio or the load characteristic dictates, the multi-speed motors shall be separate winding types. Variable speed motors operating over an adjustable range of speeds shall be motors specifically designed and rated for this duty.
- J. If the Contractor proposed to furnish motors varying in horsepower and/or characteristics from those specified, he shall first inform the Engineer of the change and shall then coordinate the change and shall pay all additional charges in connection with the change.

3.04 PROTECTION OF EQUIPMENT

- A. Store equipment, including pipe and valves, off the ground and under cover. For storage outdoors minimum 4 mil thick plastic shall be fitted to withstand spattering, ground water, precipitation and wind.
- B. Plug ends of pipe when work has stopped and close ends of ducts with plastic taped in place until work resumes.
- C. Damaged equipment shall be repaired or replaced at the option of the Architect.

3.05 PAINTING

- A. Factory painted equipment that has been scratched or marred shall be repainted to match original factory color.
- B. All uninsulated black ferrous metal items exposed to sight inside the building, such as piping, equipment hangers and support not provided with factory prime coat, shall be cleaned and painted with one coat of zinc chromate primer. In addition, such items in finished spaces shall also be painted with two coats of finish paint in a color to match adjacent surfaces or as otherwise selected by the Architect.
- C. Black ferrous metal items exposed outside the building, such as uninsulated pipe and pipe supports not provided with factory prime coat, shall be cleaned and painted with one coat of rust inhibiting primer and two coats of an asphaltic base aluminum paint. Insulated pipes outside the building shall be cleaned and painted with one coat of rust inhibiting primer before installing insulation.
- D. All hanger rods shall be galvanized.

- E. No nameplates or equipment shall be painted, and suitable protection shall be afforded to the plates to prevent their being rendered illegible during the painting operation.

3.06 PROTECTION OF EXISTING UTILITIES

- A. The Contractor shall use extreme caution during excavation operations not to damage or otherwise interrupt the operations of existing utilities. The Contractor shall be responsible for the continuous operations of these lines and shall provide bypasses or install such shoring, bracing or underpinning as may be required for proper protection.
- B. Coordinate all activities around existing utility line with the appropriate utility.

3.07 CUTTING AND PATCHING

- A. The Contractor shall assume all cost of, and be responsible for, arranging for all cutting and patching required to complete the installation of his portion of the Work. All cutting shall be carefully and neatly done so as not to damage or cut away more than is necessary of any existing portions of the structure.
- B. All surfaces shall be patched to the condition of the adjacent surfaces.
- C. The Contractor shall make suitable provisions for adequately waterproofing at his floor penetrations of water proof membrane floors. This shall include but not be limited to floor drains, open sight drains, hub drains, cleanouts, and sleeves for the various piping. This also applies to membrane roofing systems.
- D. All penetrations and water proofing of penetrations in membrane roofing systems shall be coordinated with and performed by the manufacturer/installer

3.08 SLEEVES, FLOOR AND CEILING PLATES

- A. The Contractor shall install, as required, in concrete, carpentry or masonry construction, all necessary hangers, sleeves, expansion bolts, inserts and other fixtures and appurtenances necessary for the support of pipe, duct, equipment and devices furnished under each section of the Specification.
- B. Cutting of openings, and installation of sleeves or frames through walls and surfaces shall be done in a meat workmanlike manner. Openings shall be cut only as large as required for the installation; sleeves, except as otherwise indicated, and/or frames shall be installed flush with finished surfaces and grouted in place. Surfaces around openings shall be left smooth and finished to match surrounding surface.

- C. Where pipes pass through floor slabs, sleeves shall be standard weight black steel pipe with end of sleeve 1 1/2" above finished floor. Where pipes pass through walls, sleeves shall be standard black steel pipe or 20-gage galvanized sheet metal with ends flushed with wall surfaces.
- D. Each pipe or duct passing through walls, floors, ceiling or partitions shall be provided with sleeves having internal diameters one inch larger than the outside dimensions of insulated pipes or ducts.
- E. Contractor is responsible for coring of all floors and walls. Coordinate location of cores with existing structure. Do not core through existing beams or joists.
- F. All pipe sleeves through floors, roofs and masonry walls shall be built in place as the affected walls, floors and roofs are built.
- G. All penetrations through rated floors and walls shall be sealed with an UL approved fire stop system as manufactured by 3M, Dow, Proset or Hilti. Install complete firestop system in accordance with manufacturer's instructions.
- H. Sleeves through exterior wall shall be steel pipe, flush with the exterior surfaces, and with the space between the pipe and the sleeves caulked watertight in approved manner.
- I. Inserts shall be cast iron or galvanized steel individual type, with accommodations for removable nuts and threaded rods up to 3/4 inch diameter, and permitting lateral adjustment.
- J. At the Contractor's option, the Link-Seal systems as manufactured by Thunderline Corporation may be used to seal pipe to wall penetrations. Install systems in accordance with manufacturer's instructions

3.09 CLEANING AND ADJUSTING

- A. The Contractor shall provide and install all necessary temporary connections, strainers and other equipment to thoroughly clean the piping systems before start-up. The Contractor is responsible for disposing of all cleaning agents and removing all temporary connections and strainers after cleaning is complete.
- B. Piping shall be cleaned just prior to installation and/or start-up when possible. Flush new water piping systems until water runs clean. Mild chemical cleaning may be required. If so, flush all cleaning chemicals out of the piping system before recharging with water.
- C. Removed all stickers, rust, stains, labels and temporary covers before final acceptance.

- D. The exterior surfaces of all mechanical equipment, piping, etc., shall be cleaned of all grease, oil, paint, dust and other construction debris.
- E. Bearings that require lubrication shall be lubricated in accordance with the manufacturer's recommendations. Provide written certification of lubrication.
- F. Ducts, plenums and casings shall be cleaned of all debris and blown free of all particles of rubbish and dust before installing outlets.
- G. Temporary filters shall be provided for fans that are used during construction. At the time of starting the balancing of the air distribution system, new filters shall be installed.
- H. Equipment rooms shall be left broom clean.
- I. Ends of open pipes shall be covered during construction except when working directly on such end prohibits covering. Cover with minimum four (4) mil thick polyethylene taped, tied or wired in place.
- J. Clean and polish identification plates.

3.10 GUARANTEE

- A. All systems and components shall be provided with a one year guarantee from the time of final acceptance (Coordinate with the General Conditions). All compressors shall carry a five (5) year warranty. The guarantee shall cover all materials and workmanship. During this guarantee period, all defects in materials and workmanship shall be corrected by repair or replacement without incurring additions to the Contract.

3.11 FOUNDATIONS

- A. All concrete foundations required by equipment furnished under the Mechanical Division shall be reinforced and constructed in conformance with the recommendations of the manufacturer of the respective equipment actually applied, and with the approval of the Architect. All corners of the foundations shall be neatly chamfered. Foundation bolts shall be placed in the forms when the concrete is poured. Allow one inch (1") below the equipment bases for alignment, leveling and grouting with non-shrinking grout. Grouting shall be done after the equipment is leveled in place. After the grout has hardened, the foundation bolts shall be pulled up tight and the equipment shimmed, if necessary. After removal of the forms, the surface of the foundations shall be rubbed. Unless otherwise noted, foundations shall be four inches (4") high and shall extend 6" beyond edge of equipment. All concrete work performed shall conform entirely to the

requirements of the General Specifications which describe this class of work.

3.12 INSTALLATION

- A. All equipment shall be installed in strict conformance to code requirements and manufacturer's recommendations, as specified herein and as shown. If any conflict arises between these instructions, notify the Architect immediately for guidance.
- B. The Contractor shall notify the Owner's representative within five (5) working days of the date required to obtain an inspection of work which is to be concealed. The Contractor shall obtain from the Engineer written confirmation of inspection of all work to be concealed. If the Contractor fails in his duty to notify the Owner's Representative in a timely manner and work is concealed, he must uncover all concealed areas for inspection at no cost to the Owner.

3.13 ACCESS DOORS

- A. Furnish and install access doors at each point required to provide access to concealed valves, cleanouts, and other devices requiring operations, adjustment or maintenance. Access doors shall be 16 gauge steel, prime coat finish, with mounting straps, concealed hinges and screwdriver locks, designed for the doors to open 180 degrees.
- B. Access doors installed in fire walls or partitions shall be UL labeled to maintain the fire rating of the wall or partition.

3.14 FLAME SPREAD AND SMOKE DEVELOPED PROPERTIES OF MATERIALS

- A. Materials and adhesives used throughout the mechanical and electrical systems for insulation, and jackets or coverings of any kind, or for piping or conduit system components, shall have a flame spread rating not over 25 without evidence of continued combustion and with a smoke developed rating not higher than 50. If such materials are to be applied with adhesives, they shall be tested as applied with such adhesives, or the adhesives used shall have a flame spread rating not over 25 and a smoke developed rating not higher than 50.
- B. "Flame-Spread Rating" and "Smoke Developed Rating" shall be as determined by the "Method of Test of Surface Burning Characteristics of Building Materials", NFPA No. 255, ASTM E84, Underwriter's Laboratories, Inc., Standard". Such materials are listed in the Underwriters' Laboratories, Inc. "Building Materials List" under the heading "Hazard Classification (Fire)".

3.15 HAZARDOUS MATERIALS

- A. No products shall be used that contain any known hazardous or carcinogenic materials. Products with asbestos or radioactive content shall not be used.
- B. Handling of any hazardous material is not covered in this specification division (15). Any requirements for such are beyond the scope of this contract and shall be done only by those persons contracted to do so.

3.16 TESTING PIPING AND DUCT SYSTEMS

- A. General. Concealed piping and duct work and insulated piping and duct work shall be testing in place before concealing or covering. Test shall be conducted in the presence of the Architect or his designated representative. Piping and ductwork located underground shall be tested before backfilling. Equipment, materials and instruments for testing shall be furnished by the Contractor without additional cost to the Owner.

- B. Submittals

- 1. The proposed testing procedures, including test medium and pressure, line segments and equipment included in the test, methods of isolating the test from rest of the system, and pressure monitoring techniques, shall be approved by the Engineer prior to commencement of the test.
 - 2. A detail report of pressure tests on piping and equipment shall be forwarded in duplicate to the Engineer. This report shall show date of test, lines tested, test medium, length of time test pressure was held, pressure drop or rise.

- C. Preparatory Work

- 1. Remove from the system all pumps, traps, shock arresters, expansion joints, instruments, control valves, safety valves, rupture discs, filters, orifice plates, etc., which might be damaged by the test, or are designated by the Engineer. Also remove all items such as orifice plates which might trap air in a system to be hydrostatically tested. Disconnect all instrument supplies.
 - 2. Open but do not backseat all valves including bypass valves. Lines containing check valves shall have the source of test pressure on the upstream side.
 - 3. Clean system prior to testing. Provide vents and drains as required.
 - 4. Systems may be separated into sub-systems for testing if such action will expedite or simplify the testing.
 - 5. Provide temporary supports where required to prevent over-stressing supports. When tests and completed, remove temporary supports, locks, stops, etc, and set supports for their cold load.

- D. Sanitary, Waste and Vent System

- 1. The hydrostatic test shall be performed before installing fixtures. Water tests shall

be applied to each system either in its entirety or in sections. If the test is applied to the entire system, all openings in the piping shall be closed except the highest opening, and the system shall be filled with water and tested with at least a 10 ft. of the next preceding section shall be tested so that each joint or pipe in the building except the uppermost 10 ft. of the system has been submitted to a test of at least a 10 ft. head of water. The water shall be kept in the system, or in the portion under test for at least 2 hours before the inspection starts. The system shall be tight at all joints.

2. The pneumatic test shall be made by attaching an air compressor testing apparatus to one opening and, after closing all other inlets and outlets to the system, forcing air into the system until there is a uniform gage pressure of 5 pounds per square inch or sufficient to balance a column of mercury 10" in height. This pressure shall be held without introduction of additional air for a period of at least 15 minutes.

E. Domestic Water System

1. The hydrostatic test shall be made upon completion of the roughing-in and before setting fixtures. The entire domestic cold water and hot water, and hot water circulation piping system shall be tested at a hydrostatic pressure of 125 psig and proved tight at this pressure for a period of not less than 2 hours in order to permit inspection of all joints. Where a portion of water piping system is to be concealed before completion, this portion shall be tested separately in a manner described for the entire system. Caulking of joints will not be permitted.

F. Natural Gas Systems

1. All piping shall be tested pneumatically and proved tight at a pressure of 100 psi for a period of not less than 2 hours. No loss in pressure will be permitted. Leaks detected shall be repaired by tightening, rewelding joints or replacing pipe and fittings. Caulking of joints will not be permitted.

G. Air Distributing Systems

1. Ductwork classified and constructed as pressure class 3" W.G. and above shall be tested for leakage. Leakage test shall be as outlined in AABC National Standards for Total System Balance. Test pressure and allowable leakage rate shall be as indicated in the table below.

TABLE 1 - DUCT LEAKAGE

Pressure Class	Test Pressures	Maximum Leakage

Pressure Class	Test Pressures	Maximum Leakage
(3)"	3"	1.0%

2. Central plant ventilation system shall be tested in accordance with the current version Georgia State Standard Mechanical Code.

H. Air Conditioning Piping System

1. All HVAC piping shall be tested hydrostatically and proved tight at a pressure of not less than 1 1/2 times the operating pressure for a period of not less than 2 hours.
2. Refrigerant piping shall be test in accordance with the current version of the Georgia State Minimum Standard Mechanical Code.
3. No loss in pressure will be permitted. Leaks detected shall be repaired by tightening, rewelding joints or replacing pipe and fittings. Caulking of joints will not be permitted.

3.17 EXCAVATION, TRENCHING AND BACKFILLING

- A. General: The Contractor shall perform all excavation to install piping herein specified. During excavation, material for backfilling shall be piled back from the banks of the trench to avoid overloading and to prevent slides and cave-ins. All excavated materials not to be used for backfilling shall be removed and disposed of by the Contractor. Grading shall be done to prevent surface water from flowing into trenches and excavations, and any water accumulating therein shall be removed by pumping. All excavation shall be made by open cut. No tunneling shall be done. Trenches shall not be cut below a plane extending at 45 degree angle down and away from any footing.
- B. Trench Excavation: The bottom of the trenches shall be graded to provide uniform bearing and support for each section of the piping on undisturbed soil at every point along its ensure length, except for the portions of the pipe sections excavated for sealing of pipe joints. Depressions for joints shall be dug after the trench bottom has been graded. Overdepths shall be backfilled with loose, granular, moist earth, and tamped. Remove unstable soil that is not capable of supporting the pipe and replace with specified material for a minimum depth of 12" below invert of pipe.
- C. Backfilling: The trenches shall not be backfilled until all specified pressure tests and inspection are performed. The trenches shall be backfilled with the excavated materials approved for backfilling consisting of earth, load, sandy clay, sand and gravel or soft shale, free from large clods of earth and stones, deposited in 6" layers and tamped until the pipe has a cover of not less than the adjacent existing ground, but not greater than 2"

above existing ground. The backfilling shall be carried on simultaneously on both sides of the trench so that injurious side pressures do not occur. For all trenches, the compaction of the filled trench shall be at least equal to that of the surrounding undistributed material, except that trenches occurring in areas to be filled shall be backfilled in 6" maximum layers and each layer compacted to 95% maximum density. Setting the backfill with water will not be permitted. Reopen any trenches not meeting compaction requirements; or where settlement occurs, refill, compact and restore the surface to the grade and compaction specified above, mounded over and smoothed off.

- D. Sheeting and Shoring: Furnish, put in place and maintain sheeting and bracing required to support the sides of the excavation and prevent loss of ground which could damage or delay the work or endanger personnel or adjacent structures. All trenches shall be sloped in accordance with OSHA requirements.

END OF SECTION

SECTION 15020

FANS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fans.

1.02 SUBMITTALS

- A. General: All submittals shall comply with the requirements of Division 1 - General Requirements and Section 15010 - MECHANICAL GENERAL.
- B. Provide data on fan performance including, but not limited to, airflow and total static pressure, and fan motor horsepower.
- C. Provide shop drawing showing unit dimensions, weight, electrical requirements, service access requirements and duct connection sizes and locations
- D. Provide manufacturer's instructions, indicate installation and support requirements.
- E. Provide operation and maintenance data; include start-up instructions, assembly drawings and parts lists.

1.03 QUALITY ASSURANCE

- A. Performance Ratings: Conform to AMCA 211 and AMCA 311.
- B. Classification for Spark Resistant Construction: Conform to AMCA 99.
- C. Each fan shall be tested before shipping. Motors to be tested for amperage drawn.
- D. A certificate to be supplied with each fan as to quality control before shipping and compliance to specifications.
- E. References:
 - 1. AMCA 99 Standards Handbook.

2. AMCA 210 Laboratory Methods of Testing Fans for Rating Purposes.
3. AMCA 211 Certified Ratings Procedure - Air Performance.
4. AMCA 300 Test Code for Sound Ratings Programs for Air Moving Devices.
5. AMCA 311 Certified Sound Ratings Program for Air Moving Devices.
6. AFMBA Method of Evaluating Load Ratings of Bearings (ASA-B3.11).
7. AMCA 204 Balance Quality and Vibration Levels for Fans.
8. AMCA 500 Test Methods for Louvers, Dampers and Shutters.
9. ANSI Z9.5 American National Standard for Laboratory Ventilation.

PART 2 PRODUCTS

2.01 ROOF MOUNTED CENTRIFUGAL FANS

- A. Fan housing and wheel shall be spun aluminum, weatherproof construction with corrosion resistant fasteners. Housing shall have removable ½" square mesh aluminum discharge screen, integral flashing roof curb base and gravity -operated back-draft damper.
- B. Fan motor shall be open drip-proof type, unless other wise noted. Single phase motors shall have built-in thermal overload protection.
- C. Belt drive (when scheduled) shall have cast iron sheaves, with variable pitch motor sheave.
- D. Fan drive assembly shall be mounted on vibration isolators.
- E. Fans shall be equipped with bird screen, disconnect switch, and backdraft damper.
- F. Fans shall be Penn Ventilator "Domex", or equivalent fan by Acme, Greenheck, Carnes, Cook or Iig.

2.02 CEILING FANS

- A. Fans shall be U.L. listed ceiling type with centrifugal direct drive fan wheel, lined steel housing, thermal overload protected motor, ceiling grille, backdraft damper, and roof cap.

- B. Fan static level shall not exceed 4.0 at selection point.
- C. Fans shall be modified for in-line use where shown on fan schedule drawing.
- D. Fan shall be Penn Zephyr, Acme Masterette model V100 or Greenheck Model SP.

2.03 CABINET FAN

- A. Horizontal centrifuge type with lined housing, forward curved fan, belt drive, accessible housing, throwaway filters and housing, and rubber isolators.
- B. Motor shall be open drip-proof type with thermal overload protection.
- C. Motor and drive shall be isolated from the housing.
- D. Fan shall be furnished with wired disconnect switch.
- E. Motor shall be provided with thermal overload protection.
- F. Fan shall be Greenheck, Penn, or Acme

2.04 CENTRIFUGAL IN-LINE FANS

- A. Duct mounted supply, exhaust or return fans shall be of the centrifugal belt driven in-line type. The fan housing shall be of the square design constructed of heavy gauge galvanized steel and shall include square duct mounting collars. Fan construction shall include two removable access panels located perpendicular to the motor mounting panel. The access panels must be of sufficient size to permit easy access to all interior components.
- B. The fan wheel shall be centrifugal backward inclined, constructed of aluminum and shall include a wheel cone carefully matched to the inlet cone for precise running tolerances. Wheels shall be statically and dynamically balanced.
- C. Motors shall be heavy duty ball bearing type, carefully matched to the fan load and furnished at the specified voltage, phase and enclosure. Motors and drives shall be mounted out of the airstream. Motors shall be readily accessible for maintenance.
- D. Precision ground and polished fan shafts shall be mounted in permanently sealed, lubricated pillow block ball bearings. Bearings shall be selected for a minimum (L50) life in excess of 200,000 hours at maximum cataloged operating speed.
- E. Drives shall be sized for a minimum of 150% of driven horsepower. Pulleys shall be of

the fully machined cast iron type, keyed and securely attached to the wheel and motor shafts. Motor pulleys shall be adjustable for final system balancing.

- F. A NEMA 1 disconnect switch shall be provided as standard. Factory wiring shall be provided from motor to the handy box.
- G. All fans shall bear the AMCA Certified Ratings Seal for both sound and air performance. Each fan shall bear a permanently affixed manufacturer's nameplate containing the model number and individual serial number for future identification.
- H. Provide optional backdraft dampers and motor fan guard.
- I. Fans shall be Model BSQ as manufactured by Greenheck Fan Corporation or equivalent by Penn or Acme.

PART 3 EXECUTION

- A. Support cabinet fans and in line fans from the structure with threaded rods and isolators.
- B. See drawings for fan scheduled capacities and requirements.

END OF SECTION

SECTION 15030

TESTING, BALANCING, AND ADJUSTING

PART 1 GENERAL

1.01 DESCRIPTION

- A. This section specifies the requirements for testing and balancing the Heating, Ventilating, and Air Conditioning Systems.

1.02 SUBMITTALS

- A. General: All submittals shall comply with the requirements of Division 1 - General Requirement and Section 15010 - MECHANICAL GENERAL

1.03 QUALIFICATIONS

- A. The test and balance work shall be performed by an independent firm certified by the Associated Air Balance Council (AABC), or National Environmental Balancing Bureau (NEBB).

1.04 PROCEDURES

- A. All air distribution systems and hydronic systems shall be tested, adjusted, and balanced to the conditions specified and/or shown on the drawings.
- B. Performance of systems and components at specified conditions shall be verified by testing.
- C. Before request for final inspection, calibrate, adjust, set, test and check all valves, dampers, temperatures, pressures, and flow rates of systems for operation and performance.
- D. All test and balance work shall be performed in accordance with AABC or NEBB procedures.

1.05 REPORTS

- A. Submit completed and certified report to Architect in triplicate.

PART 2 PRODUCTS

- A. Provide all instruments, charts, materials, and equipment required to develop a complete test and balance report.

PART EXECUTION

3.01 GENERAL

- B. Test and balance report shall be a complete document, not limited to, but including at least the following:
 - 1 Air side of systems:
 - a. Coil entering and leaving temperatures.
 - b. All air unit component pressure drops.
 - c. Fan RPM and entering and leaving static pressure.
 - d. Air flow readings for all diffuser outlets and exhaust grilles.
 - e. Air flow and pressure drops for all terminals. Where heating coils are included, data shall be same as under Coils and Heat Exchangers.
 - f. Space temperatures at thermostats.
 - g. Outlet temperatures of selected diffusers.
 - 2 Coils, Pumps and Heat Exchangers:
 - a. Entering medium temperature, flow rate, and pressure.
 - b. Leaving medium temperature, flow rate, and pressure.
 - 3 Pumps:
 - a. Flow rates
 - b. Entering and leaving pressures.
 - c. Verify alignment.

- d. Pump Speed.
- 4 Electric Motors:
- a. Full load amperes, voltage, and horsepower.
 - b. Installed starter heater size.
- 5 Controls:
- a. Operational setting of controllers and instruments.
 - b. Positioning and function of valves and dampers.
 - c. Interlock and operation of system functions.
 - d. Thermostat differential setting.
- 6 Refrigeration System:
- a. Compressor safety and operating controls.
 - b. Capacity reduction and low ambient controls.
 - c. Expansion valve superheat.
 - d. Operating pressure at each controller position.
 - e. Compressor full load amperage in each phase and voltage.
 - f. Condenser fan amperage and voltage, if applicable.
- 7 Fire Dampers:
- a. At selected dampers, blades will be dropped to prove close-off without binding.
- 8 Smoke and Fire/Smoke Dampers:
- a. Provide operation of all dampers on activation of smoke detectors or fire alarm signal.

3.02 BALANCING AND ADJUSTMENT AFTER FINAL INSPECTION

- 1 After building is accepted and occupied, and after testing and preliminary balancing are completed, send qualified personnel to building for not less than one period during summer and one period during winter, observe temperatures throughout conditioned spaces, consult with Owner's representative as to need for additional balancing or adjustment, then perform such work as is indicated.
- 2 Schedule these visits, at a time agreeable to Owner, during December through February for heating, and July through August for cooling.

END OF SECTION

SECTION 15031

HVAC GENERAL PROVISIONS

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 this Section.

1.2 SUMMARY

B. Furnish all materials, labor, tools, transportation, incidentals and appurtenances to complete in every detail and leave in working order all items of work called for herein or shown on the drawings. Include any minor items of work necessary to provide a complete and fully operative HVAC system.

1.03 GENERAL REQUIREMENTS

- A. Contractor must read the entire Specifications covering other branches of work. He is responsible for coordination of his work with work performed by other trades.
- B. Consult all contract drawings which may affect the location of any equipment or apparatus furnished under this work and make minor adjustments in location as necessary to secure coordination.
- C. The layout shown on the drawings is based on a particular make of equipment. If another make of equipment is used which requires modification or changes of any description from the drawings or Specifications, Contractor shall be responsible as part of this work, for making all such modifications and changes, including those involving other trades with the cost thereof included in his bid. In such case, Contractor shall submit drawings and Specifications prior to starting work showing all such modifications and changes. His proposal shall be subject to the approval of the Architect or Engineer.
- D. System layout is schematic and exact locations shall be determined by structural and other conditions. This shall not be construed to mean that the design of the system may be arbitrarily changed. The equipment layout is to fit into the building as constructed and to coordinate with equipment included under other Divisions of work.

- E. This contractor is to contact the Architect or Engineer immediately if he notices any discrepancies or omissions in either drawings or the Specifications, or if there are any questions regarding the meaning or intent thereof.
- F. Submit all changes, other than minor adjustments, to the Architect or Engineer for approval before proceeding with the work.
- G. This Contractor is required to visit the site and fully inform himself concerning all conditions affecting the scope of work. Failure to visit the site shall not relieve the Contractor from any responsibility in the performance of his work.
- H. The work under this contract shall be coordinated with the work of other trades to prevent conflict or interference and to aid rapid completion of the overall project.

1.04 SUBMITTALS:

A. Shop Drawings:

1. Submit for review, six (6) copies of shop drawings, wiring diagrams, or other data.
2. Shop drawings shall be submitted per Contract Documents. Cuts or catalogs including descriptive literature and characteristics of equipment shall show major dimensions, roughing-in data, capacity, curves, pressure drop, code compliance, motor and drive data and electrical data. Observe special instructions when required.
3. Shop Drawings will NOT be reviewed by the Architect/Engineer unless they are clearly stamped by the Contractor. Prior to submitting shop drawings, check for dimensional correctness, interferences and conformance to specifications and plans. Stamp drawings "approved" and indicate when stipulated check has been made, before forwarding them. Identify submittal data by project name and equipment identification number.
4. Architect/Engineer's review of shop drawings or schedules shall not relieve the Contractor from responsibility for errors, omissions or other deficiencies or deviations in the shop drawings from the Contract drawings or Specifications.
5. Mark all Shop Drawings with project specific information.

B. SUBMIT SHOP DRAWINGS ON THE FOLLOWING:

1. HVAC units as scheduled on the plans.
2. Air Devices (supply and return)

3. Fire Dampers.
 4. Exhaust Fans.
 5. Thermostats.
 6. Controls when central systems are specified
 7. All specified and scheduled items.
- B. RECORD DRAWINGS: - Record any changes in location of concealed piping, valves and underground services on a set of prints and deliver them upon the completion of the work.
- D. OPERATING AND MAINTENANCE INSTRUCTIONS - Instruct the Owner's representatives in all matters pertaining to the proper operating and maintenance of equipment which he furnished under this Contract.

1.05 Quality Assurance

- A. All workmanship to be of the highest quality in accordance with the best practices of the trade by craftsmen skilled in this particular work.
- B. Contractor to have a competent superintendent in charge of the work installed under this Contract. Superintendent to be experienced in this type of work.

1.06 PERMITS INSPECTIONS AND CODES

- A. This Contractor shall file all drawings, pay all fees and obtain permits and certificates of inspection relative to this work.
- B. Completed installation shall conform with all applicable Federal, State, and Local Laws, Codes and Ordinances, including but not limited to the latest approved edition of the following:
 1. Current State Building Code as Specified by Authority Having Jurisdiction or Permitting Agency.
 2. Specific Construction Safety Requirements, State Industrial Commission.
 3. State Pressure Piping System Rules.
 4. A.S.M.E. Pressure Piping Code.
 5. Standards for Welding Requirements, State Industrial Commission.
 6. Life Safety Code, NFPA-101.

7. Air Conditioning and Ventilating, NFPA-90A.
 8. Occupational Safety and Health Act (OSHA) and all amendments thereto.
- C. Nothing contained in the drawings and Specifications shall be construed to conflict with these laws, codes and ordinances and they are hereby included in these Specifications.
- D. Contractor to arrange for and include in his bid, inspection of this work by the authority having jurisdiction.

1.07 ELECTRICAL MOTORS

- A. Furnish, install and align all motors required for this equipment. Unless they are factory installed on the unit, M.C. shall provide lead-lag, hand-auto-off controllers for installation by the E.C. all starters and associated wiring and safety switches for such motors shall be furnished by the Electrical Contractor. Starters see the Electrical Division of the specifications.
- B. Design, construction and performance characteristics of motors shall conform to all applicable provisions of latest NEMA, ANSI, IEEE Standards for electrical equipment. All motors shall be suitable for operation on voltage variation of plus or minus 10%, 40 degree C ambient temperature; have a service factor of not less than 1.15.
- C. This Contractor shall furnish the Electrical Contractor with all wiring diagrams necessary to connect and control plumbing equipment.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Furnish new and undeteriorated materials and of a quality not less than what is specified.
- B. Contractor to furnish and install only those brands of equipment mentioned specifically or accepted as substitutes.

2.02 EQUIPMENT SELECTION AND APPROVAL

- A. The selection of materials and equipment to be furnished shall be governed by the following:
1. Where trade names, brands or manufacturer of equipment or materials are listed

in the Specification, the exact equipment listed shall be used in the bid. Where more than one name is listed, Contractor may select any one of the several brands specified.

2. This contractor shall comply with Division 1 and Section 01631 "Substitutions" for any additional manufactures or products.

PART 3 EXECUTION

3.01 EXAMINATION:

- A. Examine conditions for installation and determine if any unsatisfactory conditions exist which will affect the performance or installation of the work included under this section. Do not proceed with the installation until unsatisfactory conditions have been corrected.

3.02 PROTECTION AND CLEANING

- A. Protect all equipment against damage from leaks or abuse and pay the cost of repair or replacement of ductwork, piping or equipment made necessary by failure to provide suitable safeguards or protection.
- B. Repair all dents and scratches in factory prime or finish coats on all equipment. If damage is excessive, replacement may be required. Thoroughly clean, remove stickers and other foreign matter.
- C. After all piping and equipment has been inspected and approved, thoroughly clean all equipment, bare piping and insulation provided under this work.

3.03 CUTTING AND PATCHING

- A. Comply with Division 1 Section 01045 "Cutting and Patching".
- B. Plan work ahead and place sleeves in walls, floors and ceiling and anticipate during initial stages of construction such openings as will be required to accommodate equipment and piping. Coordinate work closely with the General Contractor.
- C. Give the General Contractor locations and sizes of all openings required for the installation of equipment before construction and walls are started. If it becomes necessary to cut into new work because of the failure of this Contractor to notify the General Contractor then the General Contractor shall do any necessary cutting and patching at this Contractor's expense.
- D. Patching must match existing surfaces in kind and finish and shall be done by the General Contractor at this Contractor's expense.

3.04 FOUNDATIONS AND SUPPORTS

- A. Coordinate the installation of all additional foundations, curbs, and bases for HVAC equipment as required by the manufacturer with the General Contractor. Concrete work to be performed by the General Contractor.
- B. Install welded steel frames for equipment and auxiliary steel supports for piping and ductwork. Use black steel supports for piping. Use black steel or channel iron, all coated with primer and finish coat; weatherproof with coating of bitumastic where supports are exposed to elements.
- C. All frames and supports for equipment, piping, and accessories shall be constructed to be adequate for its application to minimize vibration and provide proper anchoring as required.

3.05 IDENTIFICATION

- A. Identification control panels, surface mounted controls and gauges. This applies to Temperature Control material also. Identification shall be in the form of laminated plastic nameplates, black face, with the letters engraved into the white background, minimum 1/4" high. Plates shall be secured to each piece of equipment with screws. No "Dymo" or similar tape type labels will be allowed.
- B. Valves
 - 1. Use non-ferrous metal tags approximately 1" in diameter secured by means of copper loop hooks or multistrand non-ferrous flexible wire.
 - 2. Valves immediately adjacent to equipment, the sole purpose for which is to isolate that equipment from the mains (such as equipment shut-off valves) need not be tagged.

3.06 PAINTING

- A. Metal work installed under this Contract which remains unfinished to be given one coat of steel gray paint, as described below.
- B. Painting work to include steel supports, rods, hangers, bolts, nuts, base steel which has not been factory coated or which has suffered from exposure, bare pipe and fittings, (except brass valves and finished parts) and incidental metal items.

END OF SECTION

SECTION 15060

HANGERS AND SUPPORTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following hangers and supports for mechanical system piping and equipment:

1. Steel pipe hangers and supports.
2. Trapeze pipe hangers.
3. Metal framing systems.
4. Thermal-hanger shield inserts.
5. Fastener systems.
6. Pipe stands.
7. Pipe positioning systems.
8. Equipment supports.

- B. Related Sections include the following:

1. Division 5 Section "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
2. Division 13 Section "Fire-Suppression Piping" for pipe hangers for fire-protection piping.
3. Division 15 Section "Mechanical Vibration and Seismic Controls" for vibration isolation devices.

4. Division 15 Section "Pipe Expansion Fittings and Loops" for pipe guides and anchors.
5. Division 15 Section(s) "Metal Ducts " for duct hangers and supports.

1.03 DEFINITIONS

- A. MSS: Manufacturers Standardization Society for The Valve and Fittings Industry Inc.
- B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

PART 2 PRODUCTS

2.01 STEEL PIPE HANGERS AND SUPPORTS

- A. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.
- B. Galvanized, Metallic Coatings: Pregalvanized or hot dipped.
- C. Nonmetallic Coatings: Plastic coating, jacket, or liner.
- D. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion for support of bearing surface of piping.

2.02 TRAPEZE PIPE HANGERS

- A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural-steel shapes with MSS SP-58 hanger rods, nuts, saddles, and U-bolts.

2.03 METAL FRAMING SYSTEMS

- A. Description: MFMA-3, shop- or field-fabricated pipe-support assembly made of steel channels and other components.
- B. Coatings: Manufacturer's standard finish, unless bare metal surfaces are indicated.
- C. Nonmetallic Coatings: Plastic coating, jacket, or liner.

2.04 THERMAL-HANGER SHIELD INSERTS

- A. Description: 100-psig- (690-kPa-) minimum, compressive-strength insulation insert encased in sheet metal shield.
- B. Insulation-Insert Material for Cold Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate with vapor barrier.
- C. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate.
- D. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.
- E. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.
- F. Insert Length: Extend 2 inches (50 mm) beyond sheet metal shield for piping operating below ambient air temperature.

2.05 PIPE STAND FABRICATION

- A. Pipe Stands, General: Shop or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.
- B. Low-Type, Single-Pipe Stand: One-piece stainless steel base unit with plastic roller, for roof installation without membrane penetration.
- C. High-Type, Single-Pipe Stand: Assembly of base, vertical and horizontal members, and pipe support, for roof installation without membrane penetration.
 - 1. Base: Stainless steel.
 - 2. Vertical Members: Two or more cadmium-plated-steel or stainless-steel, continuous-thread rods.
 - 3. Horizontal Member: Cadmium-plated-steel or stainless-steel rod with plastic or stainless-steel, roller-type pipe support.
- D. Curb-Mounting-Type Pipe Stands: Shop- or field-fabricated pipe support made from structural-steel shape, continuous-thread rods, and rollers for mounting on permanent stationary roof curb.

2.06 PIPE POSITIONING SYSTEMS

- A. Description: IAPMO PS 42, system of metal brackets, clips, and straps for positioning piping in pipe spaces for plumbing fixtures for commercial applications.

2.07 EQUIPMENT SUPPORTS

- A. Description: Welded, shop- or field-fabricated equipment support made from structural-steel shapes.

2.08 MISCELLANEOUS MATERIALS

- A. Structural Steel: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
 - 1. Properties: Nonstaining, noncorrosive, and nongaseous.
 - 2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

2.09 REFRIGERANT PIPE

- A. Refrigerant pipe shall be installed using Unistrut Cush-A-Clamp or approved equal .

PART 3 EXECUTION

3.01 HANGER AND SUPPORT APPLICATIONS

- A. Specific hanger and support requirements are specified in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish.
- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

- E. Use padded hangers for piping that is subject to scratching.
- F. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30 (DN 15 to DN 750).
 2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of 120 to 450 deg F (49 to 232 deg C) pipes, NPS 4 to NPS 16 (DN 100 to DN 400), requiring up to 4 inches (100 mm) of insulation.
 3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes, NPS 3/4 to NPS 24 (DN 20 to DN 600), requiring clamp flexibility and up to 4 inches (100 mm) of insulation.
 4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes, NPS 1/2 to NPS 24 (DN 15 to DN 600), if little or no insulation is required.
 5. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS 1/2 to NPS 4 (DN 15 to DN 100), to allow off-center closure for hanger installation before pipe erection.
 6. Adjustable Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated stationary pipes, NPS 3/4 to NPS 8 (DN 20 to DN 200).
 7. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8 (DN 15 to DN 200).
 8. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8 (DN 15 to DN 200).
 9. Adjustable Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 2 (DN 15 to DN 50).
 10. Split Pipe-Ring with or without Turnbuckle-Adjustment Hangers (MSS Type 11): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 8 (DN 10 to DN 200).

11. Extension Hinged or 2-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 3 (DN 10 to DN 80).
12. U-Bolts (MSS Type 24): For support of heavy pipes, NPS 1/2 to NPS 30 (DN 15 to DN 750).
13. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
14. Pipe Saddle Supports (MSS Type 36): For support of pipes, NPS 4 to NPS 36 (DN 100 to DN 900), with steel pipe base stanchion support and cast-iron floor flange.
15. Pipe Stanchion Saddles (MSS Type 37): For support of pipes, NPS 4 to NPS 36 (DN 100 to DN 900), with steel pipe base stanchion support and cast-iron floor flange and with U-bolt to retain pipe.
16. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes, NPS 2-1/2 to NPS 36 (DN 65 to DN 900), if vertical adjustment is required, with steel pipe base stanchion support and cast-iron floor flange.
17. Single Pipe Rolls (MSS Type 41): For suspension of pipes, NPS 1 to NPS 30 (DN 25 to DN 750), from 2 rods if longitudinal movement caused by expansion and contraction might occur.
18. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes, NPS 2-1/2 to NPS 20 (DN 65 to DN 500), from single rod if horizontal movement caused by expansion and contraction might occur.
19. Complete Pipe Rolls (MSS Type 44): For support of pipes, NPS 2 to NPS 42 (DN 50 to DN 1050), if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
20. Pipe Roll and Plate Units (MSS Type 45): For support of pipes, NPS 2 to NPS 24 (DN 50 to DN 600), if small horizontal movement caused by expansion and contraction might occur and vertical adjustment is not necessary.

21. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes, NPS 2 to NPS 30 (DN 50 to DN 750), if vertical and lateral adjustment during installation might be required in addition to expansion and contraction.
- G. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 20 (DN 20 to DN 500).
 2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers, NPS 3/4 to NPS 20 (DN 20 to DN 500), if longer ends are required for riser clamps.
- H. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches (150 mm) for heavy loads.
 2. Steel Clevises (MSS Type 14): For 120 to 450 deg F (49 to 232 deg C) piping installations.
 3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
 4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
 5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F (49 to 232 deg C) piping installations.
- I. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joint construction to attach to top flange of structural shape.

3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
6. C-Clamps (MSS Type 23): For structural shapes.
7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
11. Malleable Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
12. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:
 - a. Light (MSS Type 31): 750 lb (340 kg).
 - b. Medium (MSS Type 32): 1500 lb (680 kg).
 - c. Heavy (MSS Type 33): 3000 lb (1360 kg).
13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.

15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.
- J. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
 2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
 3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.
- K. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
 2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches (32 mm).
 3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41 roll hanger with springs.
 4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
 5. Variable-Spring Hangers (MSS Type 51): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from hanger.
 6. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from base support.

7. Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from trapeze support.
8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:
 - a. Horizontal (MSS Type 54): Mounted horizontally.
 - b. Vertical (MSS Type 55): Mounted vertically.
 - c. Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.
- L. Comply with MSS SP-69 for trapeze pipe hanger selections and applications that are not specified in piping system Sections.
- M. Comply with MFMA-102 for metal framing system selections and applications that are not specified in piping system Sections.
- N. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

3.02 HANGER AND SUPPORT INSTALLATION

- A. Steel Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.
- B. Trapeze Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated trapeze pipe hangers.
 1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
 2. Field fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported. Weld steel according to AWS D1.1.
- C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled metal framing systems.

- D. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- E. Pipe Stand Installation:
1. Pipe Stand Types except Curb-Mounting Type: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.
 2. Curb-Mounting-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb. Refer to Division 7 Section "Roof Accessories" for curbs.
- F. Pipe Positioning System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture. Refer to Division 15 Section "Plumbing Fixtures" for plumbing fixtures.
- G. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.
- H. Equipment Support Installation: Fabricate from welded-structural-steel shapes.
- I. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- J. Install lateral bracing with pipe hangers and supports to prevent swaying.
- K. Load Distribution: Install hangers and supports so piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- L. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.1 (for power piping) and ASME B31.9 (for building services piping) are not exceeded.
- M. Insulated Piping: Comply with the following:
1. Attach clamps and spacers to piping.
 - a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
 - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
 - c. Do not exceed pipe stress limits according to ASME B31.1 for power piping and ASME B31.9 for building services piping.

2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN 100) and larger if pipe is installed on rollers.
3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN 100) and larger if pipe is installed on rollers.
4. Shield Dimensions for Pipe: Not less than the following:
 - a. NPS 1/4 to NPS 3-1/2 (DN 8 to DN 90): 12 inches (305 mm) long and 0.048 inch (1.22 mm) thick.
 - b. NPS 4 (DN 100): 12 inches (305 mm) long and 0.06 inch (1.52 mm) thick.
 - c. NPS 5 and NPS 6 (DN 125 and DN 150): 18 inches (457 mm) long and 0.06 inch (1.52 mm) thick.
 - d. NPS 8 to NPS 14 (DN 200 to DN 350): 24 inches (610 mm) long and 0.075 inch (1.91 mm) thick.
 - e. NPS 16 to NPS 24 (DN 400 to DN 600): 24 inches (610 mm) long and 0.105 inch (2.67 mm) thick.
5. Pipes NPS 8 (DN 200) and Larger: Include wood inserts.
6. Insert Material: Length at least as long as protective shield.
7. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.03 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make smooth bearing surface.

- C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.04 METAL FABRICATIONS

- A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

3.05 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches (40 mm).

END OF SECTION

SECTION 15070

MECHANICAL VIBRATION AND SEISMIC CONTROLS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Elastomeric isolation **pads and mounts**.
 - 2. Restrained elastomeric isolation mounts.

1.03 SUBMITTALS

- A. Shop Drawings: Include the following:
 - 1. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails, base weights, equipment static loads, power transmission, component misalignment, and cantilever loads.

PART 2 PRODUCTS

2.01 VIBRATION ISOLATORS

- A. Available Manufacturers:
- B. Manufacturers:
 - 1. Ace Mounting Co., Inc.
 - 2. Amber/Booth Company, Inc.
 - 3. B-Line Systems, Inc.
 - 4. California Dynamics Corp.

5. Isolation Technology, Inc.
 6. Kinetics Noise Control, Inc.
 7. Mason Industries, Inc.
 8. Vibration Eliminator Co., Inc.
 9. Vibration Isolation Co., Inc.
 10. Vibration Mountings & Controls/Korfund.
- C. Elastomeric Isolator Pads, Oil- and water-resistant elastomer or natural rubber, arranged in single or multiple layers, molded with a nonslip pattern and galvanized steel baseplates of sufficient stiffness for uniform loading over pad area, and factory cut to sizes that match requirements of supported equipment.
1. Material: **Standard neoprene**
 2. Durometer Rating:
 3. Number of Layers:
- D. Elastomeric Mounts Double-deflection type, with molded, oil-resistant rubber or neoprene isolator elements with factory-drilled, encapsulated top plate for bolting to equipment and with baseplate for bolting to structure. Color-code or otherwise identify to indicate capacity range.
1. Durometer Rating: **50 <Insert number>**.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas and equipment to receive vibration isolation and seismic-control devices for compliance with requirements, installation tolerances, and other conditions affecting performance.
- B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install resilient bolt isolation washers on equipment anchor bolts.

END OF SECTION

SECTION 15080

MECHANICAL IDENTIFICATION

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes the following mechanical identification materials and their installation:
1. Equipment nameplates.
 2. Equipment markers.
 3. Equipment signs.
 4. Access panel and door markers.
 5. Pipe markers.
 6. Duct markers.
 7. Stencils.
 8. Valve tags.
 9. Valve schedules.
 10. Warning tags.

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Valve numbering scheme.
- C. Valve Schedules: For each piping system. Furnish extra copies (in addition to mounted copies) to include in maintenance manuals.

1.03 QUALITY ASSURANCE

- A. ASME Compliance: Comply with ASME A13.1, "Scheme for the Identification of Piping Systems," for letter size, length of color field, colors, and viewing angles of identification devices for piping.

1.04 COORDINATION

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with location of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 PRODUCTS

2.01 EQUIPMENT IDENTIFICATION DEVICES

- A. Equipment Nameplates: Metal, with data engraved or stamped, for permanent attachment on equipment.
 - 1. Data:
 - a. Manufacturer, product name, model number, and serial number.
 - b. Capacity, operating and power characteristics, and essential data.
 - c. Labels of tested compliances.
 - 2. Location: Accessible and visible.
 - 3. Fasteners: As required to mount on equipment.
- B. Equipment Markers: Engraved, color-coded laminated plastic. Include contact-type, permanent adhesive.
 - 1. Terminology: Match schedules as closely as possible.
 - 2. Data:
 - a. Name and plan number.
 - b. Equipment service.
 - c. Design capacity.
 - d. Other design parameters such as pressure drop, entering and leaving conditions, and speed.
 - 3. Size: 2-1/2 by 4 inches (64 by 100 mm) for control devices, dampers, and valves; 4-1/2 by 6 inches (115 by 150 mm) for equipment.
- C. Equipment Signs: ASTM D 709, Type I, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white

melamine subcore, unless otherwise indicated. Fabricate in sizes required for message. Provide holes for mechanical fastening.

1. Data: Instructions for operation of equipment and for safety procedures.
 2. Engraving: Manufacturer's standard letter style, of sizes and with terms to match equipment identification.
 3. Thickness: [1/8 inch (3.2 mm)], unless otherwise indicated.
 4. Fasteners: Self-tapping, stainless-steel screws or contact-type, permanent adhesive.
- D. Access Panel and Door Markers: 1/16-inch- (1.6-mm-) thick, engraved laminated plastic, with abbreviated terms and numbers corresponding to identification. Provide 1/8-inch (3.2-mm) center hole for attachment.
1. Fasteners: Self-tapping, stainless-steel screws or contact-type, permanent adhesive.

2.02 PIPING IDENTIFICATION DEVICES

- A. Manufactured Pipe Markers, General: Preprinted, color-coded, with lettering indicating service, and showing direction of flow.
1. Colors: Comply with ASME A13.1, unless otherwise indicated.
 2. Pipes with OD, Including Insulation, Less Than 6 Inches (150 mm): Full-band pipe markers extending 360 degrees around pipe at each location.
 3. Pipes with OD, Including Insulation, 6 Inches (150 mm) and Larger: Either full-band or strip-type pipe markers at least three times letter height and of length required for label.
 4. Arrows: Integral with piping system service lettering to accommodate both directions; or as separate unit on each pipe marker to indicate direction of flow.
- B. Pretensioned Pipe Markers: Precoiled semirigid plastic formed to cover full circumference of pipe and to attach to pipe without adhesive.
- C. Shaped Pipe Markers: Preformed semirigid plastic formed to partially cover circumference of pipe and to attach to pipe with mechanical fasteners that do not penetrate insulation vapor barrier.
- D. Self-Adhesive Pipe Markers: Plastic with pressure-sensitive, permanent-type, self-adhesive back.

- E. Plastic Tape: Continuously printed, vinyl tape at least 3 mils (0.08 mm) thick with pressure-sensitive, permanent-type, self-adhesive back.
 - 1. Width for Markers on Pipes with OD, Including Insulation, Less Than 6 Inches (150 mm): 3/4 inch (19 mm) minimum.
 - 2. Width for Markers on Pipes with OD, Including Insulation, 6 Inches (150 mm) or Larger: 1-1/2 inches (38 mm) minimum.

2.03 DUCT IDENTIFICATION DEVICES

- A. Duct Markers: Engraved, color-coded laminated plastic. Include direction and quantity of airflow and duct service (such as supply, return, and exhaust). Include contact-type, permanent adhesive.

2.04 STENCILS

- A. Stencils: Prepared with letter sizes according to ASME A13.1 for piping; minimum letter height of 1-1/4 inches (32 mm) for ducts; and minimum letter height of 3/4 inch (19 mm) for access panel and door markers, equipment markers, equipment signs, and similar operational instructions.
 - 1. Stencil Material: Brass
 - 2. Stencil Paint: Exterior, gloss, acrylic enamel black, unless otherwise indicated. Paint may be in pressurized spray-can form.
 - 3. Identification Paint: Exterior, acrylic enamel in colors according to ASME A13.1, unless otherwise indicated.

2.05 VALVE TAGS

- A. Valve Tags: Stamped or engraved with 1/4-inch (6.4-mm) letters for piping system abbreviation and 1/2-inch (13-mm) numbers, with numbering scheme approved by Architect. Provide 5/32-inch (4-mm) hole for fastener.
 - 1. Material: 0.032-inch- (0.8-mm-) thick brass.
 - 2. Material: 0.0375-inch- (1-mm-) thick stainless steel.
 - 3. Material: 3/32-inch- (2.4-mm-) thick laminated plastic with 2 black surfaces and white inner layer.
 - 4. Valve-Tag Fasteners: Brass S-hook.

2.06 VALVE SCHEDULES

- A. Valve Schedules: For each piping system, on standard-size bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.
1. Valve-Schedule Frames: Glazed display frame for removable mounting on masonry walls for each page of valve schedule. Include mounting screws.
 2. Frame: Extruded aluminum.
 3. Glazing: ASTM C 1036, Type I, Class 1, Glazing Quality B, 2.5-mm, single-thickness glass.

2.07 WARNING TAGS

- A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags; of plasticized card stock with matte finish suitable for writing.
1. Size: 3 by 5-1/4 inches (75 by 133 mm) minimum.
 2. Fasteners: Brass grommet and wire.
 3. Nomenclature: Large-size primary caption such as DANGER, CAUTION, or DO NOT OPERATE.
 4. Color: Yellow background with black lettering.

PART 3 EXECUTION

3.01 APPLICATIONS, GENERAL

- A. Products specified are for applications referenced in other Division 15 Sections. If more than single-type material, device, or label is specified for listed applications, selection is Installer's option.

3.02 EQUIPMENT IDENTIFICATION

- A. Install and permanently fasten equipment nameplates on each major item of mechanical equipment that does not have nameplate or has nameplate that is damaged or located where not easily visible. Locate nameplates where accessible and visible. Include nameplates for the following general categories of equipment:

1. Fuel-burning units, including boilers, furnaces, heaters, stills, and absorption units.
 2. Pumps, compressors, chillers, condensers, and similar motor-driven units.
 3. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
 4. Fans, blowers, primary balancing dampers, and mixing boxes.
 5. Packaged HVAC central-station and zone-type units.
- B. Install equipment markers with permanent adhesive on or near each major item of mechanical equipment. Data required for markers may be included on signs, and markers may be omitted if both are indicated.
1. Letter Size: Minimum 1/4 inch (6.4 mm) for name of units if viewing distance is less than 24 inches (600 mm), 1/2 inch (13 mm) for viewing distances up to 72 inches (1830 mm), and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
 2. Data: Distinguish among multiple units, indicate operational requirements, indicate safety and emergency precautions, warn of hazards and improper operations, and identify units.
 3. Locate markers where accessible and visible. Include markers for the following general categories of equipment:
 - a. Main control and operating valves, including safety devices and hazardous units such as gas outlets.
 - b. Fire department hose valves and hose stations.
 - c. Meters, gages, thermometers, and similar units.
 - d. Fuel-burning units, including boilers, furnaces, heaters, stills, and absorption units.
 - e. Pumps, compressors, chillers, condensers, and similar motor-driven units.
 - f. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
 - g. Fans, blowers, primary balancing dampers, and mixing boxes.
 - h. Packaged HVAC central-station and zone-type units.
 - i. Tanks and pressure vessels.
 - j. Strainers, filters, humidifiers, water-treatment systems, and similar equipment.
- C. Install equipment signs with screws or permanent adhesive on or near each major item of mechanical equipment. Locate signs where accessible and visible.

1. Identify mechanical equipment with equipment markers in the following color codes:
 - a. Green: For cooling equipment and components.
 - b. Yellow: For heating equipment and components.
 - c. Orange: For combination cooling and heating equipment and components.

2. Letter Size: Minimum 1/4 inch (6.4 mm) for name of units if viewing distance is less than 24 inches (600 mm), 1/2 inch (13 mm) for viewing distances up to 72 inches (1830 mm), and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

3. Data: Distinguish among multiple units, indicate operational requirements, indicate safety and emergency precautions, warn of hazards and improper operations, and identify units.

4. Include signs for the following general categories of equipment:
 - a. Main control and operating valves, including safety devices and hazardous units such as gas outlets.
 - b. Fuel-burning units, including boilers, furnaces, heaters, stills, and absorption units.
 - c. Pumps, compressors, chillers, condensers, and similar motor-driven units.
 - d. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
 - e. Fans, blowers, primary balancing dampers, and mixing boxes.
 - f. Packaged HVAC central-station and zone-type units.
 - g. Tanks and pressure vessels.
 - h. Strainers, filters, humidifiers, water-treatment systems, and similar equipment.

- D. Stenciled Equipment Sign Option: Stenciled signs may be provided instead of laminated-plastic equipment signs, at Installer's option, if lettering larger than 1 inch (25 mm) high is needed for proper identification because of distance from normal location of required identification.

- E. Install access panel markers with screws on equipment access panels.

3.03 PIPING IDENTIFICATION

- A. Install manufactured pipe markers indicating service on each piping system. Install with flow indication arrows showing direction of flow.
 1. Pipes with OD, Including Insulation, Less Than 6 Inches (150 mm): Pretensioned pipe markers. Use size to ensure a tight fit.

2. Pipes with OD, Including Insulation, 6 Inches (150 mm) and Larger: Shaped pipe markers. Use size to match pipe and secure with fasteners.
- B. Locate pipe markers and color bands where piping is exposed in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior nonconcealed locations as follows:
1. Near each valve and control device.
 2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
 3. Near penetrations through walls, floors, ceilings, and nonaccessible enclosures.
 4. At access doors, manholes, and similar access points that permit view of concealed piping.
 5. Near major equipment items and other points of origination and termination.
 6. Spaced at maximum intervals of 50 feet (15 m) along each run. Reduce intervals to 25 feet (7.6 m) in areas of congested piping and equipment.
 7. On piping above removable acoustical ceilings. Omit intermediately spaced markers.

3.04 DUCT IDENTIFICATION

- A. Install duct markers with permanent adhesive on air ducts in the following color codes:
1. Green: For cold-air supply ducts.
 2. Yellow: For hot-air supply ducts.
 3. Blue: For exhaust-, outside-, relief-, return-, and mixed-air ducts.
 4. ASME A13.1 Colors and Designs: For hazardous material exhaust.
 5. Letter Size: Minimum 1/4 inch (6.4 mm) for name of units if viewing distance is less than 24 inches (600 mm), 1/2 inch (13 mm) for viewing distances up to 72 inches (1830 mm), and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- B. Locate markers near points where ducts enter into concealed spaces and at maximum intervals of 50 feet (15 m) in each space where ducts are exposed or concealed by removable ceiling system.

3.05 VALVE-TAG INSTALLATION

- A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; plumbing fixture supply stops; shutoff valves; faucets; convenience and lawn-watering hose connections; and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.
- B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following:
 - 1. Valve-Tag Size and Shape:
 - a. Cold Water: 1-1/2 inches (38 mm) round.
 - b. Hot Water: 1-1/2 inches (38 mm)] round.
 - c. Fire Protection: 1-1/2 inches (38 mm) round.
 - d. Gas: 1-1/2 inches (38 mm) round.
 - e. Steam: 1-1/2 inches (38 mm) round.

3.06 VALVE-SCHEDULE INSTALLATION

- A. Mount valve schedule on wall in accessible location in each major equipment room.

3.07 WARNING-TAG INSTALLATION

- A. Write required message on, and attach warning tags to, equipment and other items where required.

3.08 ADJUSTING

- A. Relocate mechanical identification materials and devices that have become visually blocked by other work.

3.09 CLEANING

- A. Clean faces of mechanical identification devices[and glass frames of valve schedules].

END OF SECTION

SECTION 15090

HVAC INSULATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Insulate the following:

- 1. Ductwork: Supply, Return and Outside Air Ducts

- B. Provide necessary jackets, cements, vapor barriers, and adhesive.

- C. Coordinate all work with other Contractors.

1.03 FIRE RATINGS (NFPA-90A-305)

- A. Insulation and adhesive shall have the following minimum ratings:

- 1. Flame spread of 25.

- 2. Smoke developed of 50.

1.04 Thickness as required by code and ASHRAE 90.1 and ASHRAE 90.2

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Owens-Corning Fiberglas Corporation, Johns-Manville, PPG, or CSG.

2.02 MASTICS, ADHESIVES & FINISHES

- A. Outdoor Vapor Barrier mastic - Benjamin-Foster 65-07.

- B. Breather mastic - Benjamin-Foster 30-36.

- C. Indoor Vapor Barrier finish - Benjamin-Foster 65-07 or 30-35.

- D. V.B. Lap adhesive - Benjamin-Foster 82-07.

- E. Lagging adhesive - Benjamin-Foster 30-36.
- F. Metal Bonding Adhesive - Benjamin-Foster 85-15.
- G. Indoor breather finish - Benjamin-Foster "Lagton".

PART 3 EXECUTION

3.01 GENERAL INSTALLATION

- A. Must comply exactly with Manufacturer's recommendations regarding fastener spacing and adhesive application.
- B. Insulation shall not be applied until the general construction has progressed sufficiently to insure against physical or moisture damage to the insulation. All damaged insulation shall be replaced at this Contractor's expense
- C. Install 20 Ga. galvanized steel insulation protectors on all insulated exposed pipes passing through floor. sleeves to 12" above the floor.
- D. Hanger rods must be perpendicular and centered on pipe supports before insulation is installed.
- E. Shop lined ducts are to be as specified in Section 15720, Low Pressure Ductwork.

END OF SECTION

SECTION 15110

METAL DUCTS

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes rectangular, round, and flat-oval metal ducts and plenums for heating, ventilating, and air-conditioning systems.

1.02 SYSTEM DESCRIPTION

- A. Duct system design, as indicated, has been used to select and size air-moving and -distribution equipment and other components of air system. Changes to layout or configuration of duct system must be specifically approved in writing by Architect. Accompany requests for layout modifications with calculations showing that proposed layout will provide original design results without increasing system total pressure.

1.03 SUBMITTALS

- A. Product Data: For duct liner and sealing materials.
- B. Shop Drawings: Show details of the following:
 - 1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
 - 2. Duct layout indicating sizes on plans.
 - 3. Fittings.
 - 4. Penetrations through fire-rated and other partitions.
- C. Coordination Drawings: Reflected ceiling plans drawn to scale and coordinating penetrations and ceiling-mounted items. Show the following:
 - 1. Ceiling suspension assembly members.
 - 2. Other systems installed in same space as ducts.

3. Ceiling- and wall-mounted access doors and panels required to provide access to dampers and other operating devices.
 4. Coordination with ceiling-mounted items, including lighting fixtures, diffusers, grilles, speakers, sprinkler heads, access panels, and special moldings.
- D. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.
- E. Record Drawings: Indicate actual routing, fitting details, reinforcement, support, and installed accessories and devices.

1.04 QUALITY ASSURANCE

- A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," unless otherwise indicated.
- B. Comply with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems," unless otherwise indicated.
- C. Comply with NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations," Chapter 3, "Duct System," for range hood ducts, unless otherwise indicated.

PART 2 PRODUCTS

2.01 SHEET METAL MATERIALS

- A. Galvanized, Sheet Steel: Lock-forming quality; ASTM A 653/A 653M, G90 (Z275) coating designation; mill-phosphatized finish for surfaces of ducts exposed to view.
- B. Reinforcement Shapes and Plates: Galvanized steel reinforcement where installed on galvanized, sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
- C. Tie Rods: Galvanized steel, 1/4-inch (6-mm) minimum diameter for 36-inch (900-mm) length or less; 3/8-inch (10-mm) minimum diameter for lengths longer than 36 inches (900 mm).

2.02 DUCT LINER

- A. General: Comply with NFPA 90A or NFPA 90B and NAIMA's "Fibrous Glass Duct Liner Standard."

B. Materials: ASTM C 1071 with coated surface exposed to airstream to prevent erosion of glass fibers.

1. Thickness: 1 inch (25 mm).
2. Thermal Conductivity (k-Value): 0.26 at 75 deg F (0.037 at 24 deg C) mean temperature.
3. Fire-Hazard Classification: Maximum flame-spread rating of 25 and smoke-developed rating of 50, when tested according to ASTM C 411.
4. Liner Adhesive: Comply with NFPA 90A or NFPA 90B and ASTM C 916.
5. Mechanical Fasteners: Galvanized steel, suitable for adhesive attachment, mechanical attachment, or welding attachment to duct without damaging liner when applied as recommended by manufacturer and without causing leakage in duct.
 - a. Tensile Strength: Indefinitely sustain a 50-lb- (23-kg-) tensile, dead-load test perpendicular to duct wall.
 - b. Fastener Pin Length: As required for thickness of insulation and without projecting more than 1/8 inch (3 mm) into airstream.
 - c. Adhesive for Attaching Mechanical Fasteners: Comply with fire-hazard classification of duct liner system.

C. Provide duct liner, acoustical, for all duct sections within 10 feet of blower.

2.03 SEALANT MATERIALS

A. Joint and Seam Sealants, General: The term "sealant" is not limited to materials of adhesive or mastic nature but includes tapes and combinations of open-weave fabric strips and mastics.

1. Joint and Seam Tape: 2 inches (50 mm) wide; glass-fiber fabric reinforced.

2.04 HANGERS AND SUPPORTS

A. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for building materials.

- B. Hanger Materials: Galvanized, sheet steel or round, threaded steel rod.
 - 1. Hangers Installed in Corrosive Atmospheres: Electrogalvanized, all-thread rod or galvanized rods with threads painted after installation.
 - 2. Straps and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for sheet steel width and thickness and for steel rod diameters.
- C. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- D. Trapeze and Riser Supports: Steel shapes complying with ASTM A 36/A 36M.

2.05 RECTANGULAR DUCT FABRICATION

- A. General: Fabricate ducts, elbows, transitions, offsets, branch connections, and other construction with galvanized, sheet steel, according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible." Comply with requirements for metal thickness, reinforcing types and intervals, tie-rod applications, and joint types and intervals.
 - 1. Lengths: Fabricate rectangular ducts in lengths appropriate to reinforcement and rigidity class required for pressure classification.
 - 2. Materials: Free from visual imperfections such as pitting, seam marks, roller marks, stains, and discolorations.
- B. Cross Breaking or Cross Beading: Cross break or cross bead duct sides 19 inches (480 mm) and larger and 0.0359 inch (0.9 mm) thick or less, with more than 10 sq. ft. (0.93 sq. m) of unbraced panel area, unless ducts are lined.

2.06 SHOP APPLICATION OF LINER IN RECTANGULAR DUCTS

- A. Adhere a single layer of indicated thickness of duct liner with 90 percent coverage of adhesive at liner contact surface area. Multiple layers of insulation to achieve indicated thickness are prohibited.
- B. Apply adhesive to liner facing in direction of airflow not receiving metal nosing.

- C. Butt transverse joints without gaps and coat joint with adhesive.
- D. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure butted-edge overlapping.
- E. Do not apply liners in rectangular ducts with longitudinal joints, except at corners of ducts, unless duct size and standard liner product dimensions make longitudinal joints necessary.
- F. Secure liner with mechanical fasteners 4 inches (100 mm) from corners and at intervals not exceeding 12 inches (300 mm) transversely around perimeter; at 3 inches (75 mm) from transverse joints and at intervals not exceeding 18 inches (450 mm) longitudinally.
- G. Secure transversely oriented liner edges facing the airstream with metal nosings that have either channel or "Z" profile or are integrally formed from duct wall. Fabricate edge facings at the following locations:
 - 1. Fan discharge.
 - 2. Intervals of lined duct preceding unlined duct.
- H. Terminate liner with duct buildouts installed in ducts to attach dampers, turning vane assemblies, and other devices. Fabricated buildouts (metal hat sections) or other buildout means are optional; when used, secure buildouts to duct wall with bolts, screws, rivets, or welds. Terminate liner at fire dampers at connection to fire-damper sleeve.

2.07 ROUND DUCT FABRICATION

- A. Round Ducts: Fabricate supply ducts of galvanized steel according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."

2.08 ROUND SUPPLY AND EXHAUST FITTING FABRICATION

- A. 90-Degree Tees and Laterals and Conical Tees: Fabricate to comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," with metal thicknesses specified for longitudinal seam straight duct.
- B. Diverging-Flow Fittings: Fabricate with a reduced entrance to branch taps with no excess material projecting from body onto branch tap entrance.
- C. Elbows: Fabricate in die-formed, gored, pleated, or mitered construction. Fabricate bend radius of die-formed, gored, and pleated elbows one and one-half times elbow diameter. Unless elbow construction type is indicated, fabricate elbows as follows:

1. Mitered-Elbow Radius and Number of Pieces: Welded construction complying with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," unless otherwise indicated.
2. Round Mitered Elbows: Welded construction with the following metal thickness for pressure classes from minus 2- to plus 2-inch wg (minus 500 to plus 500 Pa):
 - a. Ducts 3 to 26 Inches (75 to 660 mm) in Diameter: 0.028 inch (0.7 mm).
 - b. Ducts 27 to 36 Inches (685 to 915 mm) in Diameter: 0.034 inch (0.85 mm).
 - c. Ducts 37 to 50 Inches (940 to 1270 mm) in Diameter: 0.040 inch (1.0 mm).
3. Round Mitered Elbows: Welded construction with the following metal thickness for pressure classes from 2- to 10-inch wg (500 to 2490 Pa):
 - a. Ducts 3 to 14 Inches (75 to 355 mm) in Diameter: 0.028 inch (0.7 mm).
 - b. Ducts 15 to 26 Inches (380 to 660 mm) in Diameter: 0.034 inch (0.85 mm).
 - c. Ducts 27 to 50 Inches (685 to 1270 mm) in Diameter: 0.040 inch (1.0 mm).

PART 3 EXECUTION

3.01 DUCT INSTALLATION, GENERAL

- A. Duct installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of ducts, fittings, and accessories.
- B. Construct and install each duct system for the specific duct pressure classification indicated.
- C. Install round ducts in lengths not less than 12 feet (3.7 m), unless interrupted by fittings.
- D. Install ducts with fewest possible joints.
- E. Install fabricated fittings for changes in directions, changes in size and shape, and connections.
- F. Install couplings tight to duct wall surface with a minimum of projections into duct.
- G. Install ducts, unless otherwise indicated, vertically and horizontally, parallel and perpendicular to building lines; avoid diagonal runs.
- H. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- I. Install ducts with a clearance of 1 inch (25 mm), plus allowance for insulation thickness.

- J. Conceal ducts from view in finished spaces. Do not encase horizontal runs in solid partitions, unless specifically indicated.
- K. Coordinate layout with suspended ceiling, fire- and smoke-control dampers, lighting layouts, and similar finished work.
- L. Electrical Equipment Spaces: Route ductwork to avoid passing through transformer vaults and electrical equipment spaces and enclosures.
- M. Non-Fire-Rated Partition Penetrations: Where ducts pass through interior partitions and exterior walls, and are exposed to view, conceal space between construction opening and duct or duct insulation with sheet metal flanges of same metal thickness as duct. Overlap opening on four sides by at least 1-1/2 inches (38 mm).
- N. Fire-Rated Partition Penetrations: Where ducts pass through interior partitions and exterior walls, install appropriately rated fire damper, sleeve, and firestopping sealant. Fire and smoke dampers are specified in Division 15 Section "Duct Accessories." Firestopping materials and installation methods are specified in Division 7 Section "Firestopping."

3.02 SEAM AND JOINT SEALING

- A. General: Seal duct seams and joints according to the duct pressure class indicated and as described in SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."
- B. Pressure Classification Less Than 2-Inch wg (500 Pa): Transverse joints.
- C. Seal externally insulated ducts before insulation installation.

3.03 HANGING AND SUPPORTING

- A. Install rigid round, rectangular, and flat-oval metal duct with support systems indicated in SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."
- B. Support horizontal ducts within 24 inches (600 mm) of each elbow and within 48 inches (1200 mm) of each branch intersection.
- C. Support vertical ducts at a maximum interval of 16 feet (5 m) and at each floor.
- D. Install upper attachments to structures with an allowable load not exceeding one-fourth of failure (proof-test) load.
- E. Install concrete inserts before placing concrete.

3.04 CONNECTIONS

- A. Connect equipment with flexible connectors according to Division 15 Section "Duct Accessories."
- B. For branch, outlet and inlet, and terminal unit connections, comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."

3.05 FIELD QUALITY CONTROL

- A. Disassemble, reassemble, and seal segments of systems as required to accommodate leakage testing and as required for compliance with test requirements.
- B. Conduct tests, in presence of Architect, at static pressures equal to maximum design pressure of system or section being tested. If pressure classifications are not indicated, test entire system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure. Give seven days' advance notice for testing.
- C. Maximum Allowable Leakage: Comply with requirements for Leakage Classification 3 for round ducts, Leakage Classification 12 for rectangular ducts in pressure classifications less than and equal to 2-inch wg (500 Pa) (both positive and negative pressures), and Leakage Classification 6 for pressure classifications from 2- to 10-inch wg (500 to 2490 Pa).
- D. Remake leaking joints and retest until leakage is less than maximum allowable.
- E. Leakage Test: Perform tests according to SMACNA's "HVAC Air Duct Leakage Test Manual."

3.06 ADJUSTING

- A. Adjust volume-control dampers in ducts, outlets, and inlets to achieve design airflow.
- B. Refer to Division 15 Section "Testing, Adjusting, and Balancing" for detailed procedures.

3.07 CLEANING

- A. After completing system installation, including outlet fittings and devices, inspect the system. Vacuum ducts before final acceptance to remove dust and debris.

END OF SECTION

SECTION 15140

DIFFUSERS, REGISTERS, AND GRILLES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes ceiling- and wall-mounted diffusers, registers, and grilles. All ceiling mounted devices shall be white and centered on architectural elements, wall mounted devices shall be painted to match. Mechanical Contractor must verify with General Contractor before work begins.

1.03 SUBMITTALS

- A. Product Data: For each product indicated, include the following:
 - 1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
 - 2. Diffuser, Register, and Grille Schedule: Indicate Drawing designation, room location, quantity, model number, size, and accessories furnished.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers:
 - 1. Anemostat; a Mestek Company.
 - 2. Carnes.
 - 3. Krueger.

4. Nailor Industries of Texas Inc.
5. Price Industries.
6. Titus.
7. Tuttle & Bailey.
8. LIMA

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas where diffusers, registers, and grilles are to be installed for compliance with requirements for installation tolerances and other conditions affecting performance of equipment.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install diffusers, registers, and grilles level and plumb, provide fire rated devices with all required fire blankets, dampers, hangers and accessories as required to maintain all fire rated assemblies as required and as shown on the architectural plans.
- B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practicable. For units installed in lay-in ceiling panels, locate units in the center of panel. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.
- C. Install diffusers, registers, and grilles with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

3.03 ADJUSTING

- A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION

SECTION 15230

PLUMBING INSULATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Insulate all domestic hot and cold water lines and all hot water return lines per code and in compliance with enforced ASHRAE 90.1/ASHRAE90.2 Insulate all interior storm drains and pipes or lines that can possibly convey liquid at non-ambient temperature.

1.03 FIRE RATINGS (NFPA 90A-305)

- A. All insulations, jackets, cements, adhesives and vapor barriers shall have a U.L. listing not to exceed a flame spread rating of 25 and a smoke developed rating of 50 (NFIPA 90A-305).

1.04 PIPING AND FITTINGS

- A. Exposed pipe insulation shall be Johns-Manville Fiberglass with factory applied jacket. Concealed piping shall be insulated and have service finish.
- B. The fittings shall be insulated with Johns-Manville UNI-FIT insulation and have factory premolded PVC covers or use insulating cement to same thickness and finished with stretchable glass fabric and covered with one coat of Benjamin-Foster No. 8142 W. vapor barrier coating.
- C. Butt the joints together and wrap with 3" wide strip of jacket material, seal in place with Johns-Manville U-Glue or Benjamin-Foster 85-20 adhesive.
- D. Equal insulation by Owens-Corning, PPG or Certain Teed/St. Gobain may be used.

PART 2 PRODUCTS

2.01 GENERAL INSULATION

- A. Insulation shall not be applied unless, or until:

1. Surfaces are clean and dry.
 2. System has been thoroughly tested.
 3. Hanger rods are perpendicular to building lines.
- B. All insulation to be continuous through sleeves and hangers. Leave no "raw" ends on any insulation. Taper pipe insulation ends with insulating cement. All insulation to be finished smooth, ready for painting where pre-sized coverings are not used.
- C. Short connections above to individual fixtures need not be insulated 2 ft. maximum length.
- D. Install all insulation in strict accordance with manufacturer's recommendations.

2.02 PIPING

- A. Fittings to have same thickness as adjacent pipe insulation and lap of 2 inches. On all lines, install sheet metal saddle and rigid insulation at hangers. Do not cover hot water valves, flanges or unions.
- B. Insulation finish to be smooth; cover and seal all ends with cement.

END OF SECTION

SECTION 15240

DOMESTIC HOT & COLD WATER PIPING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Furnish and install the following: Complete all metal hot- cold piping system for fixtures and equipment.

1.03 RELATED WORK DESCRIBED ELSEWHERE, Plumbing Piping Specialties; Piping Hangers and Supports. Plumbing Insulation.

PART 2 PRODUCTS

2.01 PIPING

- A. Water piping shall be Type "L" hard tempered copper tubing (ASTM B-88) with wrought copper, bronze or brass fittings, polished joints and soldered with lead free solder with a 150 lb. W.W.P.
- C. Underground piping shall be type K hard tempered copper with lead free joints.

2.02 VALVES

- A. 125 lb. W.W.P. gate, globe and check valves:
 - 1. Gate (3" and larger) - Iron body, bronze mounted O.S. & Y, flanged, taper solid wedge disc.
 - 2. Gate (2-1/2" and smaller) - all bronze, screwed, taper solid wedge disc, screwed bonnet, rising stem.
 - 3. Globe (2- 1/2" and smaller) - All bronze, screwed, plug type disc, screwed bonnet, rising stem.
 - 4. Check (3" and larger) - Iron body, bronze mounted, flanged horizontal swing with bronze disc.

5. Check (2-1/2" and smaller) - All bronze, screwed horizontal swing check with bronze disc.
 6. Fixture shutoff cocks on hot or cold water to be American Standard 8223 or 8226 or equal straight or angle stop type, 1/2" size, chrome plated loose key stop.
- B. Crane, Fairbanks, Powell, Walworth, Hammond, Lunkenheimer or Stockham.

2.03 UNIONS

- A. For copper pipe, use 150 lb. all bronze, solder end type. Chase, Flagg, Mueller, or Northern Indiana Brass Company.
- B. For steel pipe use 300 lb. galvanized malleable iron, ground seat, bronze to stub, non-stock Fairbanks type PIC or equal by Rockwell, Grinnel or Crane.
- C. Dielectric unions between ferrous and copper shall be insulated to prevent metal-to-metal contact and to be manufactured by Capital Manufacturing Company of Columbus, Ohio, Patrol or PECO Sales Company.

PART 3 EXECUTION

3.01 GENERAL INSTALLATION

- A. Underground piping shall be copper, Type K with joints to be made using 95/5 solder. Install shock absorbers and provide access panels, where recommended by Plumbing and Drainage Institute and the Manufacturer.

3.02 PIPING INSTALLATION

- A. Install piping to provide complete drainage of the system toward the source wherever possible. Provide drain valves at all drainage points on pipes. pipe shall be cut accurately to measurements established at the building by the Contractor and worked into place without stringing or forcing. After cutting and reaming and before assembling, all lengths of pipe shall be set vertically and tapped with a hammer to remove scale and dust and inspected to insure that no foreign matter is lodged therein. Pipe shall follow building lines clearing all windows, doors and other openings and no diagonal piping will be allowed. Keep pipe a sufficient distance apart to allow installation of pipe insulation covering. Allowance and provisions to be made for expansion and contraction of pipe.
- B. Pipe to be run concealed wherever possible. Location of pipe in interior partitions shall be carefully coordinated with the General Contractor. Where exposed risers occur, they shall be kept as close to walls as possible.
- C. Piping to be run as close to underside of structure as physically possible.

- D. Provide 3/4" drain valves at low points of systems to permit complete drainage.
- E. All piping shall be insulated per the authority having jurisdiction or ASHRAE 90.1 and 90.2.

END OF SECTION

SECTION 15280

SOIL, WASTE AND VENT PIPING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Provide new interior sanitary piping system and extend five (5') feet outside building wall. This contractor is responsible for coordinating all plumbing piping, stubs, service lines utility taps with the G.C. and local utility before work begins.

PART 2 PRODUCTS

2.01 PIPING

- A. Piping and fittings in earth under slab - service weight coated cast iron soil pipe with hub and spigot pattern, DWV copper or P.V.C. plastic. Conforming to FHA UM-79a, all applicable UL & ASTM requirements of the authority having jurisdiction.
- B. Interior soil and waste piping (above floor slab) - either cast iron or Type DWV copper with Type DWV wrought or cast drainage pattern sweat fittings and 95/5 solder joints.
- C. Vent piping above grade - either cast iron or DWV copper.

2.02 CLEANOUTS

- A. Floor type to be adjustable cast iron with nickel brass top and carpet insert.
- B. Provide a cleanout at the base of all stacks and at the exterior of all runs.
- C. In wall of finished areas use cleanout tee and Josan No. 58890 cover. (Color to be selected by Architect.).
- D. Outside cleanouts shall consist of a cast iron access box with cast bronze countersunk I.P.S. male thread plug and cast iron body set in concrete. Josan 58680 and 58560.

PART 3 EXECUTION

3.01 GENERAL INSTALLATION

- A. Coordinate locations of cleanouts with General Contractor and with location of equipment. Pitch waste and vent piping. Trap floor drains. Exposed fixture traps to be chrome-plated brass. Top of drains and cleanouts shall be installed flush with the finished floor. Use plastic traps where noted.
- B. Extend 4 lb. lead flashing up over top of vent and turned down into pipe and 12" out from vent pipe. Make watertight flashing connection with roof and vent. Coordinate cutting and flashing installation with general contractor. Non-metallic flashings are acceptable as compliant with roofing and piping system.

END OF SECTION

SECTION 15330

GAS PIPING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Furnish and install complete system of low pressure gas piping to all items of equipment, including shutoff valve, union and dirt leg at each final connection.

B. Verify special installation and metering requirements with Utility Company.

PART 2 PRODUCTS

2.01 PIPING

A. Schedule 40 black steel pipe (ASTM A-53), welded joints. Screwed malleable iron fittings may be used on piping 2 1/2" and smaller. Underground piping shall be provided with a factory applied coating suitable for underground use; fittings may have the coating field applied

2.02 VALVES

A. 1" and smaller: 125 lb. iron body with bronze plug washer. Crane #320 or Homestead #601.

B. 1 1/4" and larger: Lubricated plug cock. Nordstrum #142 or Homestead #602.

C. Equal valves by Nibco, Lunkenheimer, Stockham or Powell are acceptable.

2.03 GENERAL INSTALLATION

A. Install vents from pressure regulators. Extend vent through outside wall, sleeve and caulk, turn pipe down and terminate with insect screen.

B. Vent all interior piping enclosures or chases to outside.

2.04 TESTS

- A. Test piping in accordance with Utility Company requirements. After testing, purge system completely.

END OF SECTION

**SECTION 16010
ELECTRICAL GENERAL PROVISIONS**

PART ONE GENERAL

1.01 WORK INCLUDED

- A. Provide a complete electrical installation consisting of distribution, lighting system, life safety system, intercommunication/program distribution system, sound system, media center sound system and partial telephone, data, and video systems.

1.02 CODES AND FEES

- A. All electrical work under the requirements of these specifications shall be in conformance with the requirements of the current editions of the National Electrical Code, and the Occupational Safety and Health Act, and shall also be in compliance with all applicable State and/or local laws and ordinances.
- B. The contractor shall obtain and pay for all permits and inspections required by the building and safety codes and ordinances and the rules and regulations of any legal body having jurisdiction.
- C. All electrical items covered by this specification shall be U.L. labeled and listed for the purpose.

1.03 DRAWINGS

- A. The locations shown on the drawings are, unless dimensioned, only approximate and the Contractor shall select the actual locations for installation with due consideration for the features of the construction and the work of other trades. The locations shown on the drawings are, unless dimensioned, only approximate and the Contractor shall select the actual locations for installation with due consideration for the features of the construction and the work of other trades. The contractor shall review architectural drawings for door swings, cabinets, counters and other built in equipment; conditions indicated on architectural plans shall govern for this work. Coordinate installation of electrical equipment with the structural and mechanical equipment and access thereto. Coordinate installation of recessed electrical equipment with concealed ductwork and piping, and wall thickness.
- B. The drawings and specifications shall both be considered as part of the Contract. Any work or material shown in one and omitted in the other, or which may fairly be implied by both or either, shall be provided in order to give a complete job.

- C. Refer to the Architectural, Structural and Mechanical plans and details for dimensions, and fit the work to conform to the details of building construction. The right is reserved to shift any switch, receptacle, ceiling outlet or any special outlet a maximum of 10'-0" from its location as shown before it is permanently installed, without incurring additions to the Contract.
- D. All conduit and wiring shown on the electrical drawings shall be provided under this Division regardless of its function.
- E. No deviations from the drawings and specifications shall be made. If it is found that existing conditions make desirable a modification in requirements covering any particular item, report such item to the Architect for his decision and instructions.
- F. All manufacturers listed on drawings and in specifications are for design purposes only and shall not be used for sale specification.

1.04 COORDINATING WITH OTHER DIVISIONS

- A. Motors will, unless noted otherwise, be furnished with the equipment they drive.
- B. Power wiring and connections for all heating, ventilating and air conditioning equipment shall be furnished under this division.
- C. Controllers and interlock wiring, including conduit, wire and connections for all heating, ventilating and air conditioning equipment shall be furnished under other divisions of the specifications as indicated on the drawings.
- D. Disconnect switches, where not furnished with equipment, will be furnished and mounted under this division of the specifications as indicated on the drawings.
- E. Control connections for 120 volt exhaust fans will be furnished under this division.
- F. Before any piping, conduit, outlets, equipment or lighting fixtures are located in any area, coordinate the space requirements of all trades. Such shall be arranged so that space conditions will allow all trades to install their work, and will also permit access for future maintenance and repair.
- G. Piping, ductwork, conduit and equipment installed at variance with the above requirements shall be relocated and/or revised to conform at the expense of the Contractor and without incurring additions to the Contract.
- H. Coordination of space requirements with all trades shall be performed so that:

- 1 No piping or ductwork other than electrical, shall be run within 42" of panel boards, switchboards or transformers.
- 2 No pipes or ducts that operate at a temperature in excess of 120 degree F. shall be installed nearer than 3" to any electrical conductor.

1.05 ADJUSTING AND TESTING

- A. All electrical equipment furnished under this contract including the electrical equipment furnished under other sections shall be tested for proper operation by the Contractor under this section. Protective devices shall be examined for proper rating and application and adjusted as necessary. Completed wiring systems shall be free of short circuits.
- B. Test all systems described in this Division in the presence of the Owner or a designated representative upon completion of the work. Demonstrate that the installation is in accordance with Contract Documents.
- C. Provide to the Owner all instructions on maintenance and operation of all systems and equipment provided. Provide all necessary tools and personnel to thoroughly demonstrate and present those instructions.
- D. The Contractor shall uncover all concealed areas during inspections if requested.

1.06 UTILITY SERVICE AND LOCATION

- A. The Contractor shall notify the "free underground utility location service" at 1-800-282-7411 and the Owner's Construction manager before any excavations are begun. Contractor may request that Owner's maintenance personnel locate all underground utilities (on Owner's side of meter) prior to excavations. However, all scheduling of maintenance personnel shall be done through the Owner's Construction Manager. Upon completion of locating underground utilities, the Contractor shall be responsible for recording and maintaining these locations on the record drawings for future reference for duration of project.

1.07 CERTIFICATES OF APPROVAL

- A. All necessary permits, inspection fees and licenses shall be obtained and paid for by the Contractor.
- B. At the completion of the building, the Contractor shall furnish and deliver to the Owner, Certificates of Approval from the local inspecting authority for the National Board of Fire

Underwriters and other agencies having authority, indicating approval of the electrical work installed under the contract.

1.08 SHOP DRAWINGS

- A. Shop drawings and/or catalog data on all items of equipment and materials shall be submitted in conformity with requirements of the General and Supplementary Conditions. The responsibility of complying with the Contract Documents shall not be relieved by the Engineer's review of shop drawings.
- B. The submittal shall include a list of the manufacturers of the principal items of material: wire, conduit, connectors, devices, boxes, lighting fixtures, special systems, panelboards, switchboards, etc.
- C. Specified catalog numbers and trade names are intended to describe the material, devices, or apparatus desired. Similar materials of other manufacturers, if of equal or equivalent quality, capacity and character may be substituted in conformity with provisions of the General and Supplementary Conditions.
- D. Samples of all materials proposed for use shall be presented to the Architect for his approval when requested.

1.09 ELECTRICAL SERVICES TO EQUIPMENT

- A. Following equipment shall be furnished and installed under other Sections of this manual:
 - 1 Finishing Hardware
 - 2 Theatre lighting
 - 3 Special Equipment
 - 4 Dimmer panels
 - 5 Sound Equipment
 - 6 HVAC Equipment
 - 7 Water Heaters
 - 8 Automatic Controls
- B. Contractor shall coordinate and determine the electrical requirements of all equipment (Whether included in above list or not) furnished under other Sections.
- C. Contractor shall provide power wiring, conduit, disconnect switches, junction boxes as may be required for equipment furnished under other sections of this specification. Make all final hook-ups and connections.
- D. Contractor shall carefully review all portions of the documents, so as to become aware of the scope of the work required by this section.

1.10 MATERIAL, WORKMANSHIP, AND PROTECTION

- A. Material and apparatus of the latest and best design and manufacture shall be installed to provide complete electrical systems. Experienced mechanics of proper trades shall

perform work and work harmoniously with all other trades. All work, material, fixtures, apparatus, etc., shall be protected from injury or damage and delivered clean. All cutting and channeling shall be accomplished in a neat and workmanlike manner without removal of excess materials. Patch and replace all cut and channeled areas with material similar to adjacent construction.

- B. Unless noted otherwise, all material shall be new and shall bear the inspection label of Underwriters' Laboratories, Inc. (UL).
- C. The published standards and requirements of the National Electrical Manufacturers Association, the American National Standards Institute, the Institute of Electrical and Electronic Engineers and the American Society of Testing Materials shall apply where applicable.

1.11 RECORD DRAWINGS:

- A. At the time of final inspection, provide three (3) sets of complete data on electrical equipment used in the project and Reproducible As Built drawings reflecting all field changes. This data shall be in bound form and shall include the following items:
 - i. Test results required by these specifications.
 - ii. Panelboard shop drawings and copies of the final circuit directories reflecting all field changes.
 - iii. Data sheets indicating electrical characteristics of all devices and equipment.
 - iv. The As-Built Drawings shall have the Contractor's name, address, telephone number, fax number, date and indicate that the drawings are "As-Built".

1.12 GUARANTEE

- A. Defects due to faulty material, workmanship or design which develop within one year from date of final acceptance are to be properly remedied, replaced and made good without cost to the Owner.

END OF SECTION

SECTION 16100

BASIC MATERIALS AND METHODS

PART ONE GENERAL

1.01 DESCRIPTION

- A. All work specified in this Section shall comply with the provisions of Section 16010.
- B. This Section covers the basic electrical materials and methods that are applicable to all sections of Division 16.
- C. Material furnished for inclusion in the work shall have been designed, built and tested in accordance with applicable NEMA and IEEE standards, shall be approved and labeled by the Underwriters' Laboratories, Inc. and shall be new, unless otherwise noted.
- D. All material and equipment shall be installed in accordance with manufacturer's recommendations.

PART TWO PRODUCTS

2.01 CONDUIT AND RACEWAYS

- A. Rigid steel conduit shall be low carbon, hot-dipped galvanized both inside and out with threaded joints.
- B. Intermediate metal conduit (IMC) shall be steel, galvanized both inside and out with threaded joints.
- C. Electrical metallic tubing (EMT) shall be steel, galvanized both inside and out.
- D. Flexible conduit shall be flexible steel conduit tubing and shall meet Underwriters' Laboratories Standard for Flexible Steel Conduit.
- E. Steel conduit approved manufacturers are Allied, Southwire, Triangle, Republic, Wheatland and Pittsburgh.
- F. PVC conduit shall be Schedule 80 polyvinyl chloride, conforming to UL65.

2.02 CONDUIT FITTINGS

- A. Rigid steel and IMC conduit fittings shall be zinc-coated, ferrous metal and threaded type.

- B. EMT fittings shall be zinc-coated hex-nut compression. EMT connectors shall have insulated throats. Die-cast fittings will not be allowed. Set screw type connectors or couplings will not be allowed.
- C. Conduit connections to panel cabinets and pull boxes shall have grounding wedge lugs between the busing and the box or locknuts designed to bite into the metal.
- D. Each end of each conduit shall be provided with either an insulated throat connector or separate locknut and insulated bushing. Bushing shall be installed before any wire is pulled.
- E. Where hubs or water-tight threaded connections are not provided as a part of the enclosure and are required, water-tight hubs similar and equal to Myers "Scru-Tite" hubs shall be installed.
- F. Junction boxes shall be of code gauge metal with continuously welded joints or of cast metal as called for on the drawings. All junction boxes shall be gasketed screw cover boxes.
- G. Pull fittings shall be type "LB", "C", and "TB" conduit fittings on individual conduits where conductor size does not exceed #2 AWG for 600 volt insulation. O.Z. Mfg. Co. type "PBW", Appleton Electric Co. type "PTC", or approved equal, pull box fittings of the proper length for the size conduit involved and the size and type of conductors contained, shall be used in all other cases unless otherwise noted on the drawings.
- H. Conduit fittings approved manufacturers are Racco, Steel City, O.Z., Thomas & Betts, Efcor and Appleton.
- I. Expansion fittings shall be provided in all conduit which crosses an expansion joint.

2.03 CONDUCTORS

- A. Conductors shall be copper of 98% conductivity, 600 volt, "THHN", "THHW" or "XHHW" insulation. Sizes specified are AWG gauge for No. 4/0 and smaller and circular mils (MCM) for all sizes larger than No. 4/0. Conductors No. 10 and smaller shall be solid; No. 8 and larger shall be stranded. Minimum size shall be No. 12 except where specified otherwise.
- B. Copper conductor approved manufacturers are Anaconda, General Cable, General Electric, Hatfield, Paranite, Phelps-Dodge, Reynolds, Simplex, Diamond, Rome and Southwire.

2.04 OUTLETS

- A. Outlet boxes and covers shall be of such form and dimensions as to be adapted to their specific usage, location, size and quantity of conduit, and size and quantity of conductors entering the boxes. In special "Fire Rated" partitions, outlets shall comply with ASTM No. E119.
- B. Flush ceiling outlets for surface or pendant mounted lighting fixtures shall be 4" square or octagonal pressed steel boxes. Boxes for devices in unfinished masonry walls or stud walls shall be pressed steel square corner, sectional switch boxes, or shall be 4" square box with a square cornered tile wall cover, set flush with masonry construction. Boxes in concrete ceiling slabs shall be octagonal, shallow pressed steel concrete boxes. Boxes exposed shall be cast type.
- C. All outlet boxes in plaster walls or ceilings shall be provided with plaster rings.
- D. Junction boxes and all outlets not indicated as containing wiring devices or lighting fixtures shall have covers. Covers for outlets in walls shall be as specified for wall switches and receptacles.
- E. Outlet box approved manufacturers are Appleton, Raco, Steel City and Crouse-Hinds.

2.05 DISCONNECT SWITCHES

- A. Disconnect switches shall be "heavy-duty" type enclosed switches of quick-make, quick-break construction. Switches shall be horsepower rated for 600 volts AC as required. Lugs shall be UL listed for copper and aluminum cable.
- B. Padlocking provisions shall be provided for padlocking in the "off" position.
- C. Switches shall be furnished in NEMA 1 general purpose enclosure unless noted otherwise. Switches located on the exterior of the building or in "wet" locations shall have NEMA 3R enclosures.
- D. Fused disconnect switches shall have rejection type fuse clips with dual element, current limiting fuses of rating shown.
- E. Manual motor controllers for single phase, fractional horsepower motors shall be single or two pole as required, and for the proper voltage. Each shall have one thermal overload device and shall be General Electric RR101Y or CR101H, or approved equal.
- F. Safety switches shall be as manufactured by General Electric, or approved equal by (TE, Square-D, Westinghouse or Cutler Hammer and shall match switchgear choice.

2.06 WIRING DEVICES

- A. Wall switches shall be bakelite phenolic, totally enclosed, quiet type, self-grounding, 120/277 volts and 20A rating.

mounting are indicated on the drawings. 277/480 volt panel boards shall be Square-D type NEHB with breakers rated for available RMS Sym. amps. 120/208 volt panel boards shall be Square-D type NQOB with breakers rated for available RMS Sym. amps. Multi-pole breakers shall be a common trip (breaker tie handles not permitted). Provide directory frame on door with typewritten card listing circuit numbers and designations. All buswork shall be copper.

- B. Fused distribution panel boards where indicated on the drawings shall be Type II, Class 1, U.L. listed. They shall be listed and labeled for Service Entrance equipment where drawings indicate this use. Integrated equipment short circuit rating shall be 200,000 max. RMS sym. amps with appropriately rated current limiting fuses. Branch switches shall be as indicated on the drawings with current limiting fuses. Panelboards shall be Square-D type OMB.
- C. Comparative panel boards by Square-D, Westinghouse, Cutler Hammer, General Electric or Siemens-Allis-ITE are acceptable but must match Switchgear choice.

2.08 SWITCHBOARD

- A. Switchboard shall be a completely self-supporting structure labeled for service entrance of the required number of vertical sections bolted together to form one metal enclosed rigid switchboard 90" high. The sides, top, and rear shall be covered with removable screw-on code gauge steel plates. Switchboard shall include all protective devices and equipment as listed on the drawings with necessary inter-connections. Buses shall be tin-plated aluminum sizes on the basis of no more than 800 amperes per square inch current density. The bus bars shall be mounted on supports of high impact non-tracking insulated material, and shall be braced to withstand available mechanical forces exerted during short circuit conditions when connected directly to a power course having the indicated short-circuit current.
- B. All steel surfaces shall be chemically cleaned and treated to provide a bond between paint and metal surfaces to help prevent the entrance of moisture and formation of rust under the paint film. The switchboard exterior shall be finished in manufacturer's standard grey. All hardware used on conductors shall have a high tensile strength, and have a suitable protective finish.
- C. A ground bus shall be furnished secured to each vertical section structure, and shall extend the entire length of the switchboard.
- D. Switchboard shall be provided with adequate lifting means and shall be capable of being rolled or moved into installation position, and bolted directly to the floor without use floor sills.
- E. A-B-C type bus arrange-left to right, top to bottom and front to rear shall be used throughout to assure convenience and safe testing and maintenance.

- F. Record drawings shall be furnished providing the following information: Complete rating, short-circuit withstandability of bus and of lowest rated device, overall outline dimensions, including space available for conduits, circuit schedule showing circuit number, device description, device frame ampere rating, trip or fuse slip ampere rating, feeder circuit identification, conductor ratings, and one-line diagram with each circuit device numbered.
- G. Switchboard shall be NEMA Class I construction. The main and distribution sections shall be not more than 24" in depth. All sections of the switchboard shall be rear aligned so that the completed structure may be placed against the wall. The distribution branch protective devices shall be group mounted with necessary bar connection straps, and having the device (line and load) connection accessible from the front. Where space for future is called for, all necessary buses except device connecting straps shall be furnished. Provide engraved laminated nameplates identifying all switches.
- H. Provide full height wiring gutter doors for quick access to working terminals.
- I. Contractor shall ensure that switchboard as submitted will fit in available space.
- J. Acceptable manufacturers are Square-D, Westinghouse, General Electric, Siemens-ITE or Cutler-Hammer.

2.09 TRANSFORMERS

- A. Small dry type transformers to provide power for lighting, convenience outlets, heating, etc. shall be wall or platform mounted, and shall have NEMA Standard taps. Primary and secondary voltages, phases, and transformer ratings shall be as indicated on the drawings. Sizes 25 and smaller shall be totally enclosed, and Underwriters Laboratories listed for indoor or outdoor installation. Sound levels shall not exceed those listed by NEMA-ANSI Standards for general purpose transformers and is no case more than 45 db.
- B. All dry type transformers shall have an insulation system with a maximum temperature rating of 2200 C and a basic impulse level of 10 kV. All transformers shall be designed to produce rated output with an average conductor temperature rise of 80° in a 40° C ambient temperature. All transformers shall be furnished with four primary voltage taps: Two 2-1/2% above, and Two 2-1/2% below rated voltage. All dry type transformers shall be of General Electric, Sorgel Electric Corporation, Westinghouse Electric Corporation, Acme, Cutler Hammer, Jefferson or ITE.
- C. All dry type transformers 5 kVA and larger shall be floor mounted and located inside building.
- D. Vibration/Isolation pads shall be used for all transformers.

2.10 PLYWOOD BACKBOARDS

- A. Provide Grade A-C plywood backboards where shown. Backboards shall be fire treated and shall be minimum 3/4" thick and sizes as shown or to accommodate equipment indicated to be mounted thereon with some additional space remaining for future use.
- B. Paint both sides and all edges with two coats of flat grey fire resistant paint. Prior to installation, then secure plywood to the building structure.

2.11 SMOKE AND FIRE STOP FITTINGS

- A. Smoke and fire stop fittings shall be U.L. listed for that purpose. The fittings used to seal conduit either on the outside of the conduit or internally shall have heat activated intumescent material which expands to fill all voids and shall be O.A./Gedney "FIRE-SEAL" or approved equal with an hourly fire-rating equal to or higher than the rating of the floor or wall through which the cable or conduit passes. The seals for conduit shall be of the flanged type.

PART THREE – EXECUTION

3.01 CONDUIT

- A. Rigid steel or IMC shall be used for feeders, branch circuits in concrete and for feeders and branch circuits where exposed to damage and exposed less than 6' above finished floor.
- B. EMT shall be used for branch circuits, fire alarm, data/voice, and video.
- C. Plastic conduit may be installed for underground service into building from Power Company transformer to Main Service and for exterior runs for site lighting. A plastic to rigid steel or intermediate metal conduit to rise above grade. Provide green equipment grounding conductors in all plastic conduits.
- D. Conduits shall be supported on not more than 8'-0" centers when concealed and 5'-0" centers when exposed. Conduits shall be supported by means of approved galvanized iron clamps or hangers, attached to masonry with inserts and bolts or lead expansion shields or to structural members by means of approved galvanized iron clamps or hangers. Where installed exposed, conduits shall be parallel with or at right angles to walls or ceilings.
- E. All conduit installed in or under the building floor slab shall be galvanized rigid or intermediate steel conduit or PVC where allowed by code. Conduits in the concrete floor slabs on grade shall be installed inside the slab above the vapor barrier where possible and shall be covered with a minimum of 2" of concrete bottom. If metallic conduits are installed below the floor slab and vapor barrier they shall be coated with two coats of coal tar bitumastic equal to Koppers Bitumastic 505.

- F. Conduit underground outside the building shall be rigid steel conduit or PVC where allowed by code. Metallic conduits shall be coated with two coats of coal tar bitumastic equal to Carboline Bitumastic 50. Conduits containing conductors at voltages of 120 volts or higher (phase to ground) shall be installed a minimum of 48" below grade. Electrical cable may be direct burial where code allows. All underground wires or conduits shall be buried with a warning tape installed 24" above the conduit or cable.
- G. Warning tapes shall be T & B/Westline NA-1268 (yellow) for electric lines, NA-1270 (green) for telephone or cable TV lines and NA-1274 (yellow) for high voltage primary by Power Company.
- H. Conduit shall be secured independently of other conduit.
- I. Conduits shall be rigidly secured to structure in vertical and horizontal planes with exception of in slab or earth which will be run in the nearest and most direct method.
- J. All conduits left for future use and for special systems shall be left with a 70# test nylon cord pulled in them and the ends corked or capped. Both ends of conduit shall be clearly identified as to where the other end is terminated.
- K. Connectors and couplings on rigid steel and intermediate metal conduit shall be threaded. Where rigid steel or intermediate metal conduit is connected to a hubless box, a locknut shall be used on each side of the box wall. If threadless connectors are used on RGSC or IMC, a ground wire must be installed inside the conduit and sized according to circuit or feeder size.
- L. Where power and lighting conduits are laid below ground, they shall be rigid galvanized steel or intermediate metal or PVC where allowed by code and encased in 4 inches of 3000 P.S.I. concrete on all sides, unless noted otherwise.
- M. Non-metallic conduit shall be Schedule 80, 900 Centigrade, rated polyvinyl chloride, Underwriters' Laboratories listed for underground direct burial. All PVC shall contain an insulated grounding conductor of the correct size per NEC.
- N. All vertical conduit runs not supported by walls are to be secured at floor and ceiling. Conduits are to be secured at the floor by means of a flange secured to the floor by expansion bolts. Connections to the equipment are to be by means of a "tee" conduit fitting and flexible conduit.
- O. Conduit seal off fittings shall be used on all conduits that go from refrigerated areas into a non-refrigerated area or from a hazardous area to a non-hazardous area and on all conduits to sewage lift pumps or other
- P. Conduit shall be continuous from outlet to outlet, from outlet to cabinet, junction box and pull box. Conduit shall enter and be secured to all boxes, etc. in such a manner that each

system will be electrically continuous from service to all outlets. All conduit from cabinets and junction boxes shall terminate in approved outlet boxes or conduit fittings. Conduit connections to any box which has no threaded hub shall be double locknuted.

- Q. Provide junction boxes or pull boxes where shown and where necessary to avoid excessive runs or too many bends between outlets. The conduit sizes shown may be increased if desired to facilitate the pulling of cables.
- R. All conduit shall be concealed unless indicated otherwise. Install exposed conduit parallel with or at right angles to the building walls and support from walls or ceilings at intervals required by Code with approved galvanized iron clamps or hangers. Concealed conduit above the ceiling shall be supported independent of ceiling construction. Where ceilings of lay-in type are used, conduit must be installed high enough to permit removal of ceiling panels and lighting fixtures. Use threaded rods and hangers for supporting single conduit. Use trapeze hangers consisting of double-nutted threaded rods and "Unistrut" channels or angles of 12 gauge minimum steel for supporting multiple conduit.
- S. Minimum size conduit for branch circuits shall not be smaller than Home runs shall extend from outlets shown to panel designated. Home runs shown may be combined where running to the same panelboard. Limit maximum number of homeruns perconduit to three (3).
- T. At couplings, conduit ends shall be threaded so that they meet in the coupling. Right and left hand couplings shall not be used; conduit couplings of the Erickson type shall be used at locations requiring such joints.
- U. Expansion fittings shall be installed in all conduit which pass through expansion joints.
- V. Provide non-hardening elastic type duct seal compound, Neer No. DC, 3M Co. "Scotchfil", or Gardner Bender duct seal, for each conduit entering the building from outside and for each conduit passing from one space into another which is normally at a lower temperature.
- W. Space in sleeves or around conduit that pass through fire resistive or fire rated walls, partitions, floors or ceilings shall be closed by packing with a fire resistive material that will maintain the rating of the barrier penetrated.

3.02 FLEXIBLE CONDUIT

- A. Flexible conduits shall be galvanized steel or aluminum. All flexible conduits shall be installed with a green ground wire run inside the conduit from box to box; or in the case of no box, the ground wire shall be run on the outside of the flex.
- B. Connections to equipment in mechanical rooms, kitchens and other places as noted shall be made with water tight, jacketed, flexible conduit. Flexible conduit shall be no longer than necessary, and in no case longer than six (6) feet, nor less than eighteen (18) inches.

- C. Furnish and install flexible metal conduit connections to all motors and to all equipment subjected to vibration. Minimum size shall be inch. Length shall be approximately 15 inch minimum and shall not exceed 6'0" maximum.
- D. Nominal size ½" flexible metal conduit in lengths not exceeding 6'0" may be used for connecting lighting fixtures. (Single fixtures-not rows.)
- E. Provide "Sealtight" conduit and Appleton, Ideal or T & B liquid-tight fittings at all flexible connections subject to weather. All flexible conduit shall contain a green grounding conductor. (Flexible conduit may not be used as a grounding conductor.)
- F. No flexible conduit is to penetrate any wall.
- G. Conduit runs shall not be coupled with flexible conduit without a junction box, and then only for hook-up of vibrating or appliance connections. Exception: dry type transformers.
- H. Any conduit or flex exposed on interior or exterior which is accessible from finished grade or floor surface is subject to physical abuse and must be installed in such a manner so as to limit this installation from becoming a safety hazard in the future. Special attention is directed to thru wall heat pump and bard units.
- I. A green stranded bonding jumper shall be installed outside of all flexible conduit that extends directly from a non-flex conduit to a rotating or vibrating machine. Where a junction box is used, the green stranded bonding jumper shall be installed inside the flexible conduit and attached to the junction box and to the machine. When the bonding jumper is installed outside of the flexible conduit, plastic wire straps shall be used 6" o.c. to secure the jumper to the flexible conduit.

3.03 CONDUIT PROTECTION

- A. Conduit shall be secured in place and protected where necessary to prevent damage to work during construction. The ends of all conduit shall be plugged to avoid filling with any foreign matter. All conduit shall be blown out and swabbed clear of water and trash prior to pulling wire.

3.04 WIRING

- A. All conductors shall be installed in conduit, unless otherwise noted. No conductors shall be pulled into the conduit until the conduit system is complete and plaster as dried. Only U.L. listed lubricants shall be used in pulling conductors.
- B. Conductors shall be continuous from outlet to outlet and from outlet to junction box or pull box. All splices and joints shall be carefully and securely made to be mechanically and electrically solid with pressure type connectors, "SKOTCHLOK" or approved equal. Tape shall be "Scotch" No. 33 for indoor and No. 88 for outdoor or approved equal.

Where connection is made to any terminals of more than 30 amperes capacity and where conductors larger than NO.10 are connected to any terminal, copper terminal lugs shall be bolted to the conductors. Where multiple connections are made to the same terminal, individual lugs for each conductor shall be used.

- C. Each conduit shall have a minimum of two (2) conductors pulled in unless that particular conduit is noted as being empty for future use. The number of cross hatches indicates the number of conductors to be installed when the number exceeds the minimum of two (2). This does not apply to conduit installed for telephones and other special systems.
- D. Conductors for lighting and receptacles circuits up to and including # 8 shall have color coded jackets. All conductors from # 6 and up are to be color coded with tape within two (2) inches of each end to indicate voltage and phase. The wiring shall be color coded with the same color used with its respective phase through the entire job as follows:

208/120 VOLT SYSTEM

Phase A -Black
Phase B - Red
Phase C -Blue
Neutral -White
Ground -Green

480/277 VOLT SYSTEM

Phase A -Brown
Phase B -Orange
Phase C -Yellow
Neutral -Gray
Ground - Green

- E. The feeder and service entrance conductors shall be color coded by the use of colored plastic tape applied within 6" of each conductor end.
- F. Branch circuit conductors shall not be smaller than No. 12 and where the home run from center of load exceeds 75'-0", the conductors from home run outlet to panel shall be No. 10 minimum.
- G. Branch circuit wiring which supplies more than one (1) fluorescent fixture through wireway of other fixtures shall be rated for use at 105 degree C.
- H. For branch circuits terminating in outlet without device, leave minimum of 12" of slack wire with taped ends and coiled for connection of equipment. All conductors shall be identified with proper circuit numbers at terminals and junction boxes.
- I. The wiring for intercom and fire alarm for new adjacent buildings should tie back to the corresponding system in the main classroom building by separate homeruns to fire alarm panel, not by connecting to nearest fire horn or pull box. All new wiring shall be identified by number.
- J. Intercom/fire alarm stub-outs (weatherhead through roof) shall be provided to accommodate possible future portable classrooms. Coordinate location with Owner.

- K. Branch circuits shall be 2, 3 or 4 wires run from the panels to all outlets. In no case shall designated homeruns be combined with other homeruns.
- L. Where wiring is relocated from one cabinet to another, the complete circuit and conduit shall be rerouted to the new location and not pass through the original cabinet.
- M. Where a portion of a circuit, feeder or system is interrupted, the existing portions shall be rerouted and reconnected together to maintain the original integrity.
- N. No splices are allowed in panels.
- O. All junction boxes are to have 8 inches of slack for future use as opposed to having wires pulled right through boxes.
- P. All wiring that extends within fluorescent fixtures that is over 12 inches long shall be 105 degree Centigrade type THHN or THWN.
- Q. All wiring within flexible conduit shall be flexible stranded.
- R. All neutral branch wires shall be white or grey depending on voltage, and all other wires shall be color coded. All grounding conductors #8 or smaller shall have green insulation. Grounding conductors #6 or larger shall be identified with green tape.
- S. Stub-outs shall be provided for intrusion alarm in all new construction. Coordinate location with Owner.
- T. Plenum rated cable may be used for low voltage installations using loop hangers properly secured above ceilings. Plenum rated cable shall be color coded as follows:
 - a. 1. Intercom Blue tint
 - b. 2. Fire Alarm Red tint
 - c. 3. TV Black tint (grey)
 - d. 4. DDC White (standard, furnished under mechanical)
 - e. 5. Data Orange (furnished and installed by Owner)

3.05 OUTLETS

- A. Provide galvanized steel or cast type boxes for all outlets.
- B. Where outlet boxes are used to support lighting fixtures, the outlet box shall be anchored to the structural members of the building.
- C. Outlet boxes shall be flush mounted unless they are specifically shown as being used with exposed conduit or are located above a ceiling.

- D. Where outlets are supplied from conduit in or below floor slabs, the conduit shall be stubbed up at the location shown and the wall built up around the conduit.
- E. Cuts for outlet boxes masonry walls shall be made so that the coverplate will completely cover the cut. The mounting height of switch, receptacle and other outlets may be varied slightly, with the Architect's approval, so that the outlet box, top or bottom, will occur at a masonry joint.
- F. The edge of all outlet boxes shall be flush with the surface in which they are recessed. The devices that fit into the outlet boxes shall be screwed tight before the cover plate is installed and the cover plate shall not be used as a means of tightening the device in place.
- G. Where outlets are shown as being adjacent and different mounting heights are specified for each, they shall be mounted one directly over the other, on the center line of the group.
- H. Support each box independently from the building structure independent of conduit.
- I. Locate boxes and conduit bodies so that covers are accessible and removable.
- J. All boxes shall be equipped with coverplates of the correct type and size for the type of box and all screws shall match plate finish.
- K. Receptacle boxes on science table tops are to be bolted to support and not solely dependent on a nipple for support.
- L. Outlet boxes shall be set so that the front edge is flush with the finished face of the wall.

3.06 NAMEPLATES

- A. Provide engraved laminated white core nameplates on the main switchboard, feeder switches, feeder breakers, distribution panels, panelboards, disconnect switches, contactors, starters, time switches, start-stop push buttons and motor switches that do not have one.
- B. Nameplates for surface mounted equipment shall be installed on the exterior of equipment with sheet metal screws. Nameplates for flush or recessed mounted equipment shall be installed on the inside of the panel door or cover with epoxy cement.
- C. Nameplates shall have 3/8" high engraved letters.
- D. 120 or 208 volts: white core laminated bakelite with black finish.
- E. 277 or 480 or high volts: white core laminated bakelite with red finish.

3.07 WALL SWITCHES AND RECEPTACLES

- A. Where more than one device is indicated at a location, the devices shall be mounted in combined sectional gang boxes and covered jointly by a common coverplate.
- B. Locations of outlets shown on the drawings are relative and approximate unless noted otherwise. Exact locations shall be determined on the job and the outlets accurately set according to architectural drawings, dimensions and Architect's direction.
- C. Mount switches vertically with up being the "on" position.
- D. Back to back receptacles shall be offset a minimum of 24" o.c. (No thru-wall boxes shall be used).
- E. All kitchen/cafeteria serving line equipment shall have the electrical service fed from overhead.
- F. Ground fault receptacles shall be used in wet areas and at all sink locations.
- G. All receptacles shall be grounded with a green ground wire connected from the ground lug on the receptacle to a screw in the back of the outlet box or with an approved grounding strap.
- H. Receptacles shall be secured to the outlet box without depending on the cover to pull them tight.
- I. Mount devices vertically, unless noted otherwise.
- J. Mount receptacles occurring over countertops horizontally.
- K. Duplex electrical outlet shall be installed within 16" on center of the TV outlet.

3.08 COVERPLATES

- A. All junction boxes, outlet boxes, sectional switch boxes, utility boxes, etc., shall be covered with a coverplate. The coverplate shall be a finished plate as specified unless designated otherwise.
- B. Coverplates shall be mounted vertically unless designated otherwise.

3.09 SAFETY SWITCHES/DISCONNECT SWITCHES

- A. All equipment utilizing gas and/or electricity is to have a disconnecting means within six (6) feet of equipment or within reach of equipment served. (Cord and plug on 1 208V is

acceptable.) Special attention is hereby brought to kitchen equipment (disconnect should also be external and not a factory part of appliance).

- B. Provide support channel frame for mounting when wall mounting is not available. Avoid mounting directly on equipment housing.
- C. All equipment power of 2 KYA and higher to have a disconnect (N.E.C.) within six (6) feet of equipment or within reach of equipment and must contain a can ground lug with a marked ground wire of proper size. All disconnects shall be mounted vertical.

3.10 PANELBOARDS

- A. Electrical panel for kitchen equipment shall be directly accessible in kitchen.
- B. Provide a typewritten directory under plastic for all panelboards with spares marked in pencil.
- C. Clean enclosure of all switchgear of all foreign matter, including dust.
- D. Flush panelboards shall have a minimum of three 3/4 inch empty conduits turned out of the wall above the ceiling for spares.
- E. All panel branch circuits shall be of the sequence, vertically number, distributed phase type. (Numbers 1, 2 and 3 shall be phase A, B, and C.) Panel buses shall be numbered and circuit numbers shall correspond to space numbers in panel.
- F. All panel covers in a building are to be keyed alike.
- G. Where two panels of different height are used, the tops shall be the same height A.F.F., and in no case should exceed 6'-8". Double width panels shall have matching trims and both cabinets and doors shall be the same size.
- H. All circuits shall be identified in detail, identifying what is served by each circuit. Spares shall be noted in pencil. Spaces are to be numbered from top to bottom starting on the left side.

3.11 GROUNDING

- A. Ground connections shall be in accordance with the National Electrical Code requirements.
- B. Provide an insulated green bonding jumper from the metal housing of wall mounted or suspended light fixtures to the grounded outlet.
- C. Common Grounding Electrode System

1. Bond together each of the following to each main service ground bus with a #3/0 green insulated "XHHW" copper ground conductor in a 1" PVC conduit to provide a common grounding electrode system.
 - a. Underground main metallic water pipe, connect ahead of the first valve, and provide a bonding jumper across water meter.
 - b. Structural steel building frame, connect to nearest vertical member originating at a footing.
 - c. Concrete encased electrode consisting of 20 feet of #4 AWG bare copper conductor encased in a footing or foundation in direct contact with the earth.
 - d. A made electrode consisting of three 10-foot copper clad ground rods spaced 12 feet apart in the form of an equilateral triangle and bonded together to form a loop. The entire rod assembly shall be installed a minimum of 24" below finished grade and the connections on the triangle shall be cad-welded to the rods.

3.12 BONDING

- A. Bond the following conduits to each other, the housing can and ground bus with a #3/0 insulated copper ground wire and grounding bushings.
 1. All conduits entering any free standing enclosure, transformers or other equipment.
 2. All conduits entering main service device.
- B. Bond together all non-current carrying metallic parts to provide continuous grounded path for all devices, equipment and enclosures.
- C. Bond all receptacles, switches and other wiring devices by providing an 8" long green insulated copper ground conductor from device grounding lug to the metallic box or the branch circuit grounding conductor.
- D. Bond all items connected by flexible type conduits by providing a green insulated copper ground conductor installed in the conduit and bonded to the enclosure or ground bus at each end.
- E. Install an insulated bond wire in all conduits which supply power to any microprocessor controlled equipment. Bond shall originate at power source and end at appropriate equipment bond point.

3.13 CONNECTION TO EQUIPMENT

- A. Equipment furnished by the Owner or under other Sections, such as Mechanical Equipment, Elevators, Escalators, Signs, Kitchen Equipment, etc. will be installed by others. Provide electrical service and make the electrical circuit connections to this equipment as directed.
- B. Service shall be provided for all equipment requiring same, whether furnished in Contract or furnished by others. Provide service for and connect the following equipment.
 - 1. All food service equipment.
 - 2. Fume hoods and other equipment in labs, shops, etc.
 - 3. Hand dryers in elementary, middle, and high school student gang toilets.
 - 4. Electrically operated theater divider partitions.
 - 5. Electrically operated projection screens (2) in high school theater building.
 - 6. Basketball backstops (high schools).
 - 7. Oscillating fans in kitchen (coordinate with mechanical).
 - 8. Art room kiln and exhaust hoods.
 - 9. Door hold-open devices.
 - 10. Water heaters.

3.14 MOUNTING HEIGHTS

- A. Unless otherwise directed, heights above floor to of device shall be as follows:

Lighting Switch	48"
Receptacle-General.	18"
TV Antenna Outlets	72"
Panelboards	68"
Safety Switches ""	60"
Motor Starters	60"
Thermostats (horizontal)	48"
Fire Alarm Pull Station	48"
Fire Alarm Horn	80"
Clock Outlets	80"
Program Bells	80"
Hand Dryers (coordinate w/ other trades)	
Call Back Intercom System.	48"
TV Electrical Outlet	72"

3.15 EQUIPMENT SUPPORTS

- A. The Contractor shall furnish and install all necessary supports for mounting electrical apparatus. All structural shapes, rods, bolts, nuts, etc., used to support electrical equipment shall be galvanized.

3.16 PAINTING

- A. Except as specified herein, painting will be done as described in other divisions of the specifications, but the electrical installation shall be free of rust, dirt, grease, and other foreign material.
- B. Equipment with a factory applied finish shall have scratches, chips, etc., repaired and refinished to the satisfaction of the Architect.

3.17 CUTTING AND PATCHING

- A. Set sleeves for conduit accurately before the concrete floors are poured, or set boxes on the forms so as to leave openings in the floors in which the required sleeves can be subsequently located. Fill in the concrete voids around the sleeves.
- B. Should the performance of this preliminary work be neglected and should cutting be required in order to install conduit, then the expense of the cutting and restoring of surfaces to their original conditions shall be accomplished without incurring additions to the Contract.

END OF SECTION

SECTION 16400

SERVICES AND DISTRIBUTION

PART ONE -GENERAL

1.01 SCOPE

- A. Work under this section is for the installation of underground power supply for the building.

1.02 SYSTEM VOLTAGE

- A. System Voltage shall be 277/480 volts, 3 phase, 4 wire, from the Power Company pad mounted transformer to the main service and distribution panel in the building.

PART TWO - PRODUCTS

2.01 SERVICE CONDUIT

- A. Conduit shall be PW, encased in 3000 psi duct bank

PART THREE -EXECUTION

- 3.01 Provide the underground primary and secondary conduit systems complete, including all excavation, backfill, trenching, spacers, stakes, conduit, etc., as indicated on the drawings, and as required.
- 3.02 Provide concrete pad for transformer in accordance with Power Company Specifications.
- 3.03 The Contractor shall install underground service conduit from the main panel to the Power Company transformer. Cable shall be pulled in by and connections made by Contractor.
- 3.04 The Contractor shall secure all permits and make all arrangements with the Power Company for the connection of electrical service to the building and coordinate metering requirements.
- 3.05 All equipment and service shall be grounded in strict accordance to requirements of the NEC, and local regulations. Ground rods shall be copper-clad 3/4" diameter, 10 feet long driven full length into the earth. The maximum resistance shall not exceed 25 ohms under normally dry conditions.

END OF SECTION

SECTION 16500

LIGHTING

PART ONE GENERAL

1.01 SCOPE

- A. The work included under this section includes the furnishing and installation of all light fixtures.
- B. All work specified in this Section shall comply with the provisions of Section 16010.
- C. General Conditions, Supplementary Conditions and General Requirements shall govern the work of this Section.

1.02 SUBMITTALS

- B. Manufacturer's literature describing product.
- C. Shop drawings, showing elevations, sections and method of installation.

PART TWO - PRODUCTS

- 2.01 Lighting fixtures shall be furnished complete with mounting accessories to suit the specific service intended. Fixtures shown in the schedule to be recessed will be complete with accessories to furnish support from the structure above and/or any other accessories required to fit the above fixtures to the ceiling construction.
- 2.02 Fixtures scheduled to be pendant mounted shall be complete with supports above the ceiling, stems and canopies, swivel aligners and/or other accessories necessary to suspend the fixtures at the specified height above the floor.
- 2.03 Fixtures scheduled to be surface mounted shall be furnished and installed employing supports above the ceiling, toggle bolts and any other accessories which are required to adequately support the fixtures.
- 2.04 Fluorescent fixtures in continuous rows shall be supplied with all fixture couplings, chase nipples, and/or other accessories recommended by the manufacturer for continuous row installation.
- 2.05 Fluorescent fixtures shall be complete with class "P" electronic ballasts designed to operate rapid start T8 Lamps. All ballasts shall conform to the following standards:
 - 1. Ballast shall meet sound rating "A".

2. Ballast shall meet ANSI Standards.
3. Ballast shall have a minimum power factor of .98.
4. Ballast shall have less than 15% total harmonic distortion, less than 8% third harmonic distortion.
5. Ballast shall comply with EMI and RFI Limits set by the FCC (CFR 47 Part 18) for non-residential applications and not interfere with normal electrical equipment.
6. Ballast shall operate lamps at a frequency of 25 KHz or Higher with less than 2% lamp flicker.
7. Provide Two (2) Year Warranty.
8. Maintain full cathode heat during operation.
9. Ballast shall have less than 1.5 ramp current crest factor (LCCF).
10. Light output shall remain constant for line voltage fluctuation
11. Accepted Manufacturers are Motorola, Advance, Magnatek, and Triad.

2.06 Lamps shall be furnished and installed in all fixtures. All incandescent lamps shall be general service inside frosted 2500 hour life, of type required. Fluorescent lamps shall be energy saving type. Refer to the light fixture schedule on the drawings for complete information. All lamps shall be Phillips, GE, or OSRAM/Sylvania.

2.07 Exit signs shall have metal stencils, red letters with a lamp life of 50,000 hours.

2.08 Refer to drawings for Lighting Fixture Schedule and Lamps.

2.09 DIFFUSERS

A. Unless specified otherwise, all prismatic diffusers for fluorescent lighting fixtures shall be prismatic acrylic KSH K12 or approved equal with a thickness of 0.125", measured from the back side of the peak of the prism.

B. All wraparound lenses shall be virgin acrylic, one-piece and injection molded.

2.10 LIGHTING FIXTURE TRIM

A. Each recessed lighting fixture shall have a trim to match the type of ceiling (plaster, exposed grid, concealed spline, exposed panel, etc.) in which it is being installed, regardless of catalog number given. Coordinate with the Architect's Reflected Ceiling plan to provide the right trim for the type of ceiling in which the fixture is to be installed.

B. Each lighting fixture recessed in a plastered ceiling of any type shall have a plaster frame.

2.11 OTHER MATERIAL

All other materials and accessories, not specifically described or called for, but which are required for a complete and finished installation for the work of this section shall be furnished and installed by the Contractor at no additional cost to the Owner. These materials shall be selected by the Contractor, subject to be reviewed by the Architect.

PART THREE - EXECUTION

3.01 Carefully install all the schedule and all specified lighting fixtures in each of the areas indicated. Fixtures shall be furnished to exactly fit the type of ceiling system as scheduled for the space.

3.02 Fixture mounting details shall be checked with the ceiling details and flanges, lay-in or wet or dry ceiling mounting shall be verified before the fixtures are ordered. The Contractor shall coordinate this item. Fluorescent fixture shall be installed with (2) 12 gauge wires. Lay-in fixtures shall be installed with alignment clips and 12 gauge wires.

3.03 Each fixture shall be marked in wiring compartment with circuit number supplying fixture. Marking may be with permanent ink marker.

3.04 All flexible conduit used to connect lay-in fixtures to junction boxes shall have 2 #12 power and 1 #12 green ground wire minimum in flex. All wire shall be flexible stranded.

3.05 All exit signs shall be installed so that they can be seen in all directions. They shall not be installed behind any pipe or other piece of equipment. The stems on all ceiling mounting lights shall be of such length that the lights shall be visible.

3.06 SUPPORT OF LIGHTING FIXTURES

A. All lighting shall be supported from the building structure. The fixtures shall be supported in a manner that will insure the fixture weight being equally distributed from each support and the fixture remaining in a level position.

B. Fluorescent fixtures installed recessed in a suspended ceiling system shall be supported from the building structure with two (2) 12 gauge wires on diagonal corners of the fixture. In addition, the fixture shall be clipped to members of the ceiling suspension system.

C. Fluorescent fixtures installed in or on any ceiling other than a suspended ceiling system specifically mentioned above shall be supported with concealed steel rods. Rods shall be 1/4" diameter minimum and shall be located where recommended by the fixture

manufacturer. Provide a minimum of two (2) supports for each 4' or 8' fixture chassis. Supports shall be maximum of 48" centers. For incandescent fixtures, steel hanging wire may be used by attaching the wire to fixture mounting frame.

D. Pendant mounted incandescent fixtures shall be stem supported by a fixture stud mounted in the outlet box. Suspended fluorescent fixtures shall have mounting stems located as per the manufacturer's recommendations, but in no case shall have less than two (2) stems per chassis.

3.07 FINAL

- A. Protect finished installation from damage by other trades.
- B. Remove rubbish and left over materials from the site.

END OF SECTION

SECTION 16720

FIRE ALARM AND SMOKE DETECTION SYSTEM

PART ONE -GENERAL

1.01 SPECIFICATION INCLUDES

- A. Fire alarm and smoke detection requirements for a NFPA 72 local fire alarm life safety system.

1.02 REFERENCES

- A. NFPA 72 -National Fire Alarm Code
- B. NFPA 101- Life Safety Code
- C. Rules and Regulations of the Safety Fire Commissioner Chapter 120-3-3
- D. O.C.G.A. Title 25
- E. SBCCI, Standard Fire Prevention Code
- F. ADA Public Law 101-336
- G. International Building Code

1.03 REGULATORY REQUIREMENTS

- A. Equipment All devices, combinations of devices, appliances, and equipment, shall be listed for the protective signaling purpose for which they are used and shall be installed in compliance with applicable codes and standards.
- B. Type of System: The control panel shall be listed for power-limited applications per NEC 760 and for compliance with the National Fire Protection Association Standards NFPA 71; for Central Station, and NFPA 72; for Local, Auxiliary, Remote Station, and/or Proprietary fire protective signaling systems.
- C. Type of Service: The control panel shall be listed for the applicable types of service used, i.e.; Manual Alarm, Automatic Alarm, Waterflow Alarm and/or Sprinkler Supervisory Service.
- D. Type of Signaling: The control panel shall be listed for the applicable types of signaling methods used i.e.; Coded, Non-Coded, March Time and/or Digital Alarm Communicator Signaling.

- E. The provisions of O. C.G.A. Chapter 25-2, or other applicable state laws, and of the applicable Chapters of the Rules and Regulations of the Georgia Safety Fire Commissioner or the Rules and Regulations of local jurisdictions regarding the requirements for certificates, licenses, permits, plan reviews, inspections, approvals, fees, etc., shall apply.

1.04 SYSTEM DESCRIPTION

- A. Fire Alarm System: Provide a complete supervised, power-limited, fire detection and evacuation system. All equipment herein specified is that of Edwards System Technology and depicts the type and quality of the equipment to be furnished. Refer to Manufacturer's Data and Drawings for further information and qualifications. Equals by Faraday and Notifier will be acceptable. All other manufacturers require 10 day prior approval to bid.
- B. System Supervision: The fire protective signaling system shall be an electrically supervised system which shall monitor integrity of circuit conductors and power supplies. Performance of fire protective signaling system circuits shall be in accordance with Style 4 operation for Signaling Line Circuits, and Style Y operation for Notification Appliance Circuits.

1.05 QUALIFICATIONS

- A. Manufacturer: The Manufacturer shall be a nationally recognized company specializing in smoke detection and fire alarm systems. This organization shall employ factory trained and NICET certified technicians, and shall maintain a service organization within 60 miles of this project location. The Manufacturer and service organization shall have a minimum of 10 years experience in the fire protective signaling systems industry.
- B. Installer: The installation shall be supervised by an employee of the manufacturer and shall have a NICET Level III or higher certification and a State of Georgia LOW-Voltage Unrestricted License.
- C. The Manufacturer Installer Organization supplying final check-out, as-built drawings on cad, contractual service and testing, shall be listed and Authorized by UL to provide services for alarm system Certification as a means of identifying compliance with applicable NFPA Standards.

1.06 SUBMITTALS

- A. Submit Manufacturer product data sheets for all proposed devices and equipment.

- B. The authority having jurisdiction shall be notified prior to installation of equipment or wiring. Complete information regarding the system including specifications, wiring diagrams, battery and power supply calculations, floor plans and graphics shall be submitted for approval.
- C. If submittals, upon review by the Owner and/or the Owners Representative, are found not to conform to the performance, type and quality of products as well as all other requirements of these specifications; the Contractor shall be required to resubmit. Approval of the submittals by the Owner shall, in no case, relieve the Contractor of the responsibility to meet the requirements of this specification.
- D. Equipment supplier shall submit CAD drawings for review showing all field wiring, device connections, and battery calculation.
- E. Submit copy of NICET certification, GA Low Voltage Unrestricted License, and Underwriter's Laboratories Inc. Certificate of Compliance.

1.07 PROJECT DOCUMENTATION

- A. The Contractor shall provide and maintain on the site an up-to-date record set of approved shop drawings.
- B. Record drawings shall include location of end-of-line device locations. Cad as-built drawings and disk will be furnished by the supplier of the fire alarm equipment at the completion of the project.
- C. An owner's manual to include:
 - 1. A detailed narrative description of the system inputs, evacuation signaling, ancillary functions, annunciation, intended sequence of operations, expansion capability considerations and limitations.
 - 2. Operator instructions for basic system operations, including alarm acknowledgement, system reset, interpreting LED and LCD indications, operation of manual evacuation signaling and ancillary function controls.
 - 3. A detailed description of routine maintenance and testing as required and recommended and as would be provided under a maintenance contract, including testing and maintenance instructions for each type of device installed. This information shall include:
 - a. A listing of the individual system components that require periodic testing and maintenance.

- b. Step-by-step instructions detailing the requisite testing and maintenance procedures and the intervals at which those procedures shall be performed, for each type of device installed.
- c. A schedule that correlates the testing and maintenance procedures with the listing.

1.08 SYSTEM OPERATION

- A. All work specified in this section shall comply with the provisions of Section 16000.
- B. The extent of the fire alarm work included under this Section and as shown shall include, but shall not be limited to, furnishing and installation of a Life Safety System with the following sequence of operation:
 - 1. Actuation of any alarm initiating device shall initiate the following:
 - a. Cause a message to appear on the alpha/numeric read-out indicating the custom message assigned to the device in alarm.
 - b. Cause all horn/strobes to sound, all visual alarms to flash continuously.
 - c. Release all magnetically held smoke doors.
 - d. Provide relay at each AHU unit to shut down or reroute air handling systems to prevent the recirculation of smoke and shut down each AHU unit associated with duct smoke detector.
 - e. Provide the appropriate signals to a central station or local municipal fire department for fire alarm, and fire sprinkler (as required by fire code).
 - f. Provide the proper alpha/numeric custom message at the remote annunciator.

PART TWO PRODUCTS

2.01 FIRE ALARM CONTROL PANEL / ANNUNCIATOR

- A. Addressable Control Panel EST-2 Series
 - 1. Expandable to 380 points and four NAC
 - 2. Battery back-up as required by code
 - 3. Auto programming with enhanced sensitivity reports
 - 4. Built in digital communicator for connection to monitoring station. (phone line connections and monthly monitoring to be furnished by owner)
- B. Remote Alpha/numeric Annunciator Panel

1. EST LSRAS-C 80character Alpha/numeric Message (custom english text) with common control functions mounting on 2-gang electrical box.
2. Power Extender Panel.
3. Minimum of four signals circuit with power supply and standby batteries.

2.02 INITIATION DEVICES

A. Manual Pull Station Signature Series Single Action Addressable

1. SIGA-270 Single action manual station
2. 279193-11 Surface back box where required to match station.

B. Addressable Signature Series Detectors

1. SIGA-PS Photoelectric sensor
2. SIGA-SB base
3. SIGA-HRS heat sensor

C. Duct Detector Housing Signature Series

1. SIGA-DH Duct detector housing
2. SIGA-PS Photoelectric Sensor
3. Sampling Tube 6261 Series (provide required length)
4. Remote Alarm LED SIGA-LED
5. Provide Detector with programmable relay for shutdown.
6. Waterflow and Tamper switch monitor (Switches furnished by others)
7. SIGA-WTM Dual input monitor module
8. SIGA-CT1 Single input monitor module

2.03 SIGNAL APPLIANCES

- A. ADA Audible I Synchronized Visual Assembly EST 757-7AT. Furnish matching surface back box where required by equipment supplier.

- B. ADA Synchronized Visual Appliance EST 202-7A-T strobe. Furnish matching surface back box where require by equipment supplier.
- C. Weather proof horn shall be EST 757-1A-Twith 757A-WB Box.

2.04 AUXILIARY DEVICES

- A. Magnetic Door Holders as applicable. Furnish control relay for connection to fire system.
 - 1. Floor mounted 1501-AQ
 - 2. Wall Mount 1504-AQ with long catch
- 16720-4 Fire Alarm and Smoke Detection System
- B. Shutdown and start up controls
 - 1. SIGA-CR with 2A Relay
 - 2. MR101C10A Relay in cabinet as required

PART THREE - EXECUTION

3.01 INSTALLATION

- A. The Manufacturer shall provide on-site technical installation support. Installation of equipment and devices that pertain to other work (if applicable) shall be closely coordinated with the appropriate Subcontractors.
- B. Include on-site services of a NICET certified technician as specified to provide technical installation support for panel start up, program editing, troubleshooting of the Fire Protective Signaling System Control Panel and assistance to the Installer for one complete final system checkout in accordance with the Field Quality Control section of these specifications. The Manufacturer shall also provide one training session with the Owner, or Owners Representatives, upon completion of installation for instruction of system operation.
- C. The contractor shall clean all dirt and debris from the inside and the outside of the fire alarm equipment after completion of the installation.
- D. All junction boxes shall be sprayed red. Wiring color code shall be maintained throughout the installation.
- E. Provide and install the system in accordance with the plans and specifications, all applicable codes and the Manufacturer's recommendations. All wiring shall be installed

in accordance with all applicable codes and standards. Before requesting final approval of the installation, the installing contractor shall furnish a written statement to the effect that the system has been installed in accordance with approved plans and tested in accordance with the manufacturer's specifications and the appropriate NFPA requirements.

- F. A Certificate of Completion (NFPA 72) shall be prepared. Parts 1, 2 and 4 through 10 shall be completed after the system is installed and the installation wiring has been checked. Part 3 shall be completed after the operational acceptance tests have been completed. A preliminary copy shall be provided at the time operational acceptance tests are requested and a final copy along with as-built drawings and owner's manual upon request for final acceptance.

END OF SECTION

SECTION 16750

STRUCTURED CABLING SYSTEM FOR VOICE AND DATA

PART ONE - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of contract including General and Supplementary conditions and Division 1 specification Sections
- B. Bidders to this section shall review all other sections of these specifications. All items in other sections relating to this section are as bidding on this bidder as if repeated herein.

1.02 SCOPE

- A. The contractor shall furnish all labor and materials and install premises telephone and data communication system as noted on the drawings and in these specifications. The contractor will furnish, install and terminate the faceplates, jacks, connection blocks, patch panels, cables, patch cords, connectors, racks, brackets, hubs, routers and all other hardware necessary to effect a functional cable plant fully compliant with that as described in these specifications and in the drawings, and to the satisfaction of the owner.

1.02 REFERENCED STANDARDS:

- A. The structured cabling placed on this undertaking shall be Category 6 550MHz, Plenum-rated, "Unshielded Twisted Pair" type and conform to the requirements contained in the latest editions of the following standards.
 - 1. TIA/EIA-568 Commercial Building Telecommunications Wiring Standard
 - 2. TIA/EIA-569 Commercial Building Standard for Telecommunications Pathways and Spaces
 - TIA/EIA-606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
 - 3. TIA/EIA-607 Commercial Building Grounding and Bonding Requirements for Telecommunications
 - 4. Supplements to EIA/TIA-568 Technical Systems Bulletins
 - 5. NFPA-70 National Electric Code (NEC)
 - 6. (ISO/IEC 11801 Generic Cabling for Customer Premises

The most recent versions of all above specifications apply to this project. If there is conflict between applicable documents, the order above shall dictate the order of

precedence in resolving the issue unless an enforceable local or national code is in effect.

- B. Federal Communications Commission
- C. Underwriters Laboratories
- D. NFPA 101 Life Safety Code

1.03 SYSTEMS DESCRIPTION

- A. Provide a system consisting of voice and data cabling and devices as described herein and as shown on the plans including all outlet devices and faceplates, terminations, cabling, cable support, termination blocks, patch panels, equipment racks, grounding, setup, labeling, sting, certification, etc.
- B. Provide a system that exceeds the requirements of the following local area network applications:
 - 1. IEEE 802.3 (10/100/1000 MBPS Ethernet)
 - 2. IEEE 802.5 (4/16 MBPS Token Ring Networks)
 - 3. 550 MHz Broadband
 - 4. 155 MBPS, 622 MBPS and 1.25 GBPS ATM
 - 5. 100 Base VG any LAN
 - 6. SONET
 - 7. FDDI/CDDI
 - 8. IBM System 3x-AS/400
 - 9. Appletalk
 - 10. ISDN
- C. Provide Category 6 unshielded twisted pair (UTP) cable, plenum rated, for copper data cabling, factory tested to 550 MHz.
- D. Provide testing and certification by the manufacturers of the equipment as an installed system that meets Category 6 standards for structured voice and data cabling systems, including the terminations and outlet devices.

- E. Provide duplex fiber optic horizontal cable where indicated.
- F. Provide multi-strand fiber optic cables installed in a star configuration between each wiring closet and the main wiring closet (BET Building Entrance Termination).
16750-1 Structured Cabling System for Voice and Data

1.05 SUBMITTALS

- A. Provide a complete shop drawing package of the system.
- B. Provide clearly legible shop drawings.
- C. Submit shop drawings in a neatly bound comb or three-ring binder with protective covers. Indicate on the front cover the date submitted, project name, specification section number,
Electrical Contractor's name, address, telephone number and the submitting equipment supplier's
address and telephone number. Allow enough clear area on the title sheet for shop drawing
review stamps.
- D. Provide a letter describing the training program on installing extended performance data cabling systems.
- E. Submit 1/8" scale reproducible sepia floor plans showing all rooms, stairways, corridors, and horizontal exits. Include all voice and data outlet locations. Indicate all wire sizes and types, wire counts, conduit sizes and proposed routing through the building. .
- F. Submit the following riser/Wiring/connection diagrams:
 - 1. Single line riser drawing indicating all system components and the vertical wiring necessary to connect the components. Indicate conduit sizes and wire counts and a legend indicating the type of wiring.
 - 2. Indicate the cable routing of each cable, and the approximate anticipated length of each cable.
 - 3. Branch circuit wiring at each communications closet and other devices in the system requiring 120-volt power.
- G. Submit original drawings produced by the supplier/manufacturer. Submitting reproductions of the Contract Documents is not acceptable.
- H. Submit a material list showing quantity, manufacturer, type and description of each item being furnished. Indicate in a separate list quantity and description of all spare parts to be turned over to the Owner at the end of the project

- I. Submit original prints of the manufacturer product sheets with complete technical data for each item being provided. Circle, arrow, or provide other permanent marking on each data sheet to clearly indicate the specific product included in the submittal. Remove or crosshatch out any product on the data sheets not applicable to the project or not being submitted for review.
- J. Submit physical drawings of components.
- K. Submit two scaled drawings of each communications closet (plan and elevation views) indicating all components including equipment racks, patch panels, termination blocks, all wiring, cable management, etc. Coordinate placement of devices with other systems that share the communications closet.
- L. Shop drawings not containing all the information listed above will be rejected without review.
- M. Documentation of testing on all wiring and terminations as per TINEIA standards.

1.06 QUALITY ASSURANCE

- A. Contractor shall be required, before awarding of contract, to demonstrate to the complete satisfaction of the Architect and/or the customer that they have the necessary facilities, ability and financial resources to execute the work in a satisfactory manner and within the time specified; that they have been in the structured cabling business for 3 years and references which will assure the Owner of his qualifications for executing the work.
- B. Contractor shall submit a copy of a valid low-voltage license in the State of Georgia (Low Voltage Telecommunications or Low-Voltage Unrestricted as issued by the State Construction Industry Licensing Board of Low-Voltage Contractors).
- C. Contractor shall submit a copy of a BICSI (Building Industry Consulting Service International) certificate certified and a RCDD (Registered Communications Distributions Designer) certificate.
- D. Comprehensive list of references: Attach a detailed list of references along with contact person, dates of work, mailing address, telephone numbers.
- E. Before commencing work, submit data showing that the contractor / subcontractor has successfully installed low voltage systems of the same type and design as specified. Include the names, locations, and the contact names and telephone number of at least four (4) similar installations. Specify type and design for each system and furnish documentation that the system has performed satisfactorily for the preceding eighteen (18) months.

- F. Before the system is accepted by the Owner, the Contractor will be required to "walk-through" the installation with the Owner and verify proper installation and conformance to specifications, drawings, and other agreed-upon, written details.

1.07 WORKMANSHIP:

- A. All work shall be performed in a workmanlike manner. Architect, Engineer, and/or Owner may observe the work procedures and workmanship of the Contractor but such observation will not relieve the contractor from responsibility for performance.

PART TWO -PRODUCTS

2.01 MANUFACTURERS

- A. The acceptable manufacturers noted shall be installed by an authorized local factory dealer/representative for that product.
- B. All connectivity products both copper and fiber optic: connectors, patch panels, wire management, patch cables, enclosures, racks and labeling are to be produced by the Acceptable Manufacturer's list below:
 - 1. Panduit
 - 2. Hubbell
 - 3. Ortronics
 - 4. AMP
 - 5. NORDX
- C. The structured cabling solutions must be "end-to-end" and covered under the manufacturers warranty as a complete system. Mixed manufacturers under different warranties are not acceptable.

2.02 HORIZONTAL CABLING

- A. Provide horizontal copper data cabling with the following requirements.
 - a. These cables shall be Category 6 550 MHz, Plenum-rated, Unshielded Twisted Pair cable.
 - b. Each cable shall be placed in a "point-to-point" fashion from the outlet to the wiring closet for each communications outlet needed.
 - c. There shall be no intermediate splices or cross connects in these cables.
 - d. Provide testing and certification by the manufacturers of the equipment as an installed system that meets Category 6 standards for structured voice and data cabling systems, including the terminations and outlet devices.

B. The cable shall meet or exceed the requirements of the following standards:

- 1 TINEIA 568 "Commercial Building Wiring Standard," Horizontal Cable Section.
- 2 Proposed ANSI X3T9.5 Requirements for UTP at 550 MHz.
- 3 Certified Level 6 Cable under UL's LAN Cable Certification Program.
- 4 IEEE 802.3
- 5 ICEA S80-576
- 6 UL Subject 444
- 7 PUB 48007
- 8 TA-TSOOO 133
- 9 National Electric Code -Article 800

2.03 RISER CABLING

A. For Telephone/Voice Backbone provide one 50-pair, Category 3, plenum rated feeder cable from each IDF to the MOF terminating on a 48 port patch panel (2 ports short for a 50 pair cable). The MDF end of the feeder shall be punched down on 48 patch panels inside the MOF cabinet designated for phones. All voice cabling shall meet the following minimum specifications:

1. CMR (Riser rated) jacket
2. 24 AWG. 50-pair, unshielded twisted copper pairs
3. UL Listed

B. For Network/Data Backbone provide multi-strand fiber optic plenum-rated multimode riser cabling to each IOF closet from the MOF with the following minimum requirements:

1. Glass core, 12 strand, 62.5/125 core/cladding; 250 coating; 900 tight buffered construction designed for indoor installation and termination; Kevlar aramid yarn strength members surrounding the cladding of each strand; riser rated jacket (CMR).
2. All fibers must be housed in rack mounted fiber enclosures.

3. All fiber shall be terminated with LC fiber connectors and certified with a db loss meter.
4. Provide 2 LC to LC fiber jumpers (at least 2 meters) for each closet requiring fiber.
5. Fiber must be installed in 1" plenum rated innerduct or interlok jacket.
6. UL Listed, Meets or exceeds FDDI standards
7. Maximum attenuation: 3.75dB/km @ 850 nm
8. Minimum bandwidth: 160 MHz*km @ 850 nm
9. Fiber proof stress: 100 kpsi

2.04 PATCH CORDS

A. Provide Patch Cords (for use in the wiring closets) with the following specifications:

1. Category 6 Patch Cords shall be 100% factory terminated and tested.
2. Enhanced performance modular plugs with a one-piece, tangle-free latch design eliminating the need for strain-relief boots to ease moves, adds and changes.
3. Constructed with enhanced 24 AWG stranded UTP cable
4. Have an average reduction of greater than 3.5dB in near end cross talk when compared to industry standard Category 6 patch cords tested in a worst-case, 100-meter channel to the T1E1A Category 6 standard.
5. Available in 1, 3, 5, 7, 10, 14 and 20 ft. lengths.
6. Available in White and Blue colors.
7. Patch cords should be from the same manufacturer as the structured cabling solution.

2.05 WORKSTATION CABLES

A. Provide patch cords for the workstation (from computers to wall outlet) with the following specifications:

1. Category 6 Patch Cords shall be 100% factory terminated and tested.
2. Enhanced performance modular plugs with a one-piece, tangle-free latch design eliminating the need for strain-relief boots to ease moves, adds and changes.
3. Constructed with enhanced 24 AWG stranded UTP cable

4. Have an average reduction of greater than 3.5dB in near end cross talk when compared to industry standard Category 6 patch cords tested in a worst-case, 100-meter channel to the TINEIA Category 6 standard.
5. Available in 1, 3, 5, 7, 10, 14 and 20 ft. lengths.
6. Available in White and Blue colors
7. Patch cords should be from the same manufacturer as the structured cabling solution.

2.06 PLYWOOD BACKBOARDS

- A. Provide 4'x8' plywood backboards in each communication closet, as indicated on the drawings and painted with two (2) coats of fire retardant marine gray enamel.

2.07 FIBER OPTICS TERMINATION KITS

- A. Provide fiber optic termination enclosures with the following specifications:
 1. 19" Standard E1A rack mountable
 2. Front access to fiber strands
 3. Modular design to accept various optical fiber connectors
 4. LC type connector adapter panels
 5. Include multiple cable entry points and a fiber optic cable routing accessory kit
 6. Front mounted jumper trough for patch cable management
- B. Provide sufficient quality of enclosures and adapters to terminate each riser fiber strand, plus 20% spare capacity in each termination kit

2.08 OUTLET DEVICES/FACEPLATES

- A. Provide communications outlets (Jacks for data/voice) as detailed on the drawings.
- B. Copper data and voice jacks
 1. The jacks used shall fit properly in the outlet openings of the faceplate.
 2. The jacks used shall be Category 6 compliant modular 8 pin, 8 conductor outlet jacks with insulation displacement connectors (IDC).
 3. The jacks used shall be capable of supporting LAN data rates of 550 MHZ.
 4. The jacks used shall conform to the latest parameters set in TIA/EIA 568.

5. Outlet jacks terminate without a punchdown tool using a forward-motion termination cap.
6. The jack should use a TIA568A wiring scheme.

C. .Outlet faceplate for this arrangement shall be configured in the following fashion:

1. Provide plastic faceplate that accommodates up to 4 outlets, in any combination of voice, data or fiber optic.
2. Any vacant faceplate or communication outlet position shall be reserved for future growth and should have a dust cover/blank inserted.
3. Provide three data and one blank outlet in each faceplate where a "data" outlet is shown on the plans.

2.09 PATCH PANELS

A. Provide data patch panels at each wiring closet with the following specifications:

1. Standard 19" wide EIA rack mountable
2. EIA/TIA 568A1B pinout wiring
3. EIA/TIA 568A1B Category 6, 550 MHz compliant performance
4. 48 modular ports per panel
5. Install a modular jack at each port position (48 per panel)
6. Provide sufficient ports at each equipment rack to terminate 120% of the total number of workstation data cables

B. Provide voice patch panels at each wiring closet with the following specifications.

1. Standard 19" wide EIA rack mountable
2. EIA/TIA 568A1B pinout wiring
3. EIA/TIA 568A1B Category 6, 550 MHz compliant performance
4. 48 modular ports per panel
5. Install a modular jack at each port position (48 per panel)
6. Provide sufficient ports at each equipment rack to terminate 48 of the 50 voice feeder cable pairs

2.10 EQUIPMENT RACKS

- A. Provide equipment racks bolted to the floor in each communications closet with the following specifications:
 - 1. Steel construction that is self supported and floor mounted
 - 2. Assembled to accommodate both 19" and 23" components at 84" (90") high
 - 3. Modular and support copper and fiber cabling
 - 4. Integral cable management with vertical channels, pass through holes and slots for additional cable management accessories
 - 5. Accept removable, hinged doors
 - 6. Meet all EIA requirements as defined in EIA-310-D
- B. Provide sufficient quantity of equipment racks so that no rack has more than 150 modular ports total (all active plus all spares). Load each rack to a maximum of six (6) 24-port patch panels

2.11 CABLE MANAGEMENT HARDWARE

- A. Provide horizontal cabling cable supports with the following specifications:
 - i. Designed to support Category 6 cables without compressing or kinking cables
 - ii. Provide hooks with the proper mounting hardware to support cabling, or pre-approved equal
 - iii. Horizontal cable tray
- B. Provide wire management at each equipment rack consisting of at least the following components:
 - 1 Horizontal cable supports and organizers on each of the equipment rack
 - a. Provide a minimum of one (1) organizer per each patch panel installed in each rack
 - b. Provide hinged covers for both vertical and horizontal cable management on racks
 - 2 Provide Velcro cable tie fastening for bundles of loose cables routed along each equipment rack

PART THREE -EXECUTION

3.01 INSTALLATION

- A. Provide a system in accordance to these specifications, specifications of agencies listed in references and the manufacturer
- B. Install terminal blocks vertically plumb and securely fastened to the backboards. Route station cables in brackets, troughs and wireways specifically designed for Category 6 applications (e.g. "J" hooks). Fasten cables securely to prevent strain at the termination.
- C. Install cables without violating the minimum bend radius (4 times the diameter of cable) recommended by the cable manufacturer
- D. Install bulk horizontal cabling in the cable tray
- E. Install all jacks with the conductors oriented on the top of the jack. Where voice/data jacks are indicated on the plans, install the voice jack in the upper left port, the data jack in the upper right port, and the fiber optic outlet in the lower two ports on the faceplate.
- F. Terminate data copper cables using T568A
- G. Where cable is not installed in cable tray, support all cable at a maximum of 5' intervals using the Category 6 "J" hooks specified elsewhere herein. Adhere to the manufacturer's maximum fill for the cable support hardware.
- H. Maintain at least a 12" spacing from fluorescent light fixtures and other EMI/RFI noise sources
- I. Horizontal Wiring:
 - 1. Unless noted otherwise, route each horizontal voice and data cabling to the nearest wiring closet on the same floor of the building. Determine shortest routing from outlet device to communications closet prior to installation. Maximum allowable cable length from workstation outlet to wiring closet: 295 feet.
 - 2. Terminate all horizontal UTP data cables at patch panel modular jack's IDCs in the equipment rack in each wiring closet. Terminate the cables at the ports in the patch panel in descending room number order from left to right and top to bottom in each equipment rack.
- J. Riser Wiring:
 - 1. Unless noted otherwise, route all riser cabling, un-spliced, from the main distribution wiring closet (BET) to each wiring closet on each floor of the building.

2. Terminate riser fiber optic cables at ceramic LC connectors in the fiber optic termination enclosure at each wiring closet
- K. Provide 10 feet of cable slack at each communications closet to allow future reconfiguration of the closets. Provide wire management to organize the slack.
- L. Coordinate placement of devices with other systems that share the communication rooms (i.e. Telephone equipment, Owner LAN equipment, etc.)
- M. Secure all cable routed to the equipment rack, patch panels, punch down blocks, etc, utilizing the cable management hardware.
- N. All copper cabling that is exterior to the building at any point should be installed with lightning protection at both termination points.

3.02 IDENTIFICATION

- A. Provide type identification labels using the following labeling scheme: Y-Z
 - Y is the final School room number (100,101,etc.)
 - Z is a unique letter for each outlet in the room, starting at the main door into the room, following a clockwise rotation around the room. Omit the letters I, O, and Q.
 - Example: "100-B" identifies the second outlet from the door in room 100.
- B. Provide typed Patch Panel labels on the front of each port in each patch panel using the labeling scheme described above.
- C. Provide self-laminating cable labels on each end of each horizontal cable using the labeling scheme described above.
- D. Identify each pair of each riser cable as directed by the Owner.

3.03 COPPER CABLE TESTING

- A. Test 100% of the copper cable pairs as described in bulleting EINTIA-568B, level TIE up to 100 MHz. Record the results of the test with cable identification and provide as part of the as-built drawings. Any cable that fails shall be re-terminated and retested. If the cable does not retest within specs after re-terminating, replace and retest the cable.

3.04 FIBER OPTIC CABLE TESTING

- A. Use test equipment manufactured to perform the fiber optic cable testing. The testing contractor shall be trained by the test equipment manufacturer or by the manufacturer's certified representative.

- B. Prior to installation, perform a visual continuity test of each strand of each cable on the cable reels to determine whether or not the cables were damaged during shipment.
- C. After the cables are installed and terminated, test each strand of each fiber optic cable using an insertion loss tester. Perform the tests with all connectors installed and terminated. Include an original hard copy output for each strand tests, as generated by the test equipment.
- D. Also perform an insertion loss test for each strand of fiber optic cable. Perform the test with all connectors installed and terminated.
- E. If the attenuation of the pair of connectors for each strand of fiber optic cable exceeds 0.5dB per connector (1.0 dB total per strand), replace the connectors and retest.
- F. Include the insertion loss test results in the O&M manuals.

3.05 TRAINING

- A. Walk the Owner through the entire system, starting with the layout of the equipment in each communications closet.

306 DOCUMENTATION

- A. Provide complete CAD as-built floor plans (AutoCad 14) that contains at least the following information:
 - 1. Architectural floorplans with finalized school room names and numbers
 - 2. Locations and identification of all voice, data and fiber optic outlets,
 - 3. Cable routing for all cables, including riser cables, Include a legend on the plans to readily identify the voice, data, and fiber optic cables.
 - 4. Conduit sizes and routing for all cables installed in conduit.
 - 5. Cable tray routing and locations.
 - 6. Bonding and grounding locations.
 - 7. Large scale blowup of all wiring closets, indicating elevation views and plan views of all termination blocks, equipment racks, patch panels, fiber optic kits, etc.
 - 8. Terminal backboard layout, with labeling and pair identifications.

- B. Provide two (2) complete as-built manuals assembled in loose-leaf binders containing the following:
1. As-built system functional block diagrams.
 2. Corrected copies of approved shop drawings.
 3. As-built system wiring diagram.
 4. List indicating each device, location, address, label, etc.
 5. System Maintenance manuals.
 6. Warranty information and 15-year certification.
- C. Name, address and phone number of the responsible service organization

3.07 WARRANTY

The Contractor shall furnish a written warranty from the manufacturer that describes the network cabling and associated equipment supplied under these specifications will be free from defects of materials and workmanship for a period of twenty-five years and the cable plan/labor will be free from defects of materials and workmanship for a period of twenty-five years from the date of final acceptance unless otherwise specified and that all defects occurring within that period shall be corrected in a timely manner at no cost to the Owner.

END OF SECTION

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Stockbridge Theatre
Mechanical Narrative

The mechanical contractor is to raise all indoor HVAC equipment, ductwork, and piping located above the existing ceiling to a level above the new ceiling elevation (to be determined by the architect). We anticipate this work would, at a minimum, include the following (however, the mechanical contractor is to visit the site prior to submitting a bid and is responsible for providing permits and a complete operational system in conformance with all applicable codes and standards):

General Areas:

1. Confirm operation of all existing equipment prior to any relocations and notify owner of any discrepancies
2. Removal of refrigerant and disconnection of refrigerant piping
3. Disconnection of condensate piping, gas piping, flue vents, electrical power, and control wiring
4. Rehanging and/or relocating the existing air handling equipment
5. Relocate air distribution/ thermostats as required to provide independent zones for the stage area, black box, and dimmer switch location.
6. Extension and/or relocating the condensate piping, gas piping, flue vents, electrical power, and control wiring (note all piping, wiring, and vents will be relocated above the new ceiling level).
7. Relocating or replacing existing ductwork at the new ceiling elevation (including additional transitions as needed to clear any obstructions or connecting to existing equipment)
8. Reconnection and extension (if required) of refrigerant piping
9. Pressure test natural gas and refrigeration
10. Recharge refrigeration systems per manufacturer's recommendations
11. Provide new programmable thermostats at locations to be determined by the architect.
12. Provide new filters, clean condenser and evaporator coils, and condensate drains
13. Provide any repair or replacement of piping or duct insulation as required.
14. Rehang air distribution either in the new ceiling grid or independently from structure above as required
15. Confirm proper operation of all HVAC equipment after relocations are complete
16. Provide independent test and balance by a N.E.E.B or A.A.B.C certified contractor
17. Provide as-built drawings including equipment model and serial numbers to the owner

Additional work for specific areas

Sound Room

1. Provide 1- 2-ton ductless split system with all associated refrigerant piping, condensate piping, insulation, air distribution, and controls for the sound room-coordinate voltage and electrical requirements with electrical contractor. Provide 300 cfm exhaust fan vented to outside with all required ductwork, line voltage thermostat, and roofing/louvers as required.

Dimmer Switch Panel

1. Provide 300 cfm exhaust fan vented to outside with all required ductwork, line voltage thermostat, and roofing/louvers as required.

Shop Area

1. Provide 1000 cfm exhaust fan vented to outside with all required ductwork, wall mounted speed control, and roofing/louvers as required.

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Stockbridge Theatre
Electrical Narrative

The Electrical contractor is to relocate all indoor HVAC equipment disconnects to a level above the new ceiling elevation (to be determined by the architect), provide power for new theatre equipment, provide and install new lights and perform required modifications to existing electrical and communication systems (outlets, phone and data j-boxes etc.) . We anticipate this work would, at a minimum, include the following (however, the mechanical contractor is to visit the site prior to submitting a bid and is responsible for providing permits and a complete operational system in conformance with all applicable codes and standards):

General Areas:

1. Relocation of HVAC disconnects for relocated AHU's
2. Circuit Breakers, conduit, conductors and disconnects for additional HVAC
3. New luminaires and associated wiring devices, conduit and conductors.
4. New outlets in renovated areas. Number to be determined.
5. Circuit breakers, conduit, conductors, disconnects etc. for owner provided theatre equipment.
 - a. Stage lights
 - b. Lifts
 - c. Theatrical gel lights
 - d. House lights
6. 200 amp feeder to new sound room (sound equipment by others).
7. Empty conduit and pull boxes for sound system (sound equipment by others).
8. Verify existing Electrical system
9. Megger test new circuits 50 amps or greater
10. Update panel schedules
11. Pull boxes for new thermostats
12. Pull boxes for phone and data jacks
13. Modifications to fire alarm system
14. Verification of fire alarm system functionality
15. Load calculations to ensure existing service is suitable for new occupancy.
16. Provide as-built drawings to the owner

The following are specific requirements of the project:

1. Marquee lights at ceiling of covered
2. House lights for Black Box and Main Theatre include 2 channels overhead (HOUSE) (warm lighting (incandescent or LED) and (WORKS) task lighting (florescent or LED) . Also wall sconces are needed.
3. Incandescent lights in Restrooms, Star Rm, and Chorus Rm
4. Dimmer packs need to be in a vented climate controlled rm. How much square footage shall be allocated for this? [20sf] 5ft deep 4 feet wide. In proximity to stage, where is the recommended location for dimmers. Is it more recommended to locate them at landing above stage Or create an additional room between the stage and the lobby area.
5. Soundboard to patching to snake 36 mic inputs to stage [12 StageLeft, 12 @ Pit, 12, StageRight, 4 returns each]
6. Amplifier racks (30" x 30" racks x 7') closer to stage [4 Amps 225 W @ 8 ohms, 1800 watts]
7. 3inch conduit for dimmers (each conduit will hold 36 dimmer)
8. 8 OHMS of impedance for each main front of house speaker, 2000watts Spec Mackie Speakers : <http://www.sweetwater.com/store/detail/HD1531/>
9. Stage Pin Connectors- One power source to each channel (each has dimmer and switch. Will need 128 1kw stage connector. Bipolar Neutrecht Ni-4connectors.
10. Provide power to Sound Booth HVAC/fan.
11. Provide power Stage area HVAC/fan
12. Locate quads on every wall outlets every four feet in green rm, star rm, chorus rm
13. Locate minimum of 1 Ethernet, 1 Clearcom, and 1 Telephone line in green rm, star rm, chorus rm, shop, and hallways
14. Locate quad outlets in hallways and shop every 6 ft.
15. Locate quad outlets at countertop ht **every 4 ft** along vanity counters in star rm, restrooms, chorus rm (20 amps per circuit)
16. Locate outlets at Refrigerator locations
17. Locate cable and outlets at ht of TV location in Green Rm. TV to be mounted on wall. TV for viewing performance on stage. Connection needed for video camera onstage.
18. Two adjustable cameras mounted, one of which is located for conductor to be seen at pit, the second to cover stage
19. Lighting/Elec Grid to be 4 x 8. Lighting grid is every 8 ft, and runs parallel to the stage. Elec grid every 4 ft and runs perpendicular to the stage. Place Edison outlets every 4 to 5 ft
20. 4 quads of outlets at counter ht , 2 quads of outlets below counter, 2 quads of outlets at back wall. 3 CAT5 or CAT6 ethernet connection for internet, and 2 telephone lines in sound booth rm
21. 1 TeleQue from stage to sound booth rm
22. Clear Comm system install in back stage areas for actors/actresses to hear performance on stage. This includes star rm, restrooms, chorus rm, Green rm, hallways, Pit, Backstage, Stage Left & Stage Right, and shop, loading dock.
23. ALL clear com wiring to be shielded
24. Important to have separate electrical circuits for sound and light (sound needs more isolation)
25. 20 par (56) LED Lighting Instruments, (32) par 38 LEDs, (30) Source 4 Parnells, (12) Par 56 instruments, (20) Source 4 ellipsoidals
26. 175 hanging tails needed. Wired to spec.
27. 175 Dimmers & Channels
28. Two ETC ion lighting console will run 4,096 Channels located in Black Box and Main Theatre
29. Floor lighting along aisles

30. 28 Berhringer X32 full console and Two S16 digital snakes

Electrical contractor shall consult owner for locations and specifications of equipment and coordinate with other trades