

Project Manual and Specifications

**The Seed Academy – Lake Cumberland
Regional AgriTech Center
Russell Springs, Kentucky**

for the

**Russell Co. Industrial Development Authority
Jamestown, Kentucky**

**MSE Project Number:
2078-34**

February 2024

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FEBRUARY 2024

Division 0
Bidding and Contract Requirements

SECTION 00020 - ADVERTISEMENT FOR BIDS
Russell Co. Industrial Development Authority
Russell Co. Agri-Tech Center Project
Jamestown, Russell Co., Kentucky

Sealed bids for the construction of all work shown in the contract documents will be received on behalf of the Seed Academy Lake Cumberland Regional AgriTech Center for the Russell Co. Industrial Development Authority, Jamestown, KY, will be received in the DUO Broadband Headquarters, 2150 S. Main St., Jamestown, KY 42629, (270) 343-3131, until 2:00 P.M., Central time, August 22, 2024 and then at said office will be publicly opened and read aloud at the 2:00 P.M., Central time, August 22, 2024. Faxed or electronic bids will not be accepted.

The CONTRACT DOCUMENTS may be reviewed at the following locations:
MSE Web Site: mselex.com under Bid Opportunities.

Copies of the Contract Documents may be obtained at the office of Lynn Imaging, 328 E. Vine St., Lexington, KY 40507, (859) 226-5850 upon receipt of a check made payable to Lynn Imaging in the amount of \$200.00 (non-refundable) or as determined by Lynn Imaging. All orders must be prepaid. There will be a 24-hour turn-around on all orders.

AIA A310 Bid Bond executed by bidder and acceptable sureties in an amount equal to five percent of the bid shall be submitted with bid. The successful bidder will be required to furnish and pay for the following: 1) 5% Bid Bond; and 2) A performance and payment bond for 100% of the contract price.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract, Section 3, Segregated Facility, Section 109 and E.O. 11246 and Title VI and other requirements. Minority bidders are encouraged to bid.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions of this advertisement and/or the specifications and may waive any informalities or reject any and all Bids. Any proposal received after the time and date specified shall not be considered and will be returned unopened to the proposer. The owner reserves the right to waive any informalities or to reject any or all bids.

Sealed bid should be labeled "The Seed Academy AgriTech Center Project".

Federal Wage Rates **DO** apply to this project.

No Bidder may withdraw his Bid for a period of sixty (60) days after the actual date of the opening thereof.

Award will be made to the lowest, responsive, responsible bidder. Bidding is for the sole benefit of the Russell Co. Industrial Development Authority. The Russell County Industrial Development Authority is an Equal Employment Opportunity Employer.

End of Section



AIA[®] Document A701[™] – 2018

Instructions to Bidders

for the following Project:

(Name, location, and detailed description)

THE OWNER:

(Name, legal status, address, and other information)

THE ARCHITECT:

(Name, legal status, address, and other information)

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This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612[™]–2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 By submitting a Bid, the Bidder represents that:

- .1 the Bidder has read and understands the Bidding Documents;
- .2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
- .3 the Bid complies with the Bidding Documents;
- .4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
- .5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
- .6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, as indicated below, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall obtain Bidding Documents.)

§ 3.1.2 Any required deposit shall be refunded to Bidders who submit a bona fide Bid and return the paper Bidding Documents in good condition within ten days after receipt of Bids. The cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.

§ 3.1.3 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.

§ 3.1.4 Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.

§ 3.1.5 The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

§ 3.2 Modification or Interpretation of Bidding Documents

§ 3.2.1 The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)

§ 3.2.3 Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3 Substitutions

§ 3.3.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

§ 3.3.2 Substitution Process

§ 3.3.2.1 Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

§ 3.3.2.2 Bidders shall submit substitution requests on a Substitution Request Form if one is provided in the Bidding Documents.

§ 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

§ 3.3.3 The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.4 If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3.5 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Addenda will be transmitted.)

§ 3.4.2 Addenda will be available where Bidding Documents are on file.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

§ 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.

§ 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter “No Change” or as required by the bid form.

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder’s refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent’s authority to bind the Bidder.

§ 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

§ 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security:

(Insert the form and amount of bid security.)

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

§ 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning _____ days after the opening of Bids, withdraw its Bid and request the return of its bid security.

§ 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:

(Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)

§ 4.3.2 Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address, and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.

§ 4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

§ 4.4 Modification or Withdrawal of Bid

§ 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.

§ 4.4.2 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.

§ 4.4.3 After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted. If a Bid is withdrawn pursuant to this Section 4.4.3, the bid security will be attended to as follows:

(State the terms and conditions, such as Bid rank, for returning or retaining the bid security.)

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be publicly opened and read aloud. A summary of the Bids may be made available to Bidders.

§ 5.2 Rejection of Bids

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

§ 5.3 Acceptance of Bid (Award)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

§ 5.3.2 Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 Contractor's Qualification Statement

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request and within the timeframe specified by the Architect, a properly executed AIA Document A305™, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted for this Bid.

§ 6.2 Owner's Financial Capability

A Bidder to whom award of a Contract is under consideration may request in writing, fourteen days prior to the expiration of the time for withdrawal of Bids, that the Owner furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. The Owner shall then furnish such reasonable evidence to the Bidder no later than seven days prior to the expiration of the time for withdrawal of Bids. Unless such reasonable evidence is furnished within the allotted time, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

§ 6.3 Submittals

§ 6.3.1 After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:

- .1 a designation of the Work to be performed with the Bidder's own forces;
- .2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and
- .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 Bond Requirements

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.

(If Payment or Performance Bonds are to be in an amount other than 100% of the Contract Sum, indicate the dollar amount or percentage of the Contract Sum.)

§ 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

§ 8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013.)

.5 Drawings

Number	Title	Date
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.6 Specifications

Section	Title	Date	Pages
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.7 Addenda:

Number	Date	Pages
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.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017.)

The Sustainability Plan:

Title	Date	Pages
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Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
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.9 Other documents listed below:

(List here any additional documents that are intended to form part of the Proposed Contract Documents.)

SECTION 00100 - INSTRUCTIONS TO BIDDERS
ADDITIONAL INFORMATION

PART 1 - GENERAL

1.01 DEFINITIONS

- A. AIA Document A701/2018, Instructions to Bidders, Articles 1 through 8, inclusive, and Guide 27 Attachment 2 are a part of this Contract.
- B. General Conditions of the Contract for Construction, AIA Document A201/2017 or current edition, Articles 1 through 14 inclusive, are a part of this Contract.

1.02 BIDDING DOCUMENTS

- A. The Bidding Documents are the Bidding and Contract Requirements, the Specifications, the Drawings and any addenda issued prior to receipt of bids.
- B. Documents are on file and may be examined or obtained for bidding purposes as stated in Section 00020 - Advertisement for Bids.

1.03 SUBSTITUTIONS AND APPROVALS DURING BIDDING

- A. Whenever products or materials are specified as "Standards" or they are otherwise named, approval of other equal quality products shall be obtained by requesting in writing and presenting for evaluation, such product or material, to the Architect, no later than seven (7) days prior to date set for receipt of bids. Submittals circumventing the above time frame will not be processed.
 - 1. If approval is granted, product or material will be added by Addendum.
 - 2. No direct reply will be made to any requests for changes, but any requested changes approved by the Architect will be stated in an Addendum issued to all prime-bidders.
 - 3. Issuance of Bidding Documents does not constitute approval of products, materials, or subcontractors.

1.04 ADDENDA

Article 3: Bidding Documents. 3.4 Addenda, 3.4.3. Change the four days to read as follows: Addenda will be issued by the Architect when in the opinion of the Architect the issuance of an addenda is in the interest of the bid process and the Owner.

1.05 BIDDER'S REPRESENTATION

- A. Each Bidder, by making his bid, represents that he has read and understands the bidding documents.

- B. Each Bidder, by making his bid, represents that he has familiarized himself with the local conditions under which the Work is to be performed.
 - 1. No additional costs of any type will be allowed by the failure of the Bidder to avail himself of the privilege of a complete and thorough, on-site inspection.
- C. Each bidder must visit and inspect the site.

1.06 BID SECURITY

- A. Provide bid security in the form of Bid Bond, AIA Documents A310, for five percent (5%) of bid made payable to the Russell County Industrial Development Authority . This security shall be forfeited if the bidder is awarded the contract and subsequently fails to enter into a contract with and furnish the required contract bond to the OWNER within ten (10) days after notice of acceptance of his proposal is made.
- B. The bid security of all unsuccessful bidders will be returned promptly after an award has been made, or in the event that all bids are rejected. The bid security of the successful bidder will be returned when a satisfactory performance and labor and material payment bond has been furnished and the contract executed.

1.07 PREPARATION OF BIDS

- A. Bids shall be submitted in duplicate only on proposal bid form as included herein.
- B. Any interlineation, alteration, or erasure will be grounds for rejection of the Bid. Bids shall contain no recapitulation of the work to be done.
- C. Bids shall be based on the materials, construction, equipment and methods named or described in the specifications and on the drawings, and any addenda issued prior to receipt of bids.
- D. Proposals shall be sealed in an opaque envelope marked with the bidder's name and business address, and bearing the following caption:
 - 1. Proposal for:
The Seed Academy Lake Cumberland Regional Agritech Center Project
 - 2. Proposals shall be addressed and delivered to:
Russell Co. Industrial Development Authority
2150 N Main St.
Jamestown, KY 42629

1.08 BID SUPPLEMENTS

- A. Bids shall be accompanied by the following supplemental documents, all properly signed and notarized:
 - 1. Bid Security, Bid Bond, AIA Document A310
 - 2. Document SC-1 - Subcontractors List (may use your own form)
 - 3. Non-Collusion Affidavit

1.09 SELECTION OF BIDS

- A. The Owner reserves the right to reject any and/or all bids and to waive any informality in bidding.

1.10 AWARD OF CONTRACTS

- A. Contracts shall be deemed to have been awarded when Notice of Award shall have been duly served upon the Bidder by any officer or agent of the Owner duly authorized to give such notice. Before the contract becomes valid, the Bidder must provide all necessary bonds, insurance and other information herein called for.

1.11 THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FURNISH THE FOLLOWING:

- A. A One Hundred Percent (100%) Performance/Payment Bond, in an amount equal to the total contract price. This bond shall guarantee all labor and materials to be as required, the faithful performance of the contract and the prompt and faithful payment of any claim or liens from any cause for which the Contractor is liable, including those for labor, materials, utility services, transportation costs and for supplies, equipment and machinery (or rental thereof).
- B. Such guarantee bonds shall remain in effect and full force for one (1) year after final acceptance of the work. Such bond shall not be executed as of a date prior to the executing of the contract.

1.12 DETAILED COST BREAKDOWN

- A. Upon award of contract, Contractor will have seven (7) working days to generate a finalized detailed cost breakdown and a detailed project schedule of the project. All construction draws made on the project will require updating the Contractor's cost breakdown. Architect and Owner approval will be required on all pay requests.

1.13 CONTRACTOR'S RESPONSIBILITY REGARDING SUB-CONTRACTORS

- A. It shall be prime contractor's responsibility to check all sub-bids carefully to determine whether or not any exceptions, omissions, or alterations to the drawings and specifications have been noted therein, as he is solely responsible for a complete job in strict accordance with drawings and specifications.

1.14 COMMENCING WORK

- A. Contractor shall commence work within ten (10) days after written Notice to Proceed is issued by the Owner, unless otherwise arranged by the Owner.

1.15 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

- A. These construction documents are to be governed, at all times, by applicable provisions of the federal laws, including but not limited to the latest amendments of the following:
 - 1. William - Steiger Occupational Safety and Health Act of 1970, Public Law 91-596.
 - 2. Part 1910 - Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations.
- B. All prime contractors, sub-contractors and their employees shall be solely responsible to conduct their work in conformance with the regulations contained in this act and as amended. All material suppliers and manufacturers shall be fully aware of their responsibilities and the requirements of the finished project under the regulations of this Act, and as amended. Such materials and fabricated products incorporated in this project shall, at the time of installation or application, be in conformance with the regulations of this act, and as amended.

END OF SECTION

ATTACHMENT TO AIA DOCUMENT A701-2018, *Instructions to Bidders*

The provisions of this Attachment shall delete, modify and supplement the provisions contained in the "*Instructions to Bidders*", AIA Document A701-2018 Edition. The provisions contained in this Attachment will supersede any conflicting provisions of the AIA Document. The term "Agency", as used in this Attachment, shall mean the United States of America, acting through the United States Department of Agriculture.

ARTICLE 2, BIDDER'S REPRESENTATIONS

2.1 Add the following subparagraph to paragraph 2.1:

2.1.7 This Bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this Bid, with any other Bidder or with any competitor.

ARTICLE 4, BIDDING PROCEDURES

4.1.1 Add the following sentence to subparagraph 4.1.1:

Only one copy of the Bid is to be submitted.

4.2.1 Delete subparagraph 4.2.1 and substitute the following:

4.2.1 Each Bid must be accompanied by a Bid Bond payable to the Owner for five percent of the total amount of the Bid.

4.3 Add the following subparagraphs to paragraph 4.3:

4.3.6 All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project, shall apply to the Contract throughout.

4.3.7 The Bidder agrees to abide by the requirements of Executive Order 11246, specifically including the provisions of the Equal Opportunity Clause and the Standard Federal Equal Employment Construction Contract Specifications set forth in the Supplementary Conditions.

4.3.8 The Bidder agrees to abide by the requirements of section 319 of Public Law 101-121, which pertains to lobbying activities and applies to recipients of contracts or subcontracts that exceed \$100,000 at any tier under a Federal loan that exceeds \$150,000 or a Federal grant that exceeds \$100,000. Each Bid shall be accompanied by a completed lobbying certification form identical to that included in the Bidding Documents.

4.3.9 The Bidder agrees to abide by the requirements under 7 C.F.R. part 180, which pertains to the debarment or suspension of a person from participating in a Federal program or activity. Each Bid exceeding \$25,000 shall be accompanied by a relevant completed certification form identical to that included in the Bidding Documents.

4.4.3 Delete subparagraph 4.4.3 and substitute the following subparagraphs 4.4.3 and .1:

4.4.3 No Bidder may withdraw, modify or cancel a Bid within 60 calendar days after the actual date of the opening thereof. Should there be reasons why the Contract cannot be awarded within the specified period, the time may be extended, by mutual agreement between the Owner and the Bidder, and the concurrence of the Agency.

4.4.3.1 In the event the lowest responsive bidder requests to withdraw its bid after a bid opening due to an unintentional error in its contents, the Owner may waive informalities, accept the request, and keep the bid security provided by the Bidder.

ARTICLE 5, CONSIDERATION OF BIDS

5.3.2 Delete subparagraph 5.3.2 and substitute the following:

5.3.2 The Owner shall have the right to accept Alternates in the sequence or combinations listed and to determine the low Bidder on the basis of the sum of the Base Bid and the Alternates accepted.

ARTICLE 7, PERFORMANCE BOND AND PAYMENT BOND

7.1.1 Replace this subparagraph with the following:

Prior to execution of the Contract, the Bidder shall furnish Bonds covering the faithful performance of the Contract and the payment of all obligations arising thereunder. Both Bonds shall be separately written, each in the amount of the Contract Sum with Power of Attorney attached naming "The United States of America, acting through the United States Department of Agriculture, Rural Development as co-obligee. The cost shall be included in the Bid.

7.1.3 Delete subparagraph 7.1.3 and substitute the following:

7.1.3 Surety companies executing Bonds must hold a certificate of authority as a acceptable surety on Federal Bonds as listed in Treasury Circular 570, as amended, and be authorized to transact business in the State where the Project is located.

7.2.1 Delete subparagraph 7.2.1 and substitute the following:

7.2.1 The Bidder to whom the Contract is awarded will be required to execute the Agreement and obtain Performance and Payment Bonds, if required, within ten (10) calendar days from the date when the Notice of Award is delivered to the Bidder. The Notice shall be accompanied by the necessary Agreement and Bond forms.

7.2.2 Delete subparagraph 7.2.2 and substitute the following:

7.2.2 The Bonds shall be written on forms identical to those included in the Bidding Documents.

(Note: Any additional provisions that are necessary to remain effective after execution of the Contract for Construction will be inserted here and continue in the same format.)

o0o

(00-00-00) PN 000

SECTION 00310 - BID SCHEDULE

Proposal of _____ (hereinafter called "BIDDER"), organized and existing under the laws of the State of _____ doing business as _____ *

to the Russell Co. Industrial Development Authority (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for the Seed Academy Lake Cumberland Regional Agritech Center in strict accordance with the Contract Documents, within the time set forth and the prices stated below.

By submission of this BID, each BIDDER certifies, and in the case of a joint BID, each party thereto certifies as to its own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence Work under this contract on or before a date to be specified in the Notice to Proceed and to substantially complete the Project within three hundred sixty-five (365) consecutive calendar days following the Notice to Proceed. BIDDER further agrees to pay as liquidated damages, the sum of \$1,000 for each consecutive calendar day thereafter as provided in the General Conditions and the Special Conditions.

BIDDER agrees to perform all the WORK described in the CONTRACT DOCUMENTS for the lump sum contained in the following Bid Schedule.

*Insert "a corporation", "a partnership", or "an individual" as applicable.

Item	Description	Unit	Cost of Item
1.	Architectural and Structural Items	LS	\$ _____
2.	Mechanical/Electrical Items	LS	\$ _____
3.	Special Inspections Testing Service (Allowance)	LS	\$ <u>30,000</u>
4.	All Other Miscellaneous Costs	LS	\$ _____
TOTAL COST OF ITEMS 1 - 4			\$ _____

5. Deductive Alternate #1 – Deduct Livestock area associated spaces in their entirety. Doors 39 & 40 are to remain. Refer to Specification 01230 Alternates. LS \$ _____

The bid prices shall include all labor, materials, taxes, allowances, overhead, profit, insurance, and other costs necessary to install the finished work of the several items called for. Changes shall be processed in accordance with the General Conditions.

This is an invitation for offer to bid, not an offer to enter into a contract.

AIA A310 Bid Bond executed by bidder and acceptable sureties in an amount equal to five percent of the bid shall be submitted with bid. The BIDDER, by submittal of this Bid, agrees with the OWNER that the amount of the bid security deposited with this Bid fairly and reasonably represents the amount of damages the OWNER will suffer due to the failure of the BIDDER to fulfill his agreements as provided in this Proposal.

Addenda to the Drawings and Specifications issued heretofore are hereby acknowledged by the undersigned as being:

No. _____ Date: _____ No. _____ Date: _____
 No. _____ Date: _____ No. _____ Date: _____

BIDDER understands that the OWNER reserves the right to reject any or all Bids and to waive any informalities in the Bidding.

BIDDER agrees that this Bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the actual date of bid opening.

Within ten (10) calendar days after receiving written notice of the acceptance of this Bid by the OWNER, the Bidder will execute and deliver to the OWNER four (4) copies of the Agreement and such other required Contract Documents.

Attachments:

- a. (add Subcontractors List (may use your own form)).
- b. Bid Security
- c. 00480 Non-Collusion Affidavit)
- d. If the contract bids exceeds \$10,000, a bidder must submit Form RD 400-6 "Compliance Statement," with the bid. "Equal Opportunity Clause," will be a part of all construction contracts exceeding \$10,000.
- e. If the contract bid exceeds \$25,000, a bidder must submit For AD 1048 "Debarment, Suspension . . . Lower Tier Transaction," with the bid.
- f. If the contract bid exceeds \$100,000, a bidder must submit RD 1940Q, Exhibit A-1, "Certification for Contracts, Grants, and Loans," with the bid.

BIDDER: _____
(Name of Company or Partnership)

By: _____
(Signature) (Date)

(Print Name) (Title)

(Street Address/P.O. Box) (Phone Number)

(City, State, Zip)

(Email Address)

Attested By: _____
(Signature) (Date)

Seal (If bid is by a corporation)

END OF SECTION

SECTION 00410 - BID SECURITY FORM

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Bid security for this project shall be in the form of a Bid Bond executed on AIA Document A310-1970 or 2010 form in the amount of five percent (5%) of the bid, made payable to the Owner.
 1. The bid security of all unsuccessful bidders will be returned promptly after an award has been made or in the event that all bids are rejected. The bid security of the successful bidder will be returned when satisfactory performance and labor and material payment bonds (AIA Document A312) have been furnished and contract executed, including one year warranty period.

END OF SECTION

SECTION 00480 - NON-COLLUSION AFFIDAVIT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Non-Collusion Affidavit for the project shall be submitted with the bid proposal, and a copy of this document is bound herewith.
 - 1. When properly executed, this Document shall become a part of the successful bidder's Contract Document.

END OF SECTION

NON-COLLUSION AFFIDAVIT

The undersigned bidder, on behalf of its officers and agents or representatives being duly sworn, states that it has not in any way, directly or indirectly, entered into any arrangement or agreement with any other bidder, or with any other person or public officer whereby bidder has paid or is to pay to such other bidder or other person or public officer any sum or money, or has given or is to give to such other bidder or other person or public officer anything of value whatever, or such affiant or either of them has not, directly or indirectly, entered into any arrangement or agreement with any other bidder or bidders, which tends to or does lessen or destroy free competition in the letting of the contract sought for by the attached bids; that no inducement of any form or character other than that which appears upon the face of the bid will be suggested, offered, paid or delivered to any person whomsoever to influence the acceptance of the said bid or awarding of the contract, nor has this bidder any agreement or understanding of any kind whatsoever, with any person whomsoever to pay, deliver to, or share with any other person in any way or manner, any of the proceeds of the contract sought by this bid.

Subscribed and sworn to before me by _____ this
_____ day of _____, 20____.

My Commission expires:

Notary Public

END OF AFFIDAVIT

SECTION 00490 - NOTICE OF AWARD

To: _____

Project Description: The Seed Academy Lake Cumberland Regional Agritech Center

The Owner has considered the Bid submitted by you for the above, described Work in response to its Advertisement for Bids dated _____, and Information for Bidders.

You are hereby notified that your Bid has been accepted for items in the amount of \$_____.

You are required by the Information for Bidders to execute the Agreement and furnish the Required Contractor's Performance Bond, Payment Bond and certificates of insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said Bonds within ten (10) days from the date of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this _____ day of _____, 20__.

Russell Co. IDA
Owner

By _____
Name/Title Clint Voils, Chairman

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by _____,

this the _____ day of _____, 20__.

By _____

Name/Title _____

SECTION 00500 - AGREEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The contract Agreement for this project shall be AIA Document A101, Owner - Contractor Agreement Form - Stipulated Sum, 2017 edition and Guide 27 Attachment 3.
- B. This form, when fully executed, shall become a part of the successful bidder's Contract Documents.

END OF SECTION

DRAFT AIA® Document A101® - 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the « » day of « » in the year « 2023 »
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

Russell County Industrial Development Authority
2150 North Main Street
Jamestown, KY 42629

« »

and the Contractor:
(Name, legal status, address and other information)

TBD

« »

« »

« »

for the following Project:
(Name, location and detailed description)

The Seed Academy Lake Cumberland Regional Agritech Center
Site: 531 French Valley Rd, Russell Springs, KY 42642

« »

The Architect:
(Name, legal status, address and other information)

MSE of Kentucky
624 Wellington Way
Lexington, KY 40503

« »

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®-2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®-2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS**
- 2 THE WORK OF THIS CONTRACT**
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION**
- 4 CONTRACT SUM**
- 5 PAYMENTS**
- 6 DISPUTE RESOLUTION**
- 7 TERMINATION OR SUSPENSION**
- 8 MISCELLANEOUS PROVISIONS**
- 9 ENUMERATION OF CONTRACT DOCUMENTS**

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

- « X »** The date of this Agreement.
- « »** A date set forth in a notice to proceed issued by the Owner.
- « »** Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)
- « »**

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

[« »] Not later than « » (« 365 ») calendar days from the date of commencement of the Work.

[« »] By the following date: « »

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be « » (\$ « »), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement. *(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)*

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum: *(Identify each allowance.)*

Item	Price

§ 4.4 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)

§ 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

« \$1,000 a day »

§ 4.6 Other:

(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

« »

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the « » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the « » day of the « » month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than « » (« ») days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

« 10% through 50% project completion, reduced to 5% after 51% through 100% project completion »

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

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§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

<< >>

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

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§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner’s prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner’s final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect’s final Certificate for Payment, or as follows:

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§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

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ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

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§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

Arbitration pursuant to Section 15.4 of AIA Document A201–2017

Litigation in a court of competent jurisdiction

Other *(Specify)*

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If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner’s convenience.)

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§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner’s representative:

(Name, address, email address, and other information)

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§ 8.3 The Contractor’s representative:

(Name, address, email address, and other information)

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§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™-2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201-2017, may be given in accordance with AIA Document E203™-2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203-2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

« »

§ 8.7 Other provisions:

« »

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™-2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™-2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™-2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:

(Insert the date of the E203-2013 incorporated into this Agreement.)

« »

- .5 Drawings

Number	Title	Date

- .6 Specifications

Section	Title	Date	Pages

- .7 Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

- .8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

[« »] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

« »

[« »] The Sustainability Plan:

Title	Date	Pages

[« »] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor’s bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

« »

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

« »

(Printed name and title)

CONTRACTOR (Signature)

« »

(Printed name and title)

DRAFT AIA® Document A101® - 2017

Exhibit A

Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the « » day of « » in the year « 2023 »
(In words, indicate day, month and year.)

for the following **PROJECT**:
(Name and location or address)

The Seed Academy Lake Cumberland Regional Agritech Center
Site: 531 French Valley Rd, Russell Springs, KY 42642

« »

THE OWNER:
(Name, legal status and address)

Russell County Industrial Development Authority
2150 North Main Street
Jamestown, KY 42629

« »

THE CONTRACTOR:
(Name, legal status and address)

TBD

« »

TABLE OF ARTICLES

- A.1 GENERAL**
- A.2 OWNER'S INSURANCE**
- A.3 CONTRACTOR'S INSURANCE AND BONDS**
- A.4 SPECIAL TERMS AND CONDITIONS**

ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201™-2017, General Conditions of the Contract for Construction.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Document A201®-2017, General Conditions of the Contract for Construction. Article 11 of A201®-2017 contains additional insurance provisions.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

§ A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner’s usual general liability insurance.

§ A.2.3 Required Property Insurance

§ A.2.3.1 Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk “all-risks” completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner’s property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ A.2.3.1.1 Causes of Loss. The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:

(Indicate below the cause of loss and any applicable sub-limit.)

Causes of Loss	Sub-Limit

§ A.2.3.1.2 Specific Required Coverages. The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect’s and Contractor’s services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:

(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

Coverage	Sub-Limit

§ A.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

§ A.2.3.1.4 Deductibles and Self-Insured Retentions. If the insurance required by this Section A.2.3 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

§ A.2.3.2 Occupancy or Use Prior to Substantial Completion. The Owner’s occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

§ A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, “all-risks” property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

§ A.2.4 Optional Extended Property Insurance.

The Owner shall purchase and maintain the insurance selected and described below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

- [] **§ A.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance**, to reimburse the Owner for loss of use of the Owner’s property, or the inability to conduct normal operations due to a covered cause of loss.

- [] **§ A.2.4.2 Ordinance or Law Insurance**, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.

- [] **§ A.2.4.3 Expediting Cost Insurance**, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.

- [] **§ A.2.4.4 Extra Expense Insurance**, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.

- [] **§ A.2.4.5 Civil Authority Insurance**, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.

- [] **§ A.2.4.6 Ingress/Egress Insurance**, for loss due to the necessary interruption of the insured’s business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.

- [] **§ A.2.4.7 Soft Costs Insurance**, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

§ A.2.5 Other Optional Insurance.

The Owner shall purchase and maintain the insurance selected below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)

[] § A.2.5.1 **Cyber Security Insurance** for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information. (Indicate applicable limits of coverage or other conditions in the fill point below.)

[] § A.2.5.2 **Other Insurance**
(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage

Limits

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 **Certificates of Insurance.** The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

§ A.3.1.2 **Deductibles and Self-Insured Retentions.** The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

§ A.3.1.3 **Additional Insured Obligations.** To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

§ A.3.2.2 Commercial General Liability

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than (\$) each occurrence, (\$) general aggregate, and (\$) aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal injury and advertising injury;

- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; and
- .5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions.

§ A.3.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the Work involves such hazards.
- .11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than « » (\$ «1,000,000 ») per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

§ A.3.2.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than « » (\$ « ») each accident, « » (\$ « ») each employee, and « » (\$ « ») policy limit.

§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)

« »

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

- [« »] § A.3.3.2.1 Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below:
- (Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)*

« »

- [« »] § A.3.3.2.2 **Railroad Protective Liability Insurance**, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate, for Work within fifty (50) feet of railroad property.

- [« »] § A.3.3.2.3 **Asbestos Abatement Liability Insurance**, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.

- [« »] § A.3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.

- [« »] § A.3.3.2.5 Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.

- [« »] § A.3.3.2.6 **Other Insurance**
(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

Coverage

Limits

§ A.3.4 Performance Bond and Payment Bond

The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:

(Specify type and penal sum of bonds.)

Type	Penal Sum (\$0.00)
Payment Bond	100%
Performance Bond	100%

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

<< >>



ATTACHMENT TO AIA DOCUMENT A101-2017, *Standard Form of Agreement
Between Owner and Contractor*

The provisions of this Attachment shall delete, modify and supplement the provisions contained in the "*Standard Form of Agreement Between Owner and Contractor*," AIA Document A101-2017 Edition. The provisions contained in this attachment shall supersede any conflicting provisions of the AIA Document.

ARTICLE 3, DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

Delete paragraph 3.1 and substitute the following:

3.1 The date of commencement shall be contained in the Notice to Proceed.

Replace paragraph 3.3.3 with the following:

If the work is not substantially complete on or before this date, or within this period of time, or extension thereof granted by the Owner, damage will be sustained by the Owner and that it is and will be impracticable and extremely difficult to fix the actual damage which the Owner will sustain in the event of and by reason of such delays. The Contractor shall pay to the Owner liquidated damages in the sum of \$ 1,000 for each calendar day of delay. Any sums that may be due the Owner as liquidated damages may be deducted from any monies due or to become due the Contractor under the Contract or may be collected from the Contractor's surety.

ARTICLE 5, PAYMENTS

Insert "ten" and "10" in the appropriate spaces in subparagraph 5.1.3.

Delete the following from clause 5.1.6.2:

(or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing)

Insert the following sentences in subparagraph 5.1.7.1:

The amount retained shall be 10% of the value of Work until 50% of the Work has been completed or a withholding of equal or greater value, such as, 5% for the full duration of the project. If 10% is held, at 50% completion, further partial payments shall be made in full to the Contractor and no additional amounts may be retained unless the Architect certifies that the Work is not proceeding satisfactorily, but amounts previously retained shall not be paid to the Contractor. At 50% completion or any time thereafter when the progress of the Work is not satisfactory, additional amounts may be retained, but in no event shall the total retainage be more than 10% of the value of Work completed.

ARTICLE 8, MISCELLANEOUS PROVISIONS

Add the following subparagraph to paragraph 8.7:

8.7.1 This Agreement shall not become effective until concurred in writing by the Agency. Such concurrence shall be evidenced by the signature of a duly authorized representative of the Agency in the space provided at the end of this Attachment to the Agreement. The concurrence so evidenced by the Agency shall in no way commit the Agency to render financial assistance to the Owner and is without liability to the Agency for any payment thereunder, but in the event such assistance is provided, the concurrence shall signify the provisions of this Agreement are consistent with Agency requirements.

ARTICLE 9, ENUMERATION OF CONTRACT DOCUMENTS

The following Documents should be referenced, if applicable:

Subparagraph 9.1.3:

Attachment to the *Standard Form of Agreement Between Owner and Contractor* (this Attachment)
General Conditions of the Contract for Construction, AIA A201-2017
Attachment to the *General Conditions of the Contract for Construction* (RD Instruction 1942-A, Guide 27, Attachment 4)
Special Conditions

Subparagraph 9.1.7:

Invitation for Bids (Form RD 1924-5)
Instructions to Bidders, AIA A701-1997
Attachment to the *Instructions to Bidders* (RD Instruction
1924-A, Guide 27, Attachment 2)
Bid Form
Bid Bond
Compliance Statement (Form RD 400-6)
Payment Bond
Performance Bond
Certification Regarding Debarment, Suspension,
Ineligibility and Voluntary Exclusion - Lower Tier
Covered Transactions (Form AD 1048)
Disclosure of Lobbying Activities (SF-LLL)
Certification for Contracts, Grants and Loans (RD
Instruction 1940-Q, Exhibit A-1)

Delete the signature block on page 7 of this Agreement, and substitute
the block on the following page:

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in duplicate on the respective dates indicated below:

ATTEST: _____	OWNER: By _____
Type Name _____	Type Name _____
Title _____	Title _____
Date _____	Date _____

ATTEST: _____	CONTRACTOR: By _____
Type Name _____	Type Name _____
Title _____	Title _____
Date _____	Date _____

AGENCY CONCURRENCE:

By _____
Type Name _____
Title _____
Date _____

The concurrence so evidenced by the Agency shall in no way commit the Agency to render financial assistance to the Owner and is without liability to the Agency for any payment hereunder, but in the event such assistance is provided, the concurrence shall signify the provisions of this Agreement are consistent with Agency requirements.

**SECTION 00610 - PERFORMANCE BOND AND
LABOR AND MATERIAL PAYMENT BOND**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. A performance bond for 100% of the final contract amount shall be executed in favor of the Owner; the forms for this bond shall be AIA Document A 312, "Performance Bond", 2010 edition.
- B. A Payment Bond on part of the contractor for 100% of the contract price as it may be increased, the forms for this bond shall be, AIA Document A312, "Payment Bond", 2010 edition.
- C. Consent of Surety to Reduction in or Partial Release of Retainage: AIA Document G707A, 1994 Edition.
- D. Consent of Surety to Final Payment: AIA Document G707, 1994 Edition.
- E. Furnish the required bonds within ten (10) days of receipt of Notice of Award.
- F. When fully executed, these bonds shall become part of the successful bidder's Contract Documents.

END OF SECTION

COMPLIANCE STATEMENT

This statement relates to a proposed contract with Russell Co. Industrial Dev. Authority

(Name of borrower or grantee)

who expects to finance the contract with assistance from either the Rural Housing Service (RHS), Rural Business-Cooperative Service (RBS), or the Rural Utilities Service (RUS) or their successor agencies, United States Department of Agriculture (whether by a loan, grant, loan insurance, guarantee, or other form of financial assistance). I am the undersigned bidder or prospective contractor, I represent that:

1. I have have not, participated in a previous contract or subcontract subject to Executive Order 11246 (regarding equal employment opportunity) or a preceding similar Executive Order.
2. If I have participated in such a contract or subcontract, I have, have not, filed all compliance reports that have been required to file in connection with the contract or subcontract.
 If the proposed contract is for \$50,000 or more: or if the proposed nonconstruction contract is for \$50,000 or more and I have 50 or more employees, I also represent that:
3. I have, have not previously had contracts subject to the written affirmative action programs requirements of the Secretary of Labor.
4. If I have participated in such a contract or subcontract, I have, have not developed and placed on file at each establishment affirmative action programs as required by the rules and regulations of the Secretary of Labor.

I understand that if I have failed to file any compliance reports that have been required of me, I am not eligible and will not be eligible to have my bid considered or to enter into the proposed contract unless and until I make an arrangement regarding such reports that is satisfactory to either the RHS, RBS or RUS, or to the office where the reports are required to be filed.

I also certify that I do not maintain or provide for my employees any segregated facilities at any of my establishments, and that I do not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I certify further that I will not maintain or provide for my employees any segregated facilities at any of my establishments, and that I will not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I agree that a breach of this certification is a violation of the Equal Opportunity clause in my contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. I further agree that (except where I have obtained identical certifications for proposed subcontractors for specific time periods) I will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause; that I will retain such certifications in my files; and that I will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number. The OMB Control Number for this information collection is 0575-0201. Public reporting for this collection of information is estimated to be approximately 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, completing and reviewing the collection of information. All responses to this collection of information are voluntary. However, in order to obtain or retain a benefit, the information in this form is required 7 CFR 1901-E. Rural Development has no plans to publish information collected under the provisions of this program. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Information Collection Clearance Officer, Rural Development Innovation Center, Regulations Management Division at ICRMTRRequests@usda.gov.

**NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS FOR
CERTIFICATIONS OF NON-SEGREGATED FACILITIES**

A certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding \$ 10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Date _____

(Signature of Bidder or Prospective Contractor)

Address (including Zip Code)

CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

The undersigned certifies, to the best of his or her knowledge and belief, that:

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

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

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including contracts, subcontracts, and subgrants under grants and loans) and that all subrecipients shall certify and disclose accordingly.

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

(name)

(date)

(title)

oOo



**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion AD-1048
 Lower Tier Covered Transactions**

The following statement is made in accordance with the Privacy Act of 1974 (5 U.S.C. § 552a, as amended). This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, and 2 C.F.R. §§ 180.300, 180.335, Participants' responsibilities. The regulations were amended and published on August 31, 2005, in 70 Fed. Reg. 51865-51880. Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed covered transaction.

According to the Paperwork Reduction Act of 1995 an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0505-0027. The time required to complete this information collection is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The provisions of appropriate criminal and civil fraud privacy, and other statutes may be applicable to the information provided.

(Read instructions on page two before completing certification.)

- A. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency;
- B. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

ORGANIZATION NAME	PR/AWARD NUMBER OR PROJECT NAME
NAME(S) AND TITLE(S) OF AUTHORIZED REPRESENTATIVE(S)	
SIGNATURE(S)	DATE

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotope, American Sign Language, etc.) should contact the responsible agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint \(https://www.ascr.usda.gov/filing-program-discrimination-complaint-usda-customer\)](https://www.ascr.usda.gov/filing-program-discrimination-complaint-usda-customer) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442.

Instructions for Certification

- (1) By signing and submitting this form, the prospective lower tier participant is providing the certification set out on page 1 in accordance with these instructions.
- (2) The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension or debarment.
- (3) The prospective lower tier participant shall provide immediate written notice to the person(s) to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- (4) The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549, at 2 C.F.R. Parts 180 and 417. You may contact the department or agency to which this proposal is being submitted for assistance in obtaining a copy of those regulations.
- (5) The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
- (6) The prospective lower tier participant further agrees by submitting this form that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- (7) A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the System for Award Management (SAM) database.
- (8) Nothing contained in the foregoing shall be construed to require establishment of a system of records to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- (9) Except for transactions authorized under paragraph (5) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

14. Certificate of Owner's Attorney.

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

I have examined the attached contract(s) and performance and payment bond(s) and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements are adequate and have has 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 terms, conditions, and provisions thereof.

Date: _____

NOTE: Delete phrase "performance and payment bonds" when not applicable.



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Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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

CONSTRUCTION CONTRACT
Date:

Amount:

Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: None See Section 18

CONTRACTOR AS PRINCIPAL **SURETY**
Company: *(Corporate Seal)* Company: *(Corporate Seal)*

Signature: _____ Signature: _____
Name Name
and Title: and Title:
(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)
AGENT or BROKER: **OWNER'S REPRESENTATIVE:**
(Architect, Engineer or other party:)

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

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

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

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

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

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

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. 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 Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the 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.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

Sample

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

SURETY

Company:

(Corporate Seal)

Company:

(Corporate Seal)

Signature: _____

Name and Title:

Address

Signature: _____

Name and Title:

Address



AIA Document A312™ – 2010

Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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

CONSTRUCTION CONTRACT
Date:

Amount:

Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: None See Section 16

CONTRACTOR AS PRINCIPAL SURETY
Company: *(Corporate Seal)* Company: *(Corporate Seal)*

Signature: _____ Signature: _____
Name
and Title: Name
and Title:
(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER: OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

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

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 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 the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction 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 the Owner or its heirs, executors, administrators, successors and assigns.

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

§ 11 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 a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the 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.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

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

§ 14 Definitions

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

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

Sample

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

SURETY

Company:

(Corporate Seal)

Company:

(Corporate Seal)

Signature: _____

Name and Title:

Address

Signature: _____

Name and Title:

Address

Init.

SECTION 00650 - CERTIFICATES OF INSURANCE

PART 1 - GENERAL

1.01 GENERAL

- A. Certificates of Insurance shall be filed with the Owner prior to the commencement of any work. Insurance shall be purchased by the General Contractor.
 - 1. These certificates shall contain a provision that coverages afforded under the policies shall not be canceled or in any way terminated until at least thirty days prior written notice has been given to the Owner and Architect.
 - 2. The Owner and the Architect shall be specifically named as additional insureds on all insurance coverage for this project.
- B. Detailed insurance requirements are covered in Section 00500 Agreement attachment A101 Exhibit A Insurance and Bonds, and all certificates shall reflect these minimum requirements for the project.

END OF SECTION

SECTION 00680 - NOTICE TO PROCEED

TO: _____ Date: _____
_____ Project: Russell Co. Agri-Science Center

You are hereby notified to commence WORK in accordance with the Agreement dated _____, on or before _____, and you are to complete the WORK within _____ consecutive calendar days thereafter. The date of completion of all WORK is therefore _____.

Russell Co. Industrial Development Authority
Owner

Signature
Clint Voils, Chairman

Name/Title

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____
_____ this the _____ day of _____, 20__.

Contractor

Signature

Name/Title



AIA[®] Document A201[™] – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503[™], Guide for Supplementary Conditions.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining

provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building

information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the

site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's

capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes

remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

- 3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design 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 the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the

time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under

Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the

Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate

Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The

Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable

by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The

foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers

to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not

constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the

endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The

Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the

Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or Suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section

15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly

consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Sample

ATTACHMENT TO AIA DOCUMENT A201-2017, *General Conditions of the Contract for Construction*

The provisions of this attachment shall delete, modify and supplement the provisions contained in the "*General Conditions of the Contract for Construction*," AIA Document A201-2017 Edition. The provisions contained in this attachment will supersede any conflicting provisions of the AIA Document. The term "Agency," as used in this Attachment, shall mean the United States of America, acting through the United States Department of Agriculture.

ARTICLE 1, GENERAL PROVISIONS

Add the following subparagraph:

1.2.4 Concurrence of the Contract by the Agency is required before it is effective.

ARTICLE 2, OWNER

Delete subparagraph 2.3.6 and substitute the following:

2.3.6 The Contractor will be furnished, free of charge, _____ copies of the Drawings and Projects Manuals necessary for execution of the Work. Additional copies will be available from the Architect at the cost of reproduction and handling.

ARTICLE 4, ARCHITECT

Add the following to subparagraph 4.1.1:

The term "Architect" means the Architect, or the Engineer when the nature of the work is within the authority granted engineers by the State licensure law, or an authorized representative of the Architect or Engineer.

ARTICLE 5, SUBCONTRACTORS

Add the following to subparagraph 5.2.2:

The Contractor shall not contract with any party who is suspended or debarred by any Federal government agency from participating in Federally assisted construction projects.

ARTICLE 7, CHANGES IN THE WORK

Delete the words ", Construction Change Directive" from subparagraph 7.1.1.

Insert the words ", Agency " after the word "Owner," and delete the words "A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor" in subparagraph 7.1.2.

Delete the words "Construction Change Directive" from subparagraph 7.1.3.

Delete subparagraph 7.2.1 and substitute the following:

7.2.1 A Change Order is a written order to the Contractor utilizing Form RD 1924-7, "Contract Change Order," or AIA G-701 signed by the Owner, Architect, Contractor, and the Agency representative. It is issued after the execution of the Contract, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time may be changed only by Change Order. The Contractor's signing of a Change Order indicates complete agreement therein.

Add subparagraph 7.2.2:

7.2.2 Methods used in determining adjustments to the Contract Sum may include any of the following:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluating.
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon.

Add the following sentence to paragraph 7.3.1: "A Construction Change Directive may be used only for a change in response to an emergency as described in paragraph 10.4.

Delete subparagraph 7.3.2.

Add the following, where appropriate, to 7.3.3 through 7.3.10: "When the use of a Construction Change Directive is justified"

ARTICLE 8, TIME

Add the following subparagraphs:

8.2.4 The Notice to Proceed shall be issued within twenty (20) calendar days of the execution of the Agreement by the Owner. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement of the Owner and Contractor, with the concurrence of the Agency. If the Notice to Proceed has not been issued within the twenty (20) calendar day period or within the period mutually agreed, the Contractor may terminate the Agreement without further liability on the part of either party.

8.3.4 As outlined in Article 3 of the Agreement, the Contractor agrees to pay liquidated damages to the Owner for each calendar day the Contractor shall be in default.

ARTICLE 9, PAYMENTS AND COMPLETION

Delete clause 9.3.1.1 and substitute the following:

9.3.1.1 Work performed and materials supplied under a Change Order may be included for payment only after the Change Order has been approved by all appropriate parties, including the Agency.

Add the words ", using AIA Document 702, 'Application and Certificate for Payment' or Form RD 1924-18, 'Partial Payment Estimate'," after "Certificate for Payment" in subparagraph 9.4.1.

Add the following subparagraph:

9.6.9 No progress payments will be made that deplete the retainage, nor place in escrow any funds that are required for retainage, nor invest the retainage for the benefit of the Contractor. Retainage will not be adjusted until after construction is substantially complete.

Replace the word "seven" with the words "fifteen (15)" in the first sentence, second line of subparagraph 9.7.

Delete subparagraph 9.8.5, after the first sentence, and substitute the following:

9.8.5 When the Work has been substantially completed, except for Work which cannot be completed because of weather conditions, lack of materials or other reasons, which, in the judgment of the Owner, are valid reasons for non-completion, the Owner may make additional payments, retaining at all times an amount sufficient to cover the estimated cost of the Work still to be completed. Provide a copy of the Certificate to the Agency.

Delete subparagraphs 9.9.1 and add the following:

9.9.1 The Contractor agrees to the use and occupancy of a portion or unit of the Project before formal acceptance by the Owner under the following conditions:

- .1 A "Certificate of Substantial Completion" shall be prepared and executed as provided in subparagraph 9.8.4, except that when, in the opinion of the Architect, the Contractor is chargeable with unwarranted delay in completing the Work or other Contract requirements, the signature of the Contractor will not be required. The Certificate of Substantial Completion shall be accompanied by a written endorsement of the Contractor's insurance carrier and surety permitting occupancy by the Owner during the remaining period of the Project Work. Occupancy and use by the Owner shall not commence until authorized by public authorities having jurisdiction over the Work.
- .2 Occupancy by the Owner shall not be construed by the Contractor as being an acceptance of that part of the Project to be occupied.
- .3 The Contractor shall not be held responsible for any damage to the occupied part of the Project resulting from the Owner's occupancy.
- .4 Occupancy by the Owner shall not be deemed to constitute a waiver of existing claims in behalf of the Owner or Contractor against each other.
- .5 If the Project consists of more than one building, and one of the buildings is to be

occupied, the Owner, prior to occupancy of that building, shall secure permanent property insurance on the building to be occupied and necessary permits which may be required for use and occupancy.

Add to subparagraph 9.9.3: Use and occupancy by the Owner prior to Project acceptance does not relieve the Contractor of responsibility to maintain all insurance and bonds required of the Contractor under the Contract Documents until the Project is completed and accepted by the Owner.

ARTICLE 11, INSURANCE AND BONDS

Replace the words "the Contract Documents" with the words "subparagraph 11.1.1" in the first sentence of subparagraph 11.1.2.

Add the following subparagraph:

11.1.1. Insurance shall be:

- .1 Written with a limit of liability of not less than \$500,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident; and a limit of liability of not less than \$500,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than \$200,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than \$200,000 aggregate for any such damage sustained by two or more persons in any one accident, or
- .2 Written with a combined bodily injury and damage liability of not less than \$700,000 per occurrence; and with an aggregate of not less than \$700,000 per occurrence.

Add the following sentence to the end of subparagraph 11.3.1:

The provisions of this subparagraph shall apply to the Contractor if the Contractor purchases and maintains said insurance coverage.

Delete subparagraph 11.1.2 and substitute the following:

11.1.2 The Contractor shall furnish the Owner bonds covering faithful performance of the Contract and payment of obligations arising thereunder within ten (10) calendar days after receipt of the Notice of Award. The surety company executing the bonds must hold a certificate of authority as an acceptable surety on Federal bonds as listed in Treasury Circular 570, and be authorized to transact business in the State where the Project is located. The bonds (using the forms included in the Bidding Documents) shall each be equal to the amount of the Contract Sum. The cost of these bonds shall be included in the Contract Sum

Add the following subparagraphs:

11.1.3.1 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current power of attorney.

11.1.3.2 If at any time a surety on any such bond is declared bankrupt or loses its right to do business in the State in which the work is to be performed or is removed from the list of surety companies accepted on Federal Bonds, the Contractor shall within ten (10) calendar days after notice from the Owner to do so, substitute an acceptable bond in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premiums of such bond shall be paid by any Contractor. No further payment shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable bond to the Owner.

ARTICLE 13, MISCELLANEOUS PROVISIONS

Add the following paragraphs:

13.6 LANDS AND RIGHTS-OF WAY

13.6.1 Prior to the start of construction, the Owner shall obtain all lands and rights-of-way necessary for the execution and completion of work to be performed under this contract.

13.7 EQUAL OPPORTUNITY REQUIREMENTS

Non-discrimination in Employment by Federally Assisted Construction Contractors, by Executive Order 11246.

13.7.1 This section summarizes Executive Order 11246, which prohibits employment discrimination and requires employers holding non-exempt Federal contracts and subcontracts and federally-assisted construction contracts and subcontracts in excess of \$10,000 to take affirmative action to ensure equal employment opportunity without regard to race, color, religion, sex, or national origin. The Executive Order requires, as a condition for the approval of any federally assisted construction contract, that the applicant incorporate nondiscrimination and affirmative action clauses into its non-exempt federally assisted construction contracts.

13.7.2 Executive Order 11246, is administered and enforced by the Office of Federal Contract Compliance Programs (OFCCP), an agency in the U.S. Department of Labor's Employment Standards Administration. OFCCP has issued regulations at 41 CFR chapter 60 implementing the Executive Order. The regulations at 41 CFR part 60-4 establish the procedures which the Agency, as an administering agency, must follow when making grants, contracts, loans, insurance or guarantees involving federally assisted construction which is not exempt from the requirements of Executive Order 11246. The regulations which apply to Federal or federally assisted construction contractors also are published at 41 CFR part 60-4.

13.7.3 OFCCP has established numerical goals for minority and female utilization in construction work. The goals are expressed in percentage terms for the contractor's aggregate workforce in each trade. OFCCP has set goals for minority utilization based on the percentage of minorities in the civilian labor force in the relevant area. There is

a single nationwide goal of 6.9 percent for utilization of women. The goals apply to all construction work in the covered geographic area, whether or not it is federal, federally assisted or non-federal. A notice advises bidders of the applicable goals for the area where the project is to be located.

13.7.4 Application. This section applies to all of a construction contractor's or subcontractor's employees who are engaged in on-site construction including those construction employees who work on a non-Federal or non-Federally assisted construction site.

13.7.4.1 Agency officials will notify the appropriate Regional Director of OFCCP that an Agency financed construction contract has been awarded, and that the equal opportunity clauses are included in the contract documents.

13.7.4.2 The Regional Director, OFCCP-DOL, will enforce the non-discrimination requirements of Executive Order 11246.

13.7.5 The prospective contractor or subcontractor must comply with the Immigration Reform and Control Act of 1986, by completing and retaining Form I-9, "Employment Eligibility Verification," for employees hired. This form is available from the Immigration and Naturalization Service, and Department of Justice.

13.7.6 The prospective contractor or subcontractor must submit Form RD 400-6, "Compliance Statement," to the applicant and an Agency official as part of the bid package, prior to any contract bid negotiations and comply with the Executive Order 11246 as stated in the contract documents.

13.8 STATUTES

13.8.1 The Contractor and each Subcontractor shall comply with the following statutes (and with regulations issued pursuant thereto, which are incorporated herein by reference):

13.8.1.1 Copeland Anti-Kickback Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR part 3). This Act provides that each Contractor shall be prohibited from inducing, by any means, any person in connection with construction to give up any part of the compensation to which the person is otherwise entitled.

13.8.1.2 Clean Air Act (42 U.S.C. 7414), section 114, and Water Pollution Control Act (33 U.S.C. 1813), section 308. Under Executive Order 11738 and Environmental Protection Agency (EPA) regulations 40 C.F.R. part 15, all Contracts in excess of \$100,000 are required to comply with these Acts. The Acts require the Contractor to:

- .1 Notify the Owner of the receipt of any communication from EPA indicating that a facility to be utilized in the performance of the Contract is under consideration to be listed on the EPA list of Violating Facilities.
- .2 Certify that any facility to be utilized in the performance of any nonexempt Contractor or Subcontractor is not listed on the EPA list of Violating Facilities as of the date of the Contract Award.
- .3 Include or cause to be included the above criteria and requirements of paragraphs .1 and .2 in every nonexempt subcontract, and that the Contractor will take such action as the Government may direct as a means of enforcing such provisions.

13.8.1.3 Restrictions on Lobbying (Public Law 101-121, section 319) as supplemented in Department of Agriculture regulations (7 CFR part 3018). This statute applies to the recipients of contracts or subcontracts that exceed \$100,000 at any tier under a Federal loan that exceeds \$150,000 or a Federal grant that exceeds \$100,000. If applicable, the Contractor must complete a certification form on lobbying activities related to the specific Federal loan or grant that is a funding source for this contract. The certification and disclosure forms shall be provided by the Owner.

13.9 RECORDS

13.9.1 If the Contract is based on a negotiated Bid, the Owner, the Agency, the Comptroller General of the United States, or any of their duly authorized representatives, shall have access to any books, documents, papers, and records of the Contractor which are pertinent to a specific Federal loan program for the purpose of making audit, examination, excerpts, and transcriptions. The Contractor shall maintain records for at least three years after the Owner makes final payment and all other pending matters are closed.

13.10 ENVIRONMENTAL REQUIREMENTS

13.10.1 Mitigation Measures - The contractor shall comply with applicable mitigation measures established in the environmental assessment for the project. These may be obtained from the Agency representative.

13.10.2 The Contractor, when constructing a Project involving trenching, excavating, or other earth moving activity, shall comply with the following environmental constraints:

13.10.2.1 Endangered Species, Historic Preservation, Human Remains and Cultural Items, Hazardous Materials, and Paleontology - Any excavation or other earth moving activity by the Contractor that provides evidence of the presence of endangered or threatened species or their critical habitat, uncovers a historical or archaeological artifact, human remains or cultural items, hazardous materials, a fossil or other paleontological materials will require the Contractor to:

- .1 Temporarily stop work;
- .2 Provide immediate notice to the Architect and the Agency, and in the case of potentially hazardous materials, provide immediate notice to local first responders and take such measures as necessary to protect the public and workers;
- .3 Take reasonable measures as necessary to protect the discovered materials or protected resource;
- .4 Abide by such direction as provided by the Agency, or Agencies responsible for resource protection or hazardous materials management; and
- .5 Resume work only upon notice from the Architect and the Agency.

13.10.3 Lead-Based Paint - The Contractor and Owner shall comply with applicable Agency requirements of the Lead-Based Paint Poisoning Prevention Act, as amended (42 U.S.C. 4821), and the Residential Lead-Based Paint Hazard Reduction Act of 1992 (42 U.S.C. 4851) for rehabilitation work on residential property built prior to 1978.

13.11 DEBARMENT AND SUSPENSION

13.11.1 The Contractor shall comply with the requirements of 7 CFR part 3017, which pertains to the debarment or suspension of a person from participating in a Federal program or activity.

ARTICLE 15 CLAIMS AND DISPUTES

Add the words "may be" after "on the parties but" in the last sentence of subparagraph 15.2.5.

Replace the word "shall" with the word "may" in the first sentence, first occurrence of subparagraph 15.3.2

Add the subparagraph: 15.4.1.2 The arbitrators will select a hearing location as close to the Owner's locale as possible.

oOo

EQUAL OPPORTUNITY AGREEMENT

This agreement, dated 12/7/2022 between
Russell Co Industrial Dev Auth

(herein called "Recipient" whether one or more) and United States Department of Agriculture (USDA), pursuant to the rules and regulations of the Secretary of Labor (herein called the 'Secretary') issued under the authority of Executive Order 11246 as amended, witnesseth:

In consideration of financial assistance (whether by a loan, grant, loan guaranty, or other form of financial assistance) made or to be made by the USDA to Recipient, Recipient hereby agrees, if the cash cost of construction work performed by Recipient or a construction contract financed with such financial assistance exceeds \$10,000 - unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965.

1. To incorporate or cause to be incorporated into any contract for construction work, or modification thereof, subject to the relevant rules, regulations, and orders of the Secretary or of any prior authority that remain in effect, which is paid for in whole or in part with the aid of such financial assistance, the following "Equal Opportunity Clause":

During the performance of this contract, the contractor agrees as follows:

- (a) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited, to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the USDA setting forth the provisions of this nondiscrimination clause.
- (b) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.
- (c) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the USDA, advising the said labor union or workers' representative of the contractor's commitments under this agreement and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- (d) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of all rules, regulations and relevant orders of the Secretary of Labor.
- (e) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, rules, regulations, and orders, or pursuant thereto, and will permit access to his books, records, and accounts by the USDA Civil Rights Office, and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (f) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by Law.
- (g) The contractor will include the provisions of paragraph 1 and paragraph (a) through (f) in every subcontract or purchase order, unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the USDA may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the USDA, the contractor may request the United States to enter into such litigation to protect the interest of the United States.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0575-0018. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

2. To be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, that if the organization so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.
3. To notify all prospective contractors to file the required 'Compliance Statement', Form RD 400-6, with their bids.
4. Form AD-425, Instructions to Contractors, will accompany the notice of award of the contract. Bid conditions for all nonexempt federal and federally assisted construction contracts require inclusion of the appropriate "Hometown" or "Imposed" plan affirmative action and equal employment opportunity requirements. All bidders must comply with the bid conditions contained in the invitation to be considered responsible bidders and hence eligible for the award.
5. To assist and cooperate actively with USDA and the Secretary in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and rules, regulations, and relevant orders of the Secretary, that will furnish USDA and the Secretary such information such as , but not limited to, Form AD-560, Certification of Nonsegregated Facilities, to submit the Monthly Employment Utilization Report, Form CC-257, as they may require for the supervision of such compliance, and that it will otherwise assist USDA in the discharge of USDA's primary responsibility for securing compliance.
6. To refrain from entering into any contract or contract modification subject to such Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and Federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by USDA or the Secretary of Labor pursuant to Part II, Subpart D, of the Executive Order.
7. That if the recipient fails or refuses to comply with these undertakings, the USDA may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the organization under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such organization; and refer the case to the Department of Justice for appropriate legal proceedings.

Signed by the Recipient on the date first written above.

Recipient

Recipient

(CORPORATE SEAL)

Russell Co Industrial Dev Auth

Name of Corporate Recipient

Attest:



Secretary

By



Chairman

UNITED STATES DEPARTMENT OF AGRICULTURE

NOTICE TO CONTRACTORS AND APPLICANTS

Attached is a nondiscrimination poster. In accordance with the terms of your construction contract with Russell County Industrial Development Authority;
(Name of Borrower or Recipient of Grant)

the poster is to be displayed in all employment offices, on bulletin boards, and in other conspicuous places available to employees and applicants for employment. The poster must be displayed in the same manner by your subcontractors who are subject to the equal opportunity provisions of your contract, and you are required to furnish them with such posters. Additional copies of the posters may be obtained from this office.

Any reference to Federal Government contract or contractors in the standard forms or posters is to be interpreted to include any contract for construction work financed in whole or in part with a United States Department of Agriculture (USDA) loan or grant.

"Subcontractors" as used herein means any subcontractor holding a subcontract which calls for supplies or services required for the performance of the prime contract except subcontracts which either (1) do not exceed \$10,000 (\$100,000 if for standard commercial supplies or raw materials) or (2) are below the second tier and do not call for construction work at the site of construction, including any temporary location or facility established by the subcontractor specifically to meet the demands of his subcontract.

A USDA official may conduct compliance reviews of contracts covered by Executive order 11246, as amended. You will be notified if such a review is scheduled.

Date

Mark Givens, Area Specialist

USDA official

Name of Contractor

Address of Contractor

Submitted:

Name:

Conf Nbr:

Application and Certificate for Payment

TO OWNER:	PROJECT:	APPLICATION NO:	<u>Distribution to:</u>
		PERIOD TO:	OWNER <input type="checkbox"/>
FROM CONTRACTOR:	VIA ARCHITECT:	CONTRACT FOR:	ARCHITECT <input type="checkbox"/>
		CONTRACT DATE:	CONTRACTOR <input type="checkbox"/>
		PROJECT NOS: / /	FIELD <input type="checkbox"/>
			OTHER <input type="checkbox"/>

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. AIA Document G703®, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM \$ _____

2. NET CHANGE BY CHANGE ORDERS \$ _____

3. CONTRACT SUM TO DATE (Line 1 ± 2) \$ _____

4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) \$ _____

5. RETAINAGE:

a. _____% of Completed Work
(Columns D + E on G703) \$ _____

b. _____% of Stored Material
(Column F on G703) \$ _____

Total Retainage (Lines 5a + 5b, or Total in Column I of G703)..... \$ _____

6. TOTAL EARNED LESS RETAINAGE \$ _____
(Line 4 minus Line 5 Total)

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT \$ _____
(Line 6 from prior Certificate)

8. CURRENT PAYMENT DUE \$

9. BALANCE TO FINISH, INCLUDING RETAINAGE \$ _____
(Line 3 minus Line 6)

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$	\$
Total approved this month	\$	\$
TOTAL	\$	\$
NET CHANGES by Change Order	\$	

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

State of: _____

County of: _____

Subscribed and sworn to before
me this _____ day of _____

Notary Public: _____

My commission expires: _____

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED \$ _____

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT:

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

USDA Rural Development
Attachment to AIA Document G702
(Application and Certificate for Payment)

In lieu of RD Form 1924-18 when used in
conjunction with AIA Document G702

Project: _____

Payment application number: _____ Amount Certified _____

The Referenced Payment Application is not valid until signed by the
Owner, Architect, Contractor and Agency.

CONTRACTOR'S CERTIFICATION:

The undersigned Contractor certifies that to the best of their knowledge, information
and belief the work covered by this payment estimate has been completed in
accordance with the contract documents, that all amounts have been paid by the
contractor for work for which previous payment estimates was issued and payments
received from the owner, and that current payment shown herein is now due.

Contractor: _____

By: _____

Date: _____

APPROVED BY OWNER:

Owner: _____

By: _____

Date: _____

ARCHITECT OR ENGINEER'S CERTIFICATION:

The undersigned certifies that the work has been carefully inspected and to the best
of their knowledge and belief, the quantities shown in this estimate are correct and
the work has been performed in accordance with the contract documents.

Architect or Engineer: _____

By: _____

Date: _____

ACCEPTED BY AGENCY:

The review and acceptance of this estimate does not attest to the correctness of
the quantities shown or that the work has been performed in accordance with the
contract documents.

By: _____

Title: _____

Date: _____

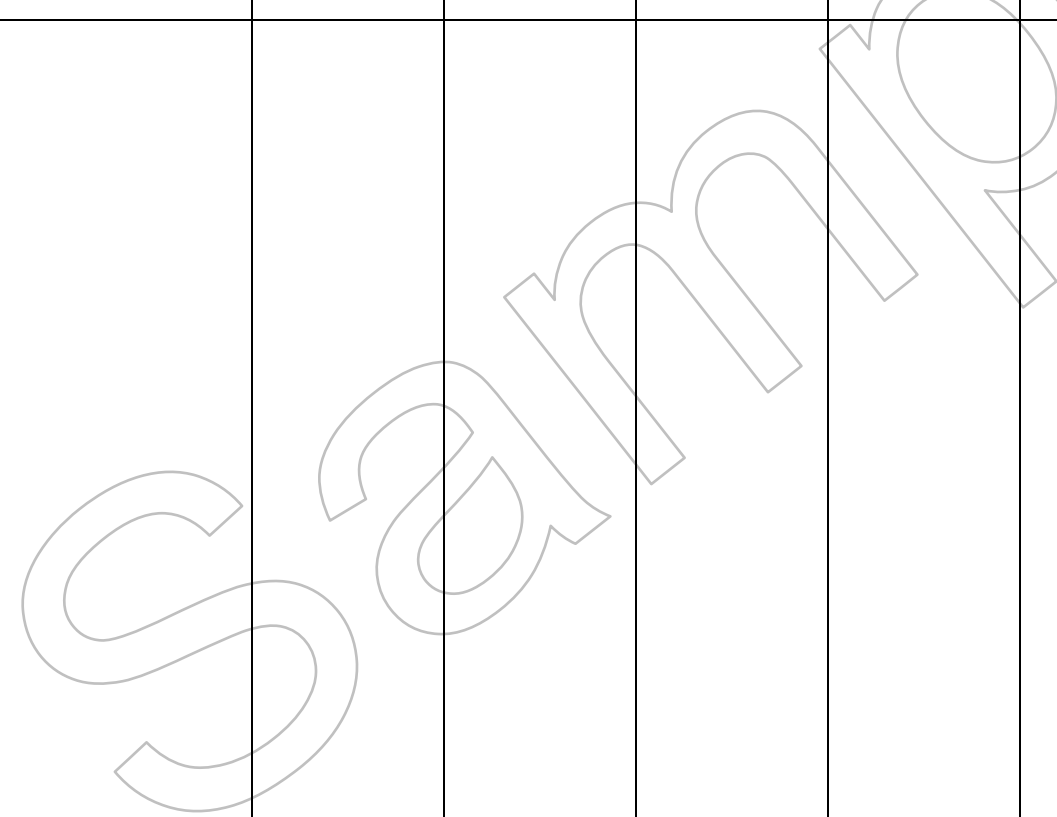


AIA Document G703[®] – 1992

Continuation Sheet

AIA Document G702[®], Application and Certificate for Payment, or G732[™], Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached. Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:
 APPLICATION DATE:
 PERIOD TO:
 ARCHITECT'S PROJECT NO:

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED <i>(Not in D or E)</i>	G		H BALANCE TO FINISH <i>(C - G)</i>	I RETAINAGE <i>(If variable rate)</i>
			D + E FROM PREVIOUS APPLICATION <i>(D + E)</i>	E THIS PERIOD		D + E + F TOTAL COMPLETED AND STORED TO DATE <i>(D + E + F)</i>	% <i>(G ÷ C)</i>		
									
GRAND TOTAL									



AIA[®]

Document G701™ – 2017

Change Order

PROJECT: *(name and address)*

CONTRACT INFORMATION:

Contract For:
Date:

CHANGE ORDER INFORMATION:

Change Order Number:
Date:

OWNER: *(name and address)*

ARCHITECT: *(name and address)*

CONTRACTOR: *(name and address)*

THE CONTRACT IS CHANGED AS FOLLOWS:

(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits. Also include agreed upon adjustments attributable to executed Construction Change Directives.)

The original (Contract Sum) (Guaranteed Maximum Price) was \$ _____

The net change by previously authorized Change Orders \$ _____

The (Contract Sum) (Guaranteed Maximum Price) prior to this Change Order was \$ _____

The (Contract Sum) (Guaranteed Maximum Price) will be (increased) (decreased) (unchanged) by this Change Order in the amount of \$ _____

The new (Contract Sum) (Guaranteed Maximum Price), including this Change Order, will be \$ _____

The Contract Time will be (increased) (decreased) (unchanged) by () days.

The new date of Substantial Completion will be

NOTE: This Change Order does not include adjustments to the Contract Sum or Guaranteed Maximum Price, or the Contract Time, that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.

NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.

ARCHITECT *(Firm name)*

CONTRACTOR *(Firm name)*

OWNER *(Firm name)*

SIGNATURE

SIGNATURE

SIGNATURE

PRINTED NAME AND TITLE

PRINTED NAME AND TITLE

PRINTED NAME AND TITLE

DATE

DATE

DATE

USDA Rural Development
Attachment to AIA G701
(Contract Change Order)

Project: _____

Change Order Number: _____ Change Order Amount: _____

The Referenced Change Order is not valid until signed by the Owner, Architect, Contractor and Agency.

Requested by: _____ Date: _____
(Owner)

Recommended by: _____ Date: _____
(Owner's Architect / Engineer)

Accepted by: _____ Date: _____
(Contractor)

Agency Concurrence: _____ Date: _____

Date _____

Dear Sir:

I hereby acknowledge the receipt of _____ dollars
(\$ _____) in full payment of my contract dated _____ for improvement work which I did for you and
which is described in my contract.

I certify that I have paid in full for all materials purchased and all labor employed in the performance of this contract, and that there
are no claims against me under this contract on account of injuries sustained by workers employed by me or by subcontractors
thereunder. I hereby release you from any claims arising by virtue of this contract.

I am attaching Form RD 1924-10, "Release by Claimants," signed by all persons from whom I have purchased materials and by all
subcontractors and all persons employed in connection with my contract with the above-named borrower.

WARNING

**The statements and representations made above are made in connection with construction financed in whole or
in part by the United States Department of Agriculture (USDA). The statements and representations will be
used to determine the release of USDA provided funds. The making of any false statement or misrepresentation
herein may be a crime punishable under Title 18 U.S.C. § 1001 which provides in part: "Whoever, in any matter
within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals or
covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statements or
representations, or makes or uses any false writing or statement or entry, shall be fined under [title 18 of the United
States code] or imprisoned not more than five years, or both.**

Sincerely,

Contractor

Position 6

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0575-0042. The time required to complete this information collection is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Submitted:

Name:

Conf Nbr:

RELEASE BY CLAIMANTS

The undersigned, having received payment in full for all labor, materials, supplies, or equipment supplied to _____, Contractor, or to any subcontractor, in the construction or repair of the improvements upon the property located at:

_____, and furnished in the execution and fulfillment of contract between said Contractor and _____ Owner, dated _____

_____, do (does) hereby release and waive any and all claims, liens, and lien rights, of any kind, nature, or description whatsoever, against said property and the Owner thereof, and against said Contractor.

<i>Lien or Claimant</i>	<i>Work or Materials</i>	<i>Amount</i>	<i>Date</i>

Submitted:

Name:

Conf Nbr:

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0575-0042. The time required to complete this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

BUILDER'S WARRANTY

Names and Address of Purchasers or Owners

Property

For good and valuable consideration, the undersigned Warrantor hereby warrants to the Purchasers or Owners identified above and to the successors or transferees, all of whom are hereinafter referred to as Owners that:

The building, including appurtenances located on the property identified above, is constructed or improved in substantial conformity with the drawings and specifications which have been accepted in writing by the respective USDA Agency. This warranty applies to all workmanship, materials, and the installation of equipment (including, but not limited to, the heating system, water heater, ranges and refrigerator).

The Owners shall give written notice to the Warrantor promptly after the discovery of any defective condition. Such written notice must be given to the Warrantor during the period of warranty. The period of warranty shall be (a) in the case of new construction or rehabilitation, one year from the date of initial occupancy of the completed or rehabilitated building, or (b) in the case of improvements made to an existing building owned by the Owners prior to the improvements being made, one year from the date of the completion of the work.

It is agreed and understood that this warranty shall apply only to those defective conditions of which the Warrantor has been given written notice during the period of warranty.

Warrantor further agrees that warrantor will take any necessary actions to correct such defective conditions within _____ days of receipt of written notice. If such action is not taken within _____ days, the Owners may, at their option, contract with another party for the correction of the defects. Warrantor agrees to pay any expenses incurred by the Owners to correct defects covered by this warranty.

This warranty shall be in addition to, and in no way reduce, all other rights and privileges which such Owners may have under any other law or instrument, and shall be binding on the Warrantor notwithstanding any provision to the contrary contained in the contract of purchase or any other instrument executed by the Owners.

This warranty is executed, in part, for the purpose of inducing the United States Department of Agriculture, (USDA) to make, insure, or guarantee a loan on the Property.

If this warranty is signed by anyone other than the Warrantor, the person signing for the Warrantor represents and certifies that the person is authorized to execute same by the Warrantor and by the person's signature the Warrantor is bound under the terms and conditions of this warranty

- NOTES:
- A. The warrantor must complete all three copies except dates, meet with owner to agree on notification period, sign and give to the Owner with the final request for payment.
Owner must meet with Warrantor to agree on warranty notification period and to date and sign the warranty, owner must retain original, and forward one copy to contractor, and one to the respective USDA Agency with the final request for payment.
 - B. This warranty shall be required in all cases involving new construction or rehabilitation of buildings including those built under contract, those built for sale without the respective USDA Agency's required construction inspections and those under conditional commitment procedures.

WARNING

Section 1001 of Title 18, United States Code provides: "Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully . . . makes any false, fictitious or fraudulent statements or representation, or makes or uses any false writing or document knowing the same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than \$250,000 or imprisoned not more than five years, or both."

In addition to the preceding warranty, the following items are covered by a company warranty or guarantee as follows:

Item	Serial & Model No.	Name and Address of Company	No. Yrs. or Mos. of Warranty
Heating System			
Kitchen Range			
Water Heater			
Refrigerator			
Manufactured Home			
Other			
Other			

NOTICE TO OWNERS: ANY NOTICE OF DEFECTIVE WORKMANSHIP, MATERIALS OR NONCONFORMITY MUST BE DELIVERED TO THE WARRANTOR NO LATER THAN

_____ .

(Warrantor shall insert date one (1) year from initial occupancy, date of conveyance of title or date of completion, whichever is applicable.) All plastic pipe used in this job will carry a 5-year warranty from the date shown by the Warrantor above.

We have furnished the above company warranties or guarantees to the Owners for their use. If this warranty covers a manufactured home, we certify that the manufactured home property substantially complies with the plans and specifications and the manufactured home sustained no hidden damage during transportation and, if manufactured in separate sections, that the sections were properly joined and sealed according to the manufacturer's specifications.

The Warrantor has signed this warranty this _____ day of _____, _____ .

 (Warrantor's Address) _____
 (SEAL)
 Warrantor (Signature & Title)

Receipt of this warranty is acknowledged this _____ day of _____, _____ .

 Owner(s)



AIA[®] Document G704[™] – 2017

Certificate of Substantial Completion

PROJECT: *(name and address)*

CONTRACT INFORMATION:

Contract For:
Date:

CERTIFICATE INFORMATION:

Certificate Number:
Date:

OWNER: *(name and address)*

ARCHITECT: *(name and address)*

CONTRACTOR: *(name and address)*

The Work identified below has been reviewed and found, to the Architect's best knowledge, information, and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion designated below is the date established by this Certificate.

(Identify the Work, or portion thereof, that is substantially complete.)

ARCHITECT *(Firm Name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE OF SUBSTANTIAL COMPLETION

WARRANTIES

The date of Substantial Completion of the Project or portion designated above is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:

(Identify warranties that do not commence on the date of Substantial Completion, if any, and indicate their date of commencement.)

WORK TO BE COMPLETED OR CORRECTED

A list of items to be completed or corrected is attached hereto, or transmitted as agreed upon by the parties, and identified as follows:

(Identify the list of Work to be completed or corrected.)

The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment, whichever occurs first. The Contractor will complete or correct the Work on the list of items attached hereto within () days from the above date of Substantial Completion.

Cost estimate of Work to be completed or corrected: \$

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work, insurance, and other items identified below shall be as follows:

(Note: Owner's and Contractor's legal and insurance counsel should review insurance requirements and coverage.)

The Owner and Contractor hereby accept the responsibilities assigned to them in this Certificate of Substantial Completion:

CONTRACTOR *(Firm Name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE

OWNER *(Firm Name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE



AIA[®] Document G706[™] – 1994

Contractor's Affidavit of Payment of Debts and Claims

PROJECT: *(Name and address)*

ARCHITECT'S PROJECT NUMBER:

OWNER

CONTRACT FOR:

ARCHITECT

CONTRACTOR

TO OWNER: *(Name and address)*

CONTRACT DATED:

SURETY

OTHER

STATE OF:

COUNTY OF:

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

CONTRACTOR: *(Name and address)*

1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. AIA Document G707[™], Consent of Surety to Final Payment, may be used for this purpose.

Indicate attachment: Yes No

BY:

The following supporting documents should be attached hereto if required by the Owner:

(Signature of authorized representative)

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof
3. Contractor's Affidavit of Release of Liens (AIA Document G706A[™])

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:

My Commission Expires:

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

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AIA[®]

Document G706ATM – 1994

Contractor's Affidavit of Release of Liens

PROJECT: <i>(Name and address)</i>	ARCHITECT'S PROJECT NUMBER:	OWNER <input type="checkbox"/>
	CONTRACT FOR:	ARCHITECT <input type="checkbox"/>
		CONTRACTOR <input type="checkbox"/>
TO OWNER: <i>(Name and address)</i>	CONTRACT DATED:	SURETY <input type="checkbox"/>
		OTHER <input type="checkbox"/>

STATE OF:
 COUNTY OF:

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR: *(Name and address)*

BY:

(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:

My Commission Expires:

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.



AIA[®] Document G707[™] – 1994

Consent of Surety to Final Payment

PROJECT: *(Name and address)*

ARCHITECT'S PROJECT NUMBER:

OWNER

CONTRACT FOR:

ARCHITECT

CONTRACTOR

TO OWNER: *(Name and address)*

CONTRACT DATED:

SURETY

OTHER

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

on bond of
(Insert name and address of Contractor)

, SURETY,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve
the Surety of any of its obligations to
(Insert name and address of Owner)

, CONTRACTOR,

as set forth in said Surety's bond.

, OWNER,

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

(Surety)

(Signature of authorized representative)

Attest:
(Seal)

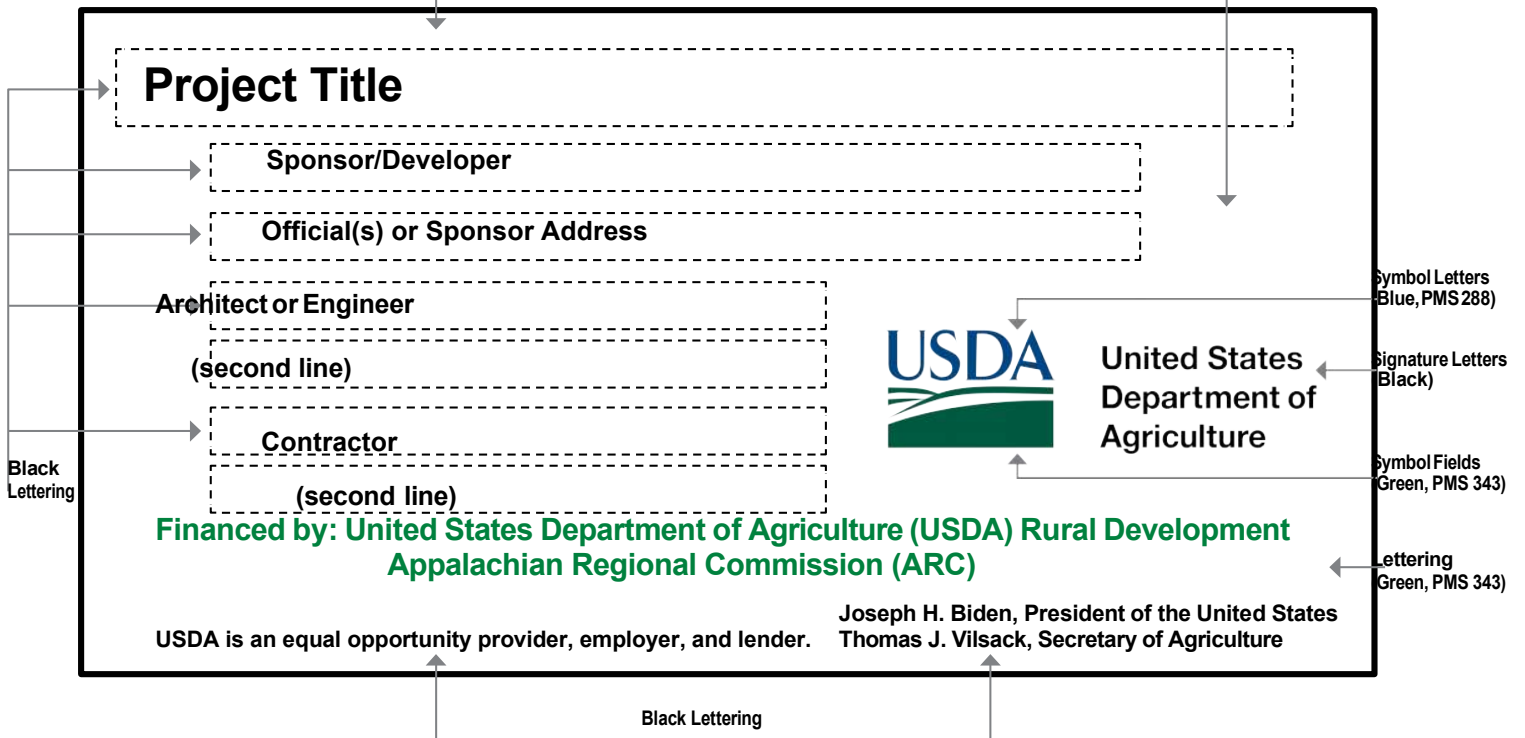
(Printed name and title)

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

TEMPORARY CONSTRUCTION SIGN FOR RURAL DEVELOPMENT & ARC PROJECTS

Recommended Fonts: Helvetica, Arial, or Myriad Pro

White Background



SIGN DIMENSIONS: 1200mm x 2400mm x 19mm (approx. 4'x8'x³/₄'')
PLYWOOD PANEL (APA RATED A-B GRADE-EXTERIOR)

LABOR STANDARDS PROVISIONS

The following clauses shall be made part of the contract documents for projects subject to the Davis-Bacon and Related Acts:

(Section a) Davis-Bacon Act (40 U.S.C. 276a - 276a-7).

(1) Minimum Wages.

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project) will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section, also, regular contributions made or costs incurred for more than a weekly period (but less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during each weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraph (4) of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records actually set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii) This paragraph has been suspended indefinitely (58 FR 58955, Nov. 5, 1993).

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

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

(v) Additional Classifications.

(A) The Contracting Officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The Contracting Officer shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the Contracting Officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the Contracting Officer to the Administrator of the Wage and Hour Division, Employment

Standards Administration, U.S. Department of Labor, Washington, D.C., 20210. The Administrator, or an authorized representative will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the Contracting Officer or will notify the Contracting Officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the Contracting Officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the Contracting Officer shall refer the questions, including the views of all interested parties and the recommendation of the Contracting Officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the Contracting Officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1) (v) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(2) Withholding. The Agency or Contracting Officer shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally- assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor, the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the Agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under paragraph (1)(iv) of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii) Payrolls.

(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Agency if the Agency is a party to the contract, but if the Agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the Agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under paragraph (3)(i) of this section. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

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

(1) That the payroll for the payroll period contains the information required to be maintained under paragraph (3) (i) of this section and that such information is correct and complete;

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

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

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph (3) (ii) (B) of this section.

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

(iii) The contractor or subcontractor shall make the records required under paragraph (3) (i) of this section available for inspection, copying, or transcription by authorized representatives of the Agency or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Agency may, after written notice to the contractor, sponsor, applicant, or owner, take

such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification,

fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

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

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

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in paragraphs (1) through (10) of this section and such other clauses as the Agency may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section.

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

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

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

(10) Certification of Eligibility.

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

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

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code 18 U.S.C. 1001.

(Section b) Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333).

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

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

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

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

oOo

"General Decision Number: KY20240042 07/05/2024

Superseded General Decision Number: KY20230042

State: Kentucky

Construction Type: Building

Counties: Barren, Casey, Clinton, Cumberland, Green, Hart, Knox, Logan, Marion, McCreary, Metcalfe, Monroe, Russell, Taylor and Wayne Counties in Kentucky.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 14026 generally applies to the contract.. The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 13658 generally applies to the contract.. The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/05/2024
1	02/09/2024
2	02/16/2024
3	05/31/2024
4	06/14/2024
5	07/05/2024

ASBE0046-002 05/01/2023

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR.....	\$ 28.09	17.19

BOIL0040-001 01/01/2021

	Rates	Fringes
BOILERMAKER.....	\$ 37.60	27.49

* CARP1650-010 06/01/2024

	Rates	Fringes
CARPENTER (Excludes Acoustical Ceiling Installation, Drywall Hanging, and Metal Stud Installation).....	\$ 32.25	18.09

ELEC0317-005 05/29/2023

	Rates	Fringes
ELECTRICIAN.....	\$ 37.15	22.73

ELEV0011-001 01/01/2023

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 52.72	37.335+a+b

PAID HOLIDAYS:

a. New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, the Friday after Thanksgiving, and Christmas Day.

b. Employer contributes 8% of regular hourly rate to vacation pay credit for employee who has worked in business more than 5 years; 6% for less than 5 years' service.

ENGI0181-083 06/01/2024

	Rates	Fringes
POWER EQUIPMENT OPERATOR (Bobcat/Skid Steer/Skid Loader).....	\$ 37.81	19.10

ENGI0181-084 06/01/2024

	Rates	Fringes
POWER EQUIPMENT OPERATOR (Oiler).....	\$ 34.00	19.10

ENGI0181-085 06/01/2024

	Rates	Fringes
POWER EQUIPMENT OPERATOR (Crane).....	\$ 37.81	19.10

CRANES WITH BOOM 150 FEET & OVER, INCLUDING JIB, SHALL RECEIVE \$.75 ABOVE THE WAGE RATE.
ALL CRANES WITH PILING LEADS WILL RECEIVE \$.50 ABOVE THE WAGE, REGARDLESS OF BOOM LENGTH.

ENGI0181-086 06/01/2024

	Rates	Fringes
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POWER EQUIPMENT OPERATOR
 (Forklift).....\$ 37.81 19.10

 ENGI0181-092 06/01/2024

Rates Fringes

POWER EQUIPMENT OPERATOR
 (Bulldozer).....\$ 40.68 19.10

 * IRON0769-005 06/01/2024

Rates Fringes

IRONWORKER, REINFORCING
 ZONE 1.....\$ 37.66 29.24
 ZONE 2.....\$ 38.06 29.24
 ZONE 3.....\$ 39.66 29.24

ZONE 1 - (no base rate increase) Up to 10 mile radius of
 Union Hall, 1643 Greenup Ave, Ashland, KY.

ZONE 2 - (add \$0.40 per hour to base rate) 10 to 50 mile
 radius of Union Hall, 1643 Greenup Ave, Ashland, KY.

ZONE 3 - (add \$2.00 per hour to base rate) 50 mile radius &
 over of Union Hall, 1643 Greenup Ave, Ashland, KY.

 LAB00189-007 06/01/2023

Rates Fringes

LABORER (Pipelayer).....\$ 26.75 15.63

 LAB00576-011 07/01/2023

Rates Fringes

LABORER (Carpenter Tender).....\$ 21.99 12.18

 LAB00576-012 07/01/2023

Rates Fringes

LABORER (Mason Tender -
 Cement/Concrete).....\$ 22.19 12.18

 LAB01392-004 07/01/2023

	Rates	Fringes
LABORER (Mason Tender - Brick)...	\$ 23.99	15.78

PAIN1072-005 12/01/2023		

	Rates	Fringes
PAINTER (Spray Only).....	\$ 30.07	23.69

PLUM0452-014 11/01/2023		

	Rates	Fringes
PIPEFITTER.....	\$ 37.25	20.76

SFKY0669-001 04/01/2024		

	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers).....	\$ 41.33	25.49

SHEE0110-006 06/01/2021		

	Rates	Fringes
SHEET METAL WORKER (Excludes HVAC Duct Installation).....	\$ 33.74	23.31

* UAVG-KY-0007 01/01/2024		

	Rates	Fringes
IRONWORKER, ORNAMENTAL.....	\$ 35.38	26.54

* UAVG-KY-0008 01/01/2023		

	Rates	Fringes
LABORER: Power Tool Operator....	\$ 26.87	17.81

* SUKY2015-023 06/02/2015		

	Rates	Fringes
BRICKLAYER.....	\$ 24.61	11.88
CEMENT MASON/CONCRETE FINISHER...	\$ 27.99	0.00

IRONWORKER, STRUCTURAL.....	\$ 22.31	15.40
LABORER: Common or General.....	\$ 16.97 **	6.11
OPERATOR:		
Backhoe/Excavator/Trackhoe.....	\$ 21.11	13.00
OPERATOR: Grader/Blade.....	\$ 24.33	13.00
PAINTER (Brush and Roller).....	\$ 18.20	6.43
PLUMBER.....	\$ 33.41	16.67
ROOFER.....	\$ 22.31	7.41
SHEET METAL WORKER (HVAC Duct Installation Only).....	\$ 25.91	8.06
TILE FINISHER.....	\$ 17.67	7.45
TILE SETTER.....	\$ 25.77	6.10
TRUCK DRIVER: Dump Truck.....	\$ 17.07 **	6.25

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

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.20) or 13658 (\$12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

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

health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

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

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

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

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

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and

the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

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

Union Average Rate Identifiers

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

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

State Adopted Rate Identifiers

Classifications listed under the ""SA"" identifier indicate that the prevailing wage rate set by a state (or local) government was adopted under 29 C.F.R §1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 01/03/2024 reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

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

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

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION"



Kentucky Transportation Cabinet
 Department of Highways
 Division of Maintenance
 Permits Branch

TC 99-1 (B)
 07/2018
 Page 1 of 1

ENCROACHMENT PERMIT

KYTC KEPT #: 08-2022-00170

Permittee: Russell County Industrial Development Authority

Permit Type / Subtype: Entrance / Commercial

Work Completion Date: 7/13/2023

INDEMNITIES		
Type	Amount Required	Tracking Number
Performance Bond	\$0.00	
Cash / Check	\$0.00	
Self-Insured	\$0.00	
Payment Bond	\$0.00	
Liability Insurance	\$0.00	

This permit has been: **APPROVED** **DENIED**

JamesE Jones, P.E.	D8 - Chief District Engineer	9/1/2022
SIGNATURE	TITLE	DATE

The TC 99-1(B), including the application TC-99 1(A) and all related and accompanying documents and drawings make up the permit. It is not a permit unless both the TC 99-1(A) and TC 99-1(B) are both present.

LOCATION(S)			
Description	County - Route	Latitude	Longitude
	Russell - KY 3280	37.031707	-85.084876

NOTICE OF COMPLETION OF ENCROACHMENT PERMIT WORK

PERMITTEE

Name: Russell County Industrial Development Authority
Contact Person: Lucas Witt
Address: PO Box 1068
City: Jamestown
State: Kentucky
Zip: 42629
Telephone: (270) 866-7070

PROJECT IDENTIFICATION

Permit Number: 08-2022-00170

I wish to notify the Department of Highways that the above mentioned permit work and any necessary right-of-way restoration have been completed and are ready for final inspection.

Permittee

Please return this form to the address below when work is completed and ready for final inspection.

Please Return to: Permit Engineer
Department of Highways, District 8 Office
1660 South US 27
Somerset, Kentucky 42502
(606) 677-4017
www.transportation.ky.gov/

LOCATION(S)			
Description	County - Route	Latitude	Longitude
	Russell - KY 3280	37.031707	-85.084876



KENTUCKY TRANSPORTATION CABINET
 Department of Highways
 PERMITS BRANCH

TC 99-1A
 Rev. 10/2020
 Page 1 of 4

APPLICATION FOR ENCROACHMENT PERMIT

KYTC KEPT #: 08-2022-00170

SECTION 1: APPLICANT CONTACT INFORMATION

APPLICANT Russell County Industrial Dev. Auth.		ADDRESS P.O. Box 1068	
EMAIL rcida@#duotel.com	CITY Jamestown	STATE KY	ZIP 42629
CONTACT NAME 1 Lucas Witt, ED Director	EMAIL lucas@mwm-llc.com	PHONE # 270-866-7070	
		CELL # 859-948-5646	
CONTACT NAME 2 (if applicable) Glen Ross, Engineer	EMAIL glenross@msexlex.com	PHONE # 859-223-5694	
		CELL # 859-619-0501	

SECTION 2: PROPOSED WORK LOCATION

ADDRESS 531 French Valley Road	CITY Russell Springs	STATE Kentucky	ZIP 42642
COUNTY Russell	ROUTE # KY 3280	MILE POINT 4.76	LONGITUDE (X) 37° 01' 54"
			LATITUDE (Y) 85° 05' 05"

ADDITIONAL LOCATION INFORMATION:

FOR KYTC USE ONLY

PERMIT TYPE: Air Right Entrance Utilities Vegetation Removal Other: _____

ACCESS: Full Partial by Permit **LOCATION:** Left Right Crossing

SECTION 3: GENERAL DESCRIPTION OF WORK

Provide an entrance for Lot 2 at the Lake Cumberland Regional Industrial Complex for an entrance to the proposed Seed Academy.

THE UNDERSIGNED APPLICANT(s), being duly authorized representative(s) or owner(s), DO AGREE TO ALL ORIGINAL UNEDITED TERMS AND CONDITIONS ON THE TC 99-1A, pages 1-4.


 SIGNATURE

7-5-22
 DATE

This is not a permit unless and until the applicant(s) receives an approved TC 99-18 from KYTC. This application shall become void if not approved by the cancellation date. The cancellation date shall be a minimum of one year from the date the applicant submits their application.



APPLICATION FOR ENCROACHMENT PERMIT

TERMS AND CONDITIONS

1. The permit, including this application and all related and accompanying documents and drawings making up the permit, remains in effect and is binding upon the Applicant/Permittee, its successors and assigns, as long as the encroachment(s) exists and also until the permittee is finally relieved by the Department of Highways from all its obligations.
2. Applicant shall meet all requirements of the Clean Water Act if the project will disturb one acre or more, the applicant shall obtain a KPDES KYR10 Permit from the Kentucky Division of Water. All disturbed areas shall meet the requirements of the Department of Highway's Standard Specifications, Sections 212 and 213, as amended.
3. **INDEMNITY:**
 - A. **PERFORMANCE BOND:** The permittee shall provide to the Department a performance bond according to the Permits Manual, Section PE-203 as a guarantee of conformance with the Department's Encroachment Permit requirements.
 - B. **PAYMENT BOND:** At the discretion of the department, a payment bond shall be required of the permittee to ensure payment of liquidated damages assessed to the permittee.
 - C. **LIABILITY INSURANCE:** Liability insurance shall be required of the permittee (in an amount approved by the department) to cover all liabilities associated with the encroachment.
 - D. It shall be the responsibility of the permittee, its successors and assigns, to maintain all indemnities in full force and effect until the permittee is authorized to release the indemnity by the Department.
4. A copy of this application and all related documents making up the approved permit shall be given to the applicant and shall be made readily available for review at the work site at all times.
5. Perpetual maintenance of the encroachment is the responsibility of the permittee, its successors and assigns, with the approval of the Department as required, unless otherwise stated.
6. Permittee, its successors and assigns, shall comply with and agree to be bound by the requirements and terms of (a) this application and all related documents making up the approved permit, (b) by the Department's Permits Manual, and (c) by the Manual on Uniform Traffic Control Devices, both manuals as revised to and in effect on the date of issuance of the permit, all of which documents are made a part thereof by this reference. Compliance by the permittee, its successors and assigns, with subsequent revisions to applicable provisions of either manual or other policy of the Department may be made a condition of allowing the encroachment to persist under the permit.
7. Permittee agrees that this and any encroachment may be ordered removed by the Department at any time, and for any reason, upon thirty days written notice to the last known address of the applicant or to the address at the location of the encroachment. The permittee agrees that the cost of removing and of restoring the associated right-of-way is the responsibility of the permittee, its successors and assigns.
8. Permittee, its successors and assigns, agree that if the Department determines that motor vehicular safety deficiencies develop as a result of the installation or use of the encroachment, the permittee, its successors and assigns, shall provide and bear the expenses to adjust, relocate, or reconstruct the facilities, add signs, auxiliary lanes, or other corrective measures reasonably deemed necessary by the Department within a reasonable time after receipt of a written notice of such deficiency. The period within which such adjustments, relocations, additions, modifications, or other corrective measures must be completed will be specified in the notice.
9. Where traffic signals are required as a condition of granting the requested permit or are thereafter required to correct motor vehicular safety deficiencies, as determined by the Department, the costs for signal equipment and installation(s) shall be borne by the permittee, its successors and assigns and the Department in its reasonable discretion and only in accordance with the Department's current policy set forth in the Traffic Operations Manual and Permits Manual. Any modifications to the permittee's entrance necessary to accommodate signalization (including necessary easement(s) on private property) shall be the responsibility of the permittee, its successors and assigns, at no expense to the Department.



APPLICATION FOR ENCROACHMENT PERMIT

10. The requested encroachment shall not infringe on the frontage rights of an abutting owner without their written consent as hereinafter described. Each abutting owner shall express their consent, which shall be binding on their successors and assigns, by the submission of a notarized statement as follows, "I (we), _____, hereby consent to the granting of the permit requested by the applicant along Route _____, which permit does affect frontage rights along my (our) adjacent real property." By signature(s) _____, subscribed and sworn by _____, on this date _____.
11. The permit, if approved, is subject to the agreement that it shall not interfere with any similar rights or permit(s) previously granted to any other party, except as otherwise provided by law.
12. Permittee shall include documentation which describes the facilities to be constructed. Permittee, its successors and assigns, agree as a condition of the granting of the permit to construct and maintain any and all permitted facilities or other encroachments in strict accordance with the submitted and approved permit documentation and the policies and procedures of the Department. Permittee, its successors and assigns, shall not use facilities authorized herein in any manner contrary to that prescribed by the approved permit. Only normal usage as contemplated by the parties and by this application and routine maintenance are authorized by the permit.
13. Permittee, its successors and assigns, at all times from the date permitted work is commenced until such time as all permitted facilities or other encroachments are removed from the right-of-way and the right-of-way restored, **shall defend, protect, indemnify and save harmless** the Department from any and all liability claims and demands arising out of the work, encroachment, maintenance, or other undertaking by the permittee, its successors and assigns, related or undertaken pursuant to the granted permit, due to any claimed act or omission by the permittee, its servants, agents, employees, or contractors. This provision shall not inure to the benefit of any third party nor operate to enlarge any liability of the Department beyond that existing at common law or otherwise if this right to indemnity did not exist.
14. Upon a violation of any provision of the permit, or otherwise in its reasonable discretion, the Department may require additional action by the permittee, its successors and assigns, up to and including the removal of the encroachment and restoration of the right-of-way. In the event additional actions required by the Department under the permit are not undertaken as ordered and within a reasonable time, the Department may in its discretion cause those or other additional corrective actions to be undertaken and the Department shall recover the reasonable costs of those corrective actions from the permittee, its successors and assigns.
15. Permittee, its successors and assigns, shall use the encroachment premises in compliance with all requirements of federal law and regulation, including those imposed pursuant to Title VI of the Civil Right Act of 1964 (42 U.S.C. § 2000d et seq.) and the related regulations of the U.S. Department of Transportation in Title 49 C.F.R. Part 21, all as amended.
16. Permittee, its successors and assigns, agree that if the Department determines it is necessary for the facilities or other encroachment authorized by the permit to be removed, relocated or reconstructed in connection with the reconstruction, relocation or improvement of a highway, the Department may revoke permission for the encroachment to remain under the permit and may order its removal, relocation or reconstruction by the permittee, its successors and assigns, at the expense of the permittee, except where the Department is required by law to pay any or all of those costs.



APPLICATION FOR ENCROACHMENT PERMIT

- 17. Permittee agrees that the authorized permit is personal to the permittee and shall remain in effect until such time as (a) the permittee's rights to the adjoining real property to have benefitted from the requested encroachment have been relinquished, (b) until all permit obligations have been assumed by appropriate successors and assigns, and (c) unless and until a written release from permit obligations has been granted by the Department. The permit and its requirements shall also bind the real property to have benefitted from the requested encroachment to the extent permitted by law. The permit and the related encroachment become the responsibility of the successors and assigns of the permittee and the successors and assigns of each property owner benefitting from the encroachment, or the encroachment may not otherwise permissibly continue to be maintained on the right-of-way. (Does not apply to utility encroachments serving the general public.)
- 18. If work authorized by the permit is within a highway construction project in the construction phase, it shall be the responsibility of the permittee to make personal contact with the Department's Engineer on the project in order to coordinate all permitted work with the Department's prime contractor on the project.
- 19. This permit is not intended to, nor shall it, affect, alter or alleviate any requirement imposed upon the permittee, its successors and assigns, by any other agency.
- 20. Permittee, its successors and assigns, agree to contain and maintain all dirt, mud, and other debris emanating from the encroachment away from the surrounding right-of-way and the travel way of the highway hereafter and at all times that its obligations under the permit remain in effect.
- 21. Before You Dig: The contractor is instructed to call 1-800-752-6007 to reach KY 811, the One-Call system for information on the location of existing underground utilities. The call is to be placed a minimum of two (2) and no more than ten (10) business days prior to excavation. The contractor should be aware that the owners of underground facilities are not required to be members of the KY 811 One-Call Before U-Dig (BUD) service. The contractor must coordinate excavation with the utility owners, including those whom do not subscribe to KY 811. It may be necessary for the contractor to contact the County Clerk to determine what utility companies have facilities in the area.
- 22. The undersigned Utility acknowledges ownership and control of the facilities proposed to be installed, modified, or extended by the Applicant/Permittee and agrees to be bound by the requirements and terms of this application and all related documents making up the approved permit, by the Department's Permits Guidance Manual, and by all applicable regulations and statutes in effect on the date of issuance of the permit. This information and application is certified correct to the best knowledge and belief of the undersigned Utility.

UTILITY

NAME (Utility Representative)

TITLE (Utility Representative)

SIGNATURE (Utility Representative)

DATE



To Submit a Locate Request
24 Hours a Day, Seven Days a Week:
Call 811 or 800-752-6007

KY Transportation Cabinet – District 8
Permit Number 08-2022-00170

Applicant to construct a new 36 foot commercial entrance right of mile point 4.76 on KY 3280 in Russell County with 25 feet radii as per entrance diagram and encroachment terms. No pipe is required. Entrance to be paved with 10 inches thickness of DGA, 3.0 inches thickness asphalt base, and 1.0 inch thickness asphalt. Side slopes of the entrance shall be 6:1 or flatter as per KY Standard Drawing RPM-110-07.

Construction of the entrance shall not interfere with any construction or maintenance operations by the Transportation Cabinet on KY 3280.

No changes shall be made contrary to this permit and the applicant's plans without first notifying and being approved by the Permit Engineer.

All work and materials shall meet or exceed the Standard Specifications.

All disturbed portions of the right-of-way are to be restored to grass as per Kentucky Department of Highways Standard Specifications for Road and Bridge Construction, 2019 edition. A satisfactory turf, as determined by the Department, is to be established by the permittee prior to release of indemnity.

The minimum rate of application for seeding and protection method II per 1,000 square feet shall be applied as follows:

2.5 lbs of seed mixture
12 lbs of 20-10-10 fertilizer
150 lbs of agricultural limestone

Roadway drainage shall be maintained at all times, with silt checks placed in the roadway ditch where needed and near the inlet of all culvert and entrance pipe to control erosion and prevent silt from settling inside of pipe.

The applicant shall provide all necessary steps to contain all silting within the work area as specified in Section 212 and Section 213, Department's Standard Specifications for Road and Bridge Construction.

Work area within the Kentucky Department of Highways right of way shall be signed and flagged in accordance to the Manual on Uniform Traffic Control Devices before any work is to begin on the Kentucky Department of Highways right of way.

This permit will be terminated and work will stop immediately at any time the Department of Highways discovers or is notified of any unsafe or hazardous conditions until corrections have been made.

It shall be the responsibility of the applicant to contact the Kentucky Department of Highways District 8 Permits Office at 606-677-4017 a minimum of 2 working days before work begins on KY Transportation Cabinet right of way.



ENCROACHMENT PERMIT GENERAL NOTES & SPECIFICATIONS

Permit No. 08-2022-00170

I. SAFETY

A. General Provisions

- All signs and control of traffic shall be in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition, Part VI, Kentucky Department of Highways Standard Drawings, and safety requirements shall comply with the Permits Manual.
- All work necessary in shoulder or ditch line areas of a state highway shall be scheduled to be promptly completed so that hazards adjacent to the traveled way are kept to an absolute minimum.
- No more than one (1) traveled-lane shall be blocked or obstructed during normal working hours. All signs and flaggers during lane closure shall conform to the Manual on Uniform Traffic Control Devices and Kentucky Department of Highways Standard Drawings.
- When necessary to block one (1) traveled-lane of a state highway, the normal working hours shall be as directed by the Department. No lanes shall be blocked or obstructed during adverse weather conditions (rain, snow, fog, etc.) without specific permission from the Department. Working hours shall be between 8:30 AM and 4:00 PM
- The traveled-way and shoulders shall be kept clear of mud and other construction debris at all times during construction of the permitted facility.
- Non-construction equipment, vehicles, or office trailers shall not be allowed on the right of way during working hours.
- The right of way shall be left free and clear of equipment, material, and vehicles during non-working hours.

B. Explosives

- No explosive devices or explosive material shall be used within state right of way without proper license and approval of the Kentucky Department of Mines and Minerals, Explosive Division.

C. Other Safety Requirements

- All workers must wear OSHA conforming personal protection items at all times when work is performed on the KYTC right of way. All traffic control must conform to the latest edition of the Manual on Uniform Traffic Control Devices and Kentucky Department of Highways Standard Drawings

II. UTILITIES * Applies to Fully Controlled Access Highways ONLY

- *All work necessary within the right of way shall be performed behind a temporary fence erected prior to a boring operation.
- *The temporary woven wire fence shall be removed immediately upon completion of work on the right of way, and the control of access immediately restored to original condition, in accordance with applicable Kentucky Department of Highways Standard Drawings.
- *All vents, valves, manholes, etc., shall be located outside of the right-of-way.
- *Encasement pipe shall extend from right-of-way line to right-of-way line and shall be one continuous run of pipe. The encasement pipe shall be welded at all joints.
- The boring pit and tail ditch shall extend past the existing toe of slope or bottom of ditch line and shall be a minimum of 42 inches deep.

IV. RIGHT OF WAY RESTORATION

- Encasement pipe shall conform to current standards for highway crossings in accordance with the Permits Manual.
- Parallel lines shall be constructed between back slope of ditch line and right-of-way line and shall have a minimum of 42-inch cover above top of pipe or conduit.
- All pavement cuts shall be restored per attached encroachment terms.
- Aerial crossing of this utility line shall have a minimum clearance of _____ feet from the high point of the roadway to the low point of the line (calculated at the coefficient for expansion of 120 degrees Fahrenheit).
- The 30-foot clear zone requirement shall be met to the extent possible in accordance with the Permits Manual.
- Special requirements:

III. GENERAL

A. OSHA

- Kentucky Occupational Safety and Health Standards for the construction industry, which has the effect of law, states in part: (Page 52, 1926.651, Specific Excavation Requirements) "Prior to opening an excavation, effort shall be made to determine whether underground installations, (sewer, telephone, water, fuel, electric lines, etc.) will be encountered, and if so, where such underground installations are located. When the excavation approaches the estimated location of such an installation, the exact location shall be determined, and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation."

B. Archaeological

- Whenever materials of an archaeological nature are discovered during the course of construction work or maintenance operations, contact shall be made immediately with the Division of Environmental Analysis, which maintains an archaeologist on staff, or with the Office of the State Archaeologist located at the University of Kentucky. Following this consultation, further action shall be decided on a case-by-case basis by the State Highway Engineer or the Transportation Planning Engineer or their designated representative.

C. Utilities in the Work Areas

- The permittee shall be responsible for any damage to existing utilities, and any utility modifications or relocations within state right of way necessary, as determined by the Department or by the owner of the utility, shall be at the expense of the permittee and subject to the approval of the Department.
- All existing manholes and valve boxes shall be adjusted to be flush with finished grade.

D. Environmental

- If the activity to which this permit relates disturbs one acre or more of land, you must obtain a KPDES KYR10 permit.

Websites

<https://eec.ky.gov/Environmental-Protection/Pages/default.aspx>

IV. RIGHT OF WAY RESTORATION

- All disturbed portions of the right of way shall be restored to grass as per Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition). A satisfactory turf, as determined by the Department, shall be established by the permittee prior to release of indemnity. Sodding or seeding shall be as follows:

Slopes 3:1 or flatter	90% Kentucky 31 Tall Fescue 10% White Dutch Clover
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Slopes steeper than 3:1	70% KY 31 Fescue 30% Partridge Pea
-------------------------	---------------------------------------

- Two tons of clean straw mulch per acre of seeding.
- Prior to seeding, the ground shall be prepared in accordance with Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition).
- Substitutes for sod such as artificial turf, rocked mulch, or paved areas may be acceptable if they are aesthetically pleasing.
- All ditch-flow lines and all ditch-side slopes shall be sodded.
- Existing right of way markers shall not be disturbed, but if damaged in any way, they shall be entirely replaced by the permittee, with new markers in accordance with Kentucky Department of Highways Standard Drawings. Markers that are entirely removed shall be re-established in the proper locations by the permittee and to the satisfaction of the Department.
- Other right of way restoration requirements are as follows:

V. DRAINAGE

- All pipe shall be laid in a straight alignment, to proper grades, and with all materials and methods of installation including bedding and joint seating in accordance with Department Standard Specifications for Road and Bridge Construction (latest edition). Pipe shall not be covered until inspected by the Department and express permission obtained to make backfill.
- All gutter lines at the base of new curbs shall be on continuous grades, and pockets of water along with curbs or in entrance areas or other paved areas within the right of way shall not be acceptable.
- All drainage structures and appurtenances (manholes, catch basins, curbing, inlet basins, etc.) shall conform to Department specifications and shall be constructed in accordance with the Department Standard Drawings. Type required:

VI. Paving

- No bituminous pavement shall be installed within the right of way between November 15 and April 1, nor when the temperature is below 40 degrees Farenheit, without the express consent of the Department. No bituminous pavement shall be installed when the underlying course is wet.
- Paving within the right of way shall be as follows:

<input checked="" type="checkbox"/> Base (Type)	<u>DGA</u>	(Thickness)	<u>10 inches</u>
<input checked="" type="checkbox"/> Surface Base (Type)	<u>Asphalt Base</u>	(Thickness)	<u>3.0 inches</u>
<input checked="" type="checkbox"/> Finished Surface (Type)	<u>Asphalt Surface</u>	(Thickness)	<u>1.0 inch</u>
- Existing pavement and shoulder material shall be removed to accommodate the above paving specifications.
- The finished surface of all new pavement within the right of way shall be true to the required slope and grade, uniform in density and texture, free of irregularities, and equivalent in riding qualities to the adjacent highway pavement or as determined by the Department of Highways.
- All materials and methods of construction, including base and subgrade preparation, shall be in accordance with Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition).
- 48 hours notice to the Department is required prior to beginning paving operations.
 Phone: 606-307-6273 Name: Adam Dixon, PE
- To ensure proper surface drainage, the new pavement shall be flush with the edge of existing highway pavement and shall slope away from the existing edge of the pavement as specified in drawings.
- Existing edge of pavement shall be saw-cut to provide a straight and uniform joint for new pavement. An approved joint sealer, in accordance with Kentucky Department of Highways Standard Specifications (latest edition), shall be applied between new and existing pavements.

VII. SIDEWALKS SPECIFICATIONS *This dimension should be equal to the width of the sidewalk.

A. New Sidewalks

- Sidewalks shall be constructed of Class A concrete (3,500 p.s.i. test), shall be * ___feet in width, 8 inches in thickness across the entrances, and 4 inches in thickness across the remaining sections.
- Sidewalks shall have tooled joints not less than 1 inch in depth at four foot intervals*, and 1/2 premolded expansion joints extending entirely through the sidewalk at intervals not to exceed 50 feet.
- All materials and methods of construction, including curing, shall be in accordance with the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition).

B. Existing Sidewalks

- (Applicable if existing sidewalks are being relocated) Use of the sidewalk shall not be blocked or obstructed, and a usable walkway shall be maintained across the construction area at all times.
- All damaged sections of the sidewalks shall be entirely replaced to match existing sections.

VIII. DENSE GRADED SHOULDERS

- Any existing dense-graded aggregate shoulders in the entire frontage within the construction area, which have been disturbed or damaged or on which dirt has been placed or mud has been deposited or tracked, shall be restored to original condition by removal of all contaminated material and replaced to proper grade with new dense-graded aggregate.
- All new aggregate shoulders as specified in the plan shall consist of 5 inches of compacted dense-graded aggregate, 2^{1/2} pounds per square yard of calcium chloride.
- All dense-graded aggregate shoulders shall slope away from the new edge of pavement at the rate of 3/4 inch per foot.

IX. CURBING

A. Bituminous Curbs

- Bituminous concrete curbs shall be given a paint coat of asphalt emulsion.
- The surface under the bituminous concrete curb shall be tacked with asphalt emulsion.
- All bituminous concrete curbs shall be constructed of a Class I bituminous concrete mixture as specified by official Department of Highways specifications.
- All bituminous curbs shall be rolled curb, with a minimum base width of 8 inches and a minimum height of _____ inches. The top of the curb shall be constructed in such a manner as to guarantee a uniform rolled effect throughout the entire run.

B. Concrete Curbs

- All curbs or curb and gutter shall be constructed of Class A concrete (3,500 p.s.i. test) and shall be uniform in height, width, and alignment, true to grade, and satisfactory in finish and appearance as determined by the Department. All materials and methods of construction, including curing, shall be in accordance with Department of Highways Standard Specifications for Road and Bridge Construction (latest edition).
- All concrete curbs shall be 6 inches in width, extend _____ inches above finished grade and 12 inches below finished grade, with all visible edge rounded to 1/2 inch radii.
- All concrete curbs shall have expansion joints constructed at intervals of not more than 30 feet, and 1/2 inch premolded expansion joint material (cut to conform to the curb or to the curb and gutter section) shall be used in each expansion joint.
- The last _____ feet of all concrete curbs are to be tapered down to finished grade.

X. RIGHT-OF-WAY FENCE REPLACEMENT

- The replacement fence shall be a height of at least 48 inches and shall be of sufficient density to contain all animals (if applicable).

- The replacement fence shall be a minimum of 1 foot outside the right-of-way line. The fence materials and design shall meet accepted industry standards.

- The permittee shall be required to maintain the fence in a high state of repair.

- The existing fence shall be removed by permittee and stored at the Department's maintenance storage yard for future reuse by the Department.

- The control of access shall not be diminished as a result of the removal or replacement of the fence.

IX. MISCELLANEOUS

- Miscellaneous:

NOTICE TO PERMITTEE

THE PERMITTEE AGREES THAT ALL WORK WITHIN THE EXISTING RIGHT OF WAY SHALL BE DONE IN ACCORDANCE WITH THE PLANS AS APPROVED AND PERMITTED BY AN ENCROACHMENT PERMIT. ANY CHANGES OR VARIANCES MADE AT THE TIME OF CONSTRUCTION WITHOUT WRITTEN APPROVAL FROM THE DEPARTMENT OF HIGHWAYS SHALL BE REMOVED BY THE PERMITTEE AT NO EXPENSE TO THE DEPARTMENT OF HIGHWAYS AND SHALL BE REDONE BY THE PERMITTEE TO CONFORM WITH THE APPROVED PLANS.

SP-1F
SHEET 05

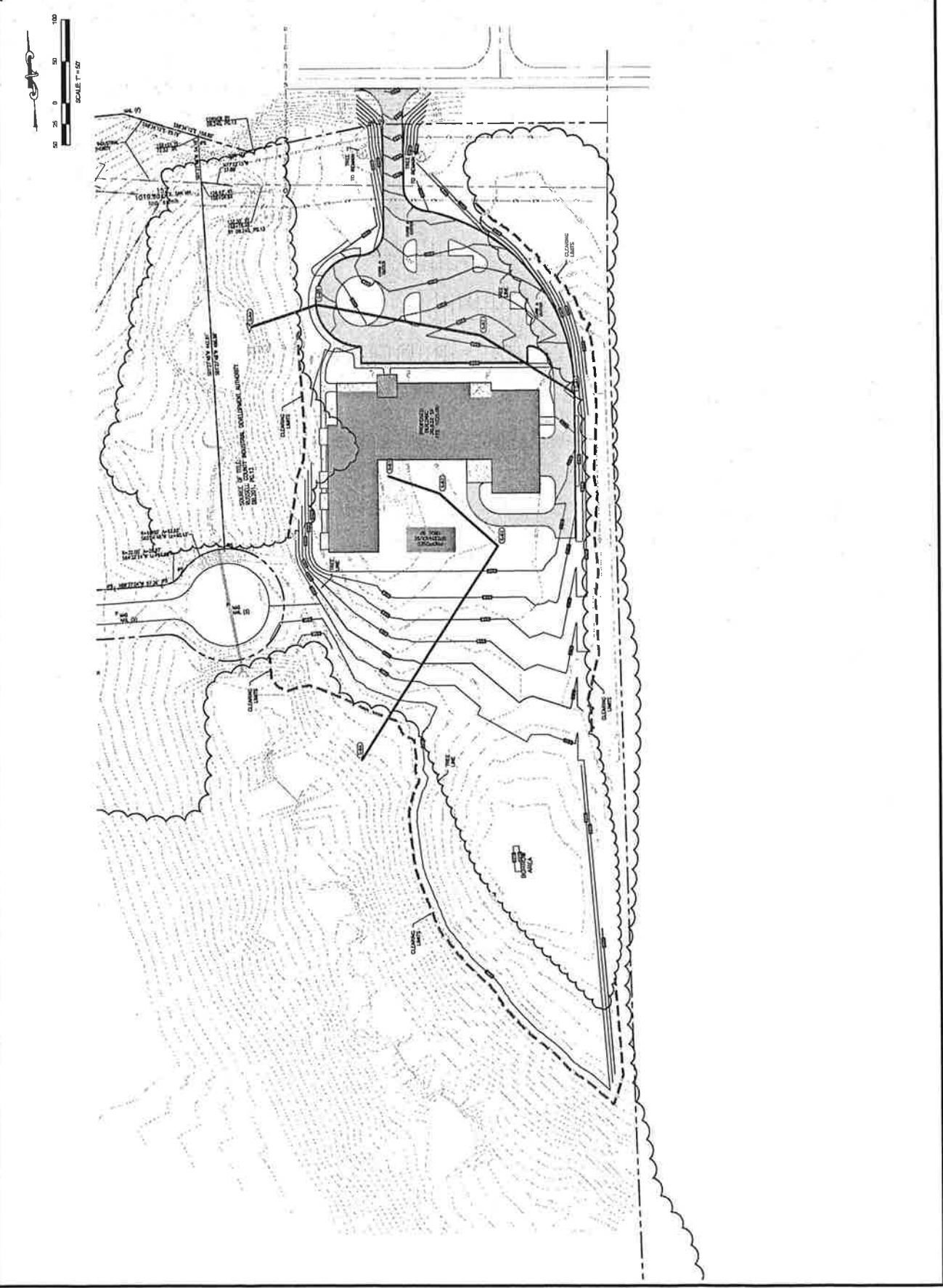
MS&G
OF KENTUCKY, INC.
Engineers
Architects
Planners

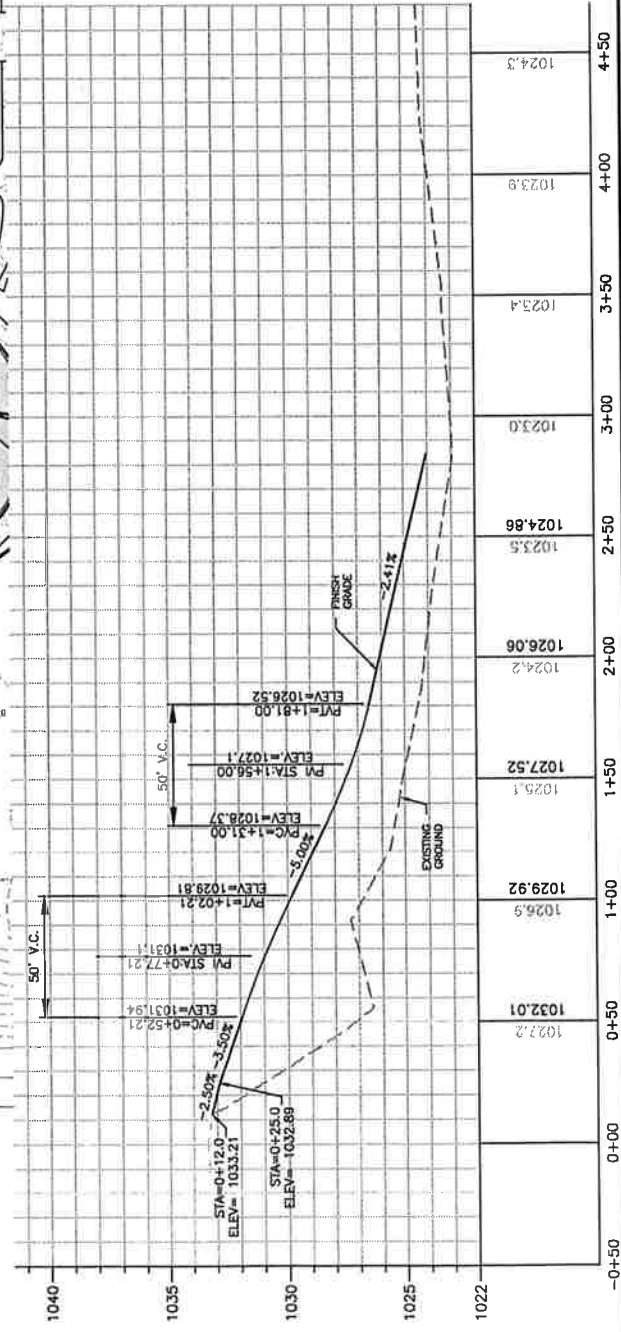
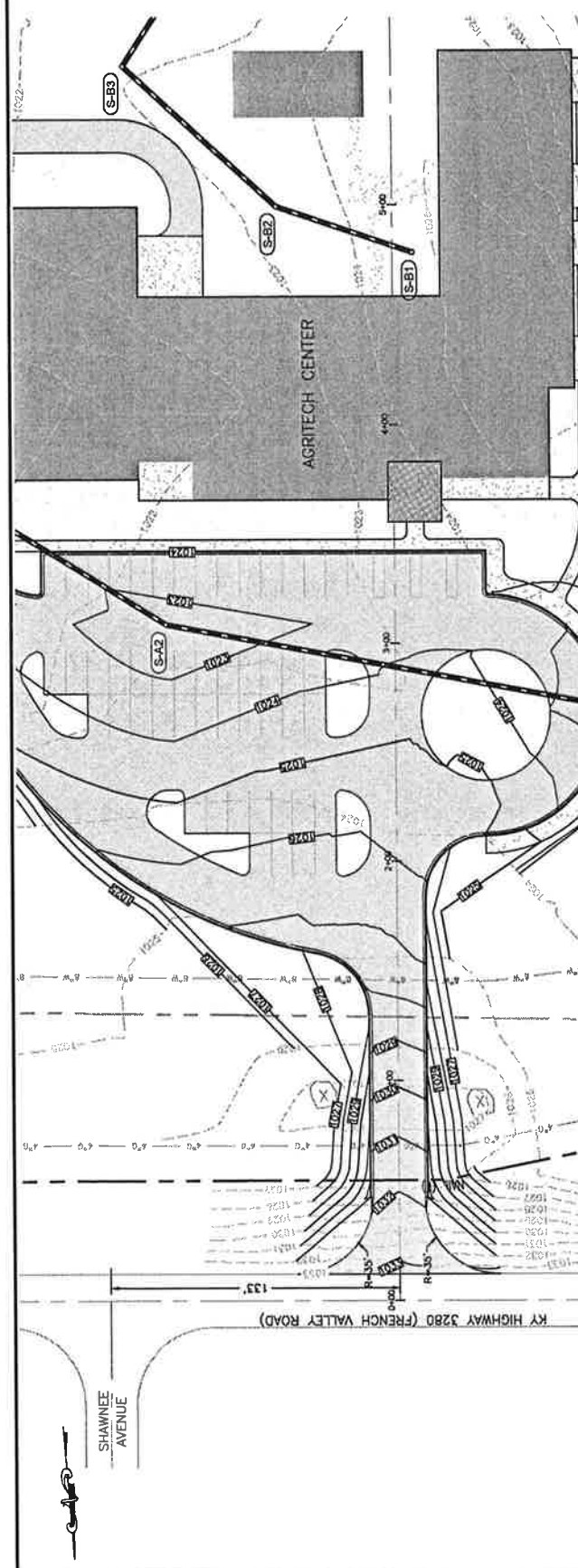
424 Washington Hwy
Lexington, KY 40503
Phone (606) 223-5864
Fax (606) 223-2807

PROJECT NO.	
DESIGNED BY	G.A.R.
DRAWN BY	J.M.M.
CHECKED BY	G.A.R.
REVIEWED BY	G.A.R.
DATE	JULY 2022
SCALE	AS NOTED

DATE		REVISION

THE SEED ACADEMY
LAKE CUMBERLAND REGIONAL AGRITECH CENTER
SITE PLAN LAYOUT SKETCH
RUSSELL SPRINGS, KENTUCKY





**THE SEED ACADEMY
LAKE CUMBERLAND REGIONAL
AGRITECH CENTER**
ENTRANCE DRIVE PLAN AND PROFILE
RUSSELL SPRINGS, KENTUCKY

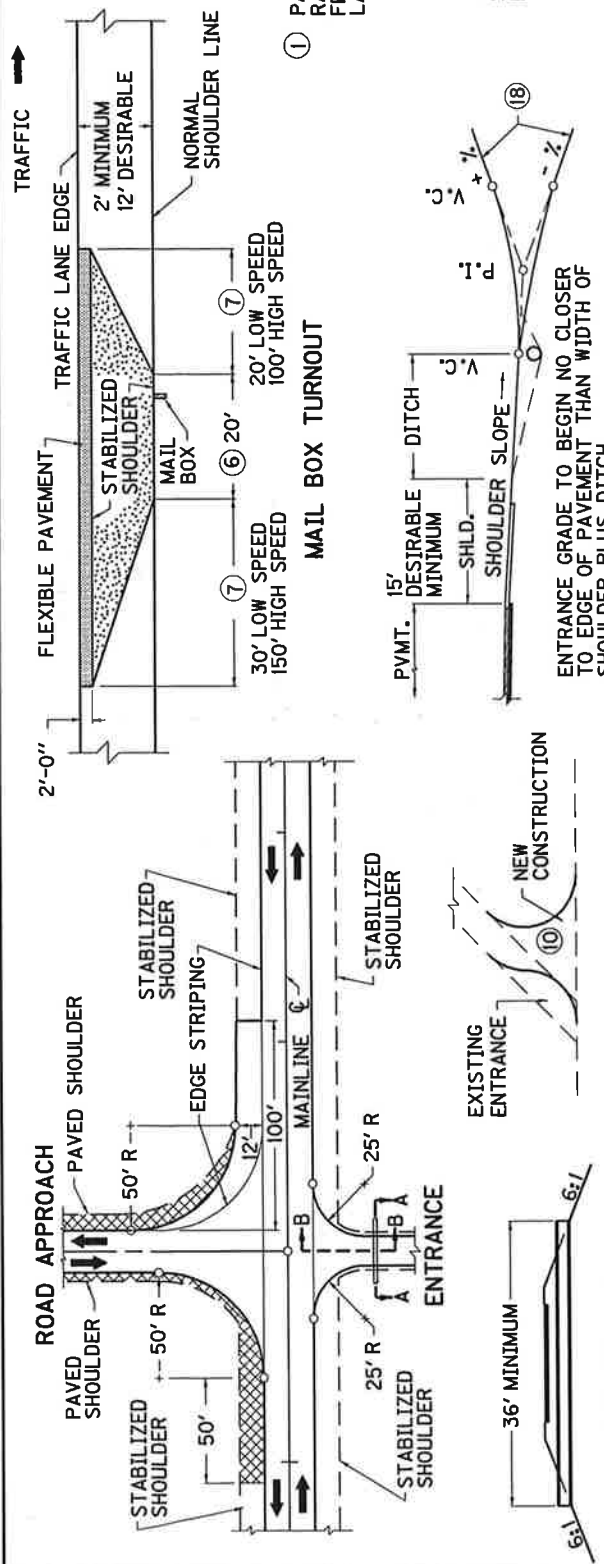


SCALE: 1" = 50'
JULY 12, 2022

nsc
OF KENTUCKY, INC.
Engineers
Architects
Planners

624 Wellington Way
Lexington, KY 40503
www.nselex.com

Phone: (859)223-5664
Fax: (859)223-2607



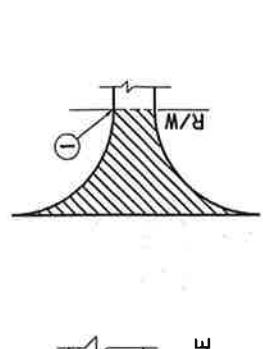
SECTION A-A

SECTION B-B

MAIL BOX TURNOUT

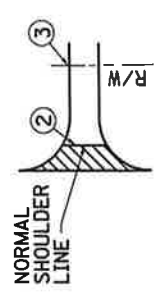
~ NOTES ~

- ⑥ ADD 2'-0" FOR EACH ADDITIONAL MAIL BOX.
 - ⑦ HIGH SPEED EQUALS 50 MPH OR GREATER. LOW SPEED EQUALS LESS THAN 50 MPH.
 - ⑧ THE 2'-0" WIDE FLEXIBLE PAVEMENT FOR THE LENGTH AS SHOWN, OR AS DETERMINED BY THE ENGINEER, SHALL BE APPLIED TO ALL MAIL BOX TURNOUTS. THE PAVEMENT DESIGN SHALL BE AS SHOWN OR AS APPROVED BY THE ENGINEER.
 - ⑨ FOR STABILIZED SHOULDERS, THIS AREA SHALL RECEIVE THE SAME TREATMENT AS THAT FOR ADJOINING STABILIZED SHOULDERS. FOR EARTH SHOULDERS THIS AREA SHALL RECEIVE 3" TO 5" OF COMPACTED DENSE GRADED AGGREGATE BASE, BANK GRAVEL, OR TRAFFIC BOUND BASE.
- APPROACHES AND ENTRANCES**
- ⑩ IF FEASIBLE, ALL APPROACHES AND ENTRANCES SHALL INTERSECT SHOULDER LINE AT RIGHT ANGLES. IF NOT AT RIGHT ANGLES, PIPE LENGTH SHALL BE INCREASED TO PROVIDE ACCURATE RADIUS.
 - ⑪ ROAD APPROACH ILLUSTRATION IS FOR MAINLINE ROAD, ADT 400 OR GREATER. PAVED SHOULDER PORTION SHOWN SHALL ONLY BE APPLICABLE WHERE THE MAINLINE SPECIFIES STABILIZED OR PAVED SHOULDERS. IF THE MAINLINE SHOULDER IS PAVED, THIS SHOULDER PORTION SHALL ALSO BE PAVED.
 - ⑫ WHEN THE MAINLINE ADT IS UNDER 400, USE A 25' RADIUS WITH NO DECELERATION WIDTH PROVIDED.
 - ⑬ THE PAVEMENT ON ENTRANCES AND APPROACHES THAT IS DISTURBED DURING NEW CONSTRUCTION OPERATIONS SHALL BE REPLACED WITH A PAVEMENT EQUIVALENT TO THE EXISTING PAVEMENT, REGARDLESS OF THE SURFACE MATERIAL USED ELSEWHERE. THE PAVEMENT DESIGN SHALL BE AS SHOWN ON THE PLANS OR AS APPROVED BY THE ENGINEER.
 - ⑭ THE RADIUS ON COUNTY OR SECONDARY ROADS SHALL NOT BE LESS THAN 25' MEASURED TO THE INSIDE EDGE OF THE SURFACE. EACH ADDITIONAL FOOT OF SURFACE WIDTH WILL REQUIRE AN ADDITIONAL FOOT OF PIPE.
 - ⑮ PIPE ILLUSTRATION IS BASED ON THE USE OF 15" PIPE. LARGER SIZES MAY BE INSTALLED WITH APPROPRIATE MODIFICATIONS. PIPES SMALLER THAN 15" DIAMETER ARE NOT TO BE USED EXCEPT IN SPECIAL CASES, WHEN SPECIFICALLY AUTHORIZED.
 - ⑯ IN CUT SECTION, SIGHT DISTANCE SHALL BE PROVIDED ON ENTRANCES AND APPROACHES BY DAYLIGHTING THE CUT FROM THE POINTS WHERE THE RADIUS BEGINS, TO POINTS NOT LESS THAN 100' ON EACH OF THE INTERSECTING ROADWAY.
 - ⑰ MINIMUM PAVED AREAS FOR ENTRANCES AND APPROACHES. THESE PAVED AREAS MAY BE EXTENDED TO TOUCHDOWN OR TIE-DOWN POINT PROVIDED THE EXISTING IS PAVED.
 - ⑱ MAXIMUM GRADE FOR ENTRANCES 50' OR GREATER IN LENGTH: MOUNTAINOUS TERRAIN - 20%, ROLLING TERRAIN - 16% AND FLAT TERRAIN - 12%.



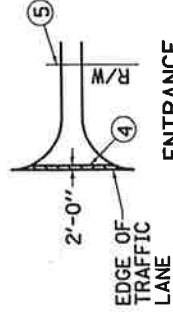
① PAVE TO R/W LINE OR END OF RADIUS, WHICHEVER IS FURTHER FROM THE EDGE OF TRAFFIC LANE.

ROAD AND STREET APPROACHES



② PAVED TO SHOULDER LINE SURFACE TO R/W LINE OR TOUCHDOWN WITH TRAFFIC BOUND BASE.

ENTRANCE (RESIDENTIAL AND COMMERCIAL)



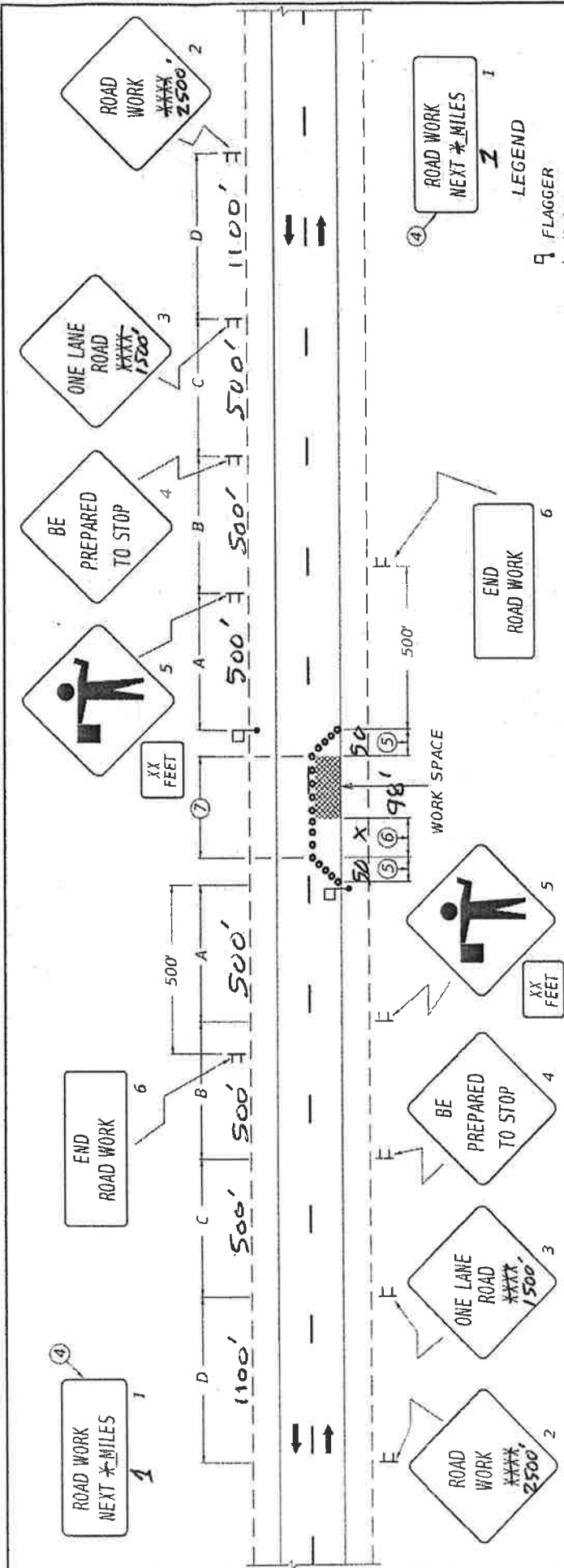
④ PAVE AS SHOWN WITH FLEXIBLE PAVEMENT. SURFACE TO R/W LINE WITH TRAFFIC BOUND BASE.

KENTUCKY
DEPARTMENT OF HIGHWAYS

APPROACHES, ENTRANCES AND MAIL BOX TURNOUT

STANDARD DRAWING NO. RPM-110-07

APPROVED: [Signature] DATE: 12-01-15
SUBMITTED: [Signature] DATE: 12-01-15



LEGEND

- ① FLAGGER
- F SIGN
- CHANNELIZING DEVICES
- CONES
- DRUMS

NOTES

1. THE SIZE OF SIGNS 2 THRU 5 SHALL BE 48" X 48" WITH 30" X 24" SUPPLEMENTAL PLAQUES FOR EXPRESSWAYS/FREEWAYS. THE MINIMUM SIZE OF SIGNS 2 THRU 5 SHALL BE 36" X 36" WITH 24" X 18" SUPPLEMENTAL PLAQUES FOR OTHER ROADWAYS. SIGN NOS. 1 AND 6 SHALL BE 48" X 24" FOR EXPRESSWAYS/FREEWAYS AND 36" X 18" FOR OTHER ROADWAYS. A FREEWAY IS DEFINED AS A DIVIDED HIGHWAY WITH FULL CONTROL OF ACCESS. AN EXPRESSWAY IS DEFINED AS A DIVIDED HIGHWAY WITH PARTIAL CONTROL OF ACCESS.
2. THE FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. FLAGGER STATIONS SHALL BE LOCATED FAR ENOUGH IN ADVANCE OF THE ACTIVITY AREA SO THAT APPROACHING ROAD USERS WILL HAVE SUFFICIENT DISTANCE TO STOP BEFORE ENTERING THE WORK SPACE. ILLUMINATION SHALL BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT.
3. DRUMS SHALL BE USED IN LIEU OF CONES IF CLOSURE EXTENDS INTO NIGHTTIME HOURS. GRABBER CONES MAY BE USED IN LIEU OF DRUMS IF THE USE OF DRUMS WOULD RESULT IN LANES THAT ARE TOO NARROW OR AN UNACCEPTABLE SITUATION BASED ON ENGINEERING JUDGMENT.
4. SIGN NO. 1 SHOULD BE INSTALLED AT THE LIMITS OF THE PROJECT WHEN THE CONSTRUCTION ZONE IS LONGER THAN TWO MILES IN LENGTH. THE DISTANCE SHOWN SHALL BE STATED TO THE NEAREST WHOLE MILE.
5. TAPERS SHALL BE 50' (MIN) TO 100' (MAX) IN LENGTH. SPACING OF CHANNELIZING DEVICES SHOULD BE 20' THRU THE TAPER AREAS.
6. BUFFER SPACE (OPTIONAL). IF USED, THE BUFFER SPACE SHOULD BE EXTENDED SO THAT THE TWO-WAY TRAFFIC TAPER IS PLACED BEFORE A HORIZONTAL OR CREST VERTICAL CURVE TO PROVIDE ADEQUATE SIGHT DISTANCE FOR THE FLAGGER AND A QUEUE OF STOPPED VEHICLES. REFER TO TABLE 6C-2 OF THE MUTCD FOR GUIDANCE ON BUFFER SPACE LENGTH.
7. SPACING OF CHANNELIZING DEVICES THRU THE ACTIVITY AREA SHOULD BE 80'. ON ROADWAYS WITH WIDTHS LESS THAN 20 FEET, CHANNELIZING DEVICES MAY BE OMITTED THRU THE ACTIVITY AREA BASED ON ENGINEERING JUDGMENT.

RUSSELL CO. AGRITECH
ENTRAUCE
 DRAWING NOT TO SCALE

KENTUCKY
 DEPARTMENT OF HIGHWAYS
 LANE CLOSURE
 TWO-LANE HIGHWAY
 STANDARD DRAWING NO. TTC-100-05
 DATE: 02-26-20
 APPROVED: [Signature]

SIGNING AND SPACING TABLE

ROAD TYPE	A	B	C	D
EXPRESSWAY/ FREEWAY	1000'	500'	1100'	2600'
SP. LT. ≥ 45 MPH*	500'	500'	500'	1100'
SP. LT. ≤ 40 MPH*	250'	250'	250'	250'

*NOTE: USE NORMAL POSTED SPEED LIMIT

BID ITEMS AND UNIT TO BID
 EACH
 LANE CLOSURE
 REFER TO SECTION 112 OF STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE
 CONSTRUCTION, CURRENT EDITION.

Moren, Conley W (KYTC-D08)

From: Glen Ross <glenross@mselex.com>
Sent: Thursday, July 28, 2022 2:38 PM
To: Moren, Conley W (KYTC-D08)
Cc: 'James manley'; Jones, James E (KYTC-D08); Dixon, Adam C (KYTC-D08); 'Lucas Witt'
Subject: RE: Russell County IDA - entrance permit for driveway on French Valley Road
Attachments: _Design-070222A for DOT-Site Plan Sketch.pdf; Sign Placement Aerial-page-001.jpg; ttc 100 RCIDA.pdf

****CAUTION** PDF attachments may contain links to malicious sites. Please contact the COT Service Desk ServiceCorrespondence@ky.gov for any assistance.**

Conley

See the answers to your questions in red below. Let me know if more is needed.

Thank you,

Glen A. Ross, P.E.
President
MSE of Kentucky, Inc.
624 Wellington Way
Lexington, Ky 40503
859-223-5694 (Bus.)
859-223-2607 (Fax)
glenross@mselex.com
www.mselex.com

From: Moren, Conley W (KYTC-D08) <Conley.Moren@ky.gov>
Sent: Friday, July 22, 2022 3:15 PM
To: Glen Ross <glenross@mselex.com>
Cc: James manley <jrmanley@outlook.com>; Jones, James E (KYTC-D08) <JamesE.Jones@ky.gov>; Dixon, Adam C (KYTC-D08) <Adam.Dixon@ky.gov>
Subject: RE: Russell County IDA - entrance permit for driveway on French Valley Road

Glen,
Thank you for the submittal. In addition what has been supplied we will require the proposed traffic control that complies with the Manual on Uniform traffic Control Devices and the Department's standard drawings (i.e. Lane Closure Two Lane Highway TTC-100-05) for the entrance construction that impacts the French Valley Road traffic,

the site topography sheet so we may confirm the storm water flows in relation to the right of way, See attached exhibit. The project site is 6' lower than French valley Road (el. 1033 down to el. 1027) and all drainage from the site is directed to the west and south away from French Valley Road. A storm sewer shown at the front of the building carries stormwater from the front of the site to the west into a creek in the industrial park that flows to the south away from the highway.

the size of the building in square feet The "Seed Academy" will have 31,050 sq. ft. It has 3 labs and 5 classrooms. The remaining space is support/office space.

and the maximum number of students or capacity so we may ascertain the traffic generation potential, According to Dr. Ford, Superintendent of Russell County Schools, the high school has 5 class periods per day. The Seed academy will operate as a remote facility for the high school to conduct agri-science education. A bus will bring students from the high school to the Seed Academy and return each period that students have classes there. It is not yet know if all 5 periods would have students attending the Academy. So the maximum traffic is 5 bus trips and return to the high school per school day. There will be 3 instructors at the Academy who will likely drive their own vehicles. It is hoped, but not yet established, that the Somerset Community College will have some students enter the program, perhaps up to five. They would likely drive their own vehicles. A cleaning service would account for another vehicle each day.

French Valley Road is a low volume road, with the AADT in 2021 for this area (Sta. 756) being 1,936.

the pavement structure of the entrance on right of way,
Heavy Duty Pavement For entrances, main roads, main drives and all loading dock areas.
All asphalt to be mixed, placed, and compacted in accordance with Kentucky Transportation Cabinet Standard Specifications. Also, the dense graded aggregate (DGA) to be placed and compacted in accordance with KyTC Specifications. PG 22 OF 25
Surface Course 1"
Asphalt Base Course 3"
Base Material (DGA) 10"

the proposed traffic markings and signage to be installed by the applicant,
There will be a stop bar at the driveway exit onto French Valley Road and a dividing line on the entrance drive to separate in and out vehicles. A monument sign identifying the Seed Academy will be erected off the highway right-of-way at a later date.

and the entrance curbing needs to end at the property line with clear labels for the benefit of the contractor. There will be no curbs on the highway right of way. The entrance drive will be sloped away from the highway and drainage will sheet flow down the entrance drive slope as shown on the entrance drive profile submitted with the encroachment permit. All as shown on the attached exhibit and the permit exhibit.

Upon completion of the encroachment review, we can then determine the appropriate indemnity amount. The Russell County Industrial Authority (Owner/applicant) is an agency of the County and City government. The facility will be operated under lease from Russell county IDA by the Russell County Public School system.

Please let me know if you have any questions.

Conley Moren, P.E.
TEBM Engineering Support
District 8
Somerset KY
1-502-764-0347 Office
1-606-416-4722 Cell

From: Glen Ross <glenross@msexlex.com>
Sent: Thursday, July 21, 2022 6:06 PM
To: Moren, Conley W (KYTC-D08) <Conley.Moren@ky.gov>
Cc: James manley <jrmanley@outlook.com>
Subject: Russell County IDA - entrance permit for driveway on French Valley Road

****CAUTION** PDF attachments may contain links to malicious sites. Please contact the COT Service Desk ServiceCorrespondence@ky.gov for any assistance.**

Conley

Attached is a request for a permit to construct a new driveway into the Lake Cumberland Regional Industrial Park (formerly the French Valley Industrial park) on French valley Road to serve a proposed new agricultural academy that will be owned by the industrial authority. Traffic is expected to be minimal with 2 school bus trips per day bringing high school students to the academy for classes and then return to the high school. There will be 6-8 instructors and administrators and perhaps a few students who will drive directly to the facility. I have attached a photo of the entrance location viewed from French Valley Road.

Please let me know if you have questions.

Thank you,

Glen A. Ross, P.E.
President
MSE of Kentucky, Inc.
624 Wellington Way
Lexington, Ky 40503
859-223-5694 (Bus.)
859-223-2607 (Fax)
glenross@mselex.com
www.mselex.com



COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET

transportation.ky.gov

Andy Beshear
GOVERNOR

Jim Gray
SECRETARY

Russell County Industrial Development
PO Box 1068
Jamestown, KY 42629

Subject: Pulaski County
KY 39
MP 104-3280-4.760
Permit 08-2022-00170

Dear Sir:

The attached is your copy of the approved encroachment permit application. One copy is to be submitted to your contractor. This permit is to remain on the project until the permitted work is complete.

You are to shape and seed any disturbed areas on the State's right of way. All work and materials are to comply with the Department's Standard Specification for Road and Bridge Construction- 2019 Edition. Signs, barricades, lights, etc. if required, are to be installed in accordance with the Manual on Uniform Traffic Control Devices.

Please notify this office when permitted work begins. When work has been completed, the Notice of Completion of Encroachment Permit Work must be completed and returned so an inspection can be made by personnel from this office. If all work has been completed satisfactorily, your indemnity will then be released.

Yours truly,

A handwritten signature in cursive script, appearing to read "Conley Moren".

Conley Moren, P.E.
Engineering Support TEBM
District 8- Somerset

9/7/2022

Date

JJ/cm
Attachments

Russell County IDA Agri-Business Training Center Project

Letter of Conditions Required Mitigation Measures

The project shall be in compliance with all requirements noted in the Department for Local Government letter dated May 13, 2020 from Ms. Lee Nalley. (Copy Attached)

The line design and construction shall be accomplished in a way that will leave the floodplains and wetlands unaffected after construction is completed. The U.S. Corps of Engineer's Nationwide Permit 12 applies to all floodplain and utility line construction.

Any excavation by the Contractor that uncovers or disturbs a historical or archaeological artifact shall be immediately reported to the Owner and a representative of this agency. Construction shall be halted pending the notification process and further directions issued by this agency after consultation with the State Historical Preservation Officer.

The design and construction of the project shall be accomplished with all local, state, and federal statutes, regulations, and permits in effect.

Best Management Practices shall be incorporated into the project design, construction, and maintenance.

Since all corridor construction will occur in the existing highway right-of-way if a stream is encountered it will necessarily be directional bored. Notify Rural Development if any relocation of the line is anticipated for stream crossings.

All requirements stated in the USFWS letter of December 21, 2020, shall be made a part of the project design, construction, and maintenance. (Copy Attached)



ANDY BESHEAR
GOVERNOR

DEPARTMENT FOR LOCAL GOVERNMENT
OFFICE OF THE GOVERNOR
100 AIRPORT ROAD, 3rd FLOOR
FRANKFORT, KENTUCKY 40601-8204
PHONE (502) 573-2382 FAX (502) 573-2939
TOLL FREE (800) 346-5606/ TDD: 711
WWW.kydlgweb.ky.gov

DENNIS KEENE
COMMISSIONER

May 13, 2020

Mr. Bennie Garland
Russell County Industrial Development Authority
2150 N. Main Street
Jamestown, KY 42629

RE: Russell County Regional Agri-Business Training Facility
SAI# KY202005050624
CFDA# 23.001

Dear Mr. Garland:

The Kentucky State e-Clearinghouse is the official designated Single Point of Contact (SPOC) for the Commonwealth pursuant to Presidential Executive Order 12372, and supported by Kentucky Statutes KRS 45.031. The primary function of the SPOC is to streamline the review aforementioned process for the applicant and the funding agency. This process helps in vocalizing the statutory and regulatory requirements. Information in the form of comments, if any, will be attached to this correspondence.

This proposal has been reviewed by the appropriate state agencies in the e-Clearinghouse for conflicts with state or local plans, goals and objectives. After receiving this letter, you should make it available to the funding agency and continue with the funding agencies application process. This e-clearinghouse SPOC letter signifies only that the project has followed the state reviewing requirements, and is neither a commitment of funds from this agency or any other state or federal agency. Please remember if any federal reviews are required the applicant must follow through with those federal agencies.

The results of this review are valid for one year from the date of this letter. If the project is not submitted to the funding agency or not approved within one year after the completion of this review, the applicant can request an extension by email to Lee.Nalley@ky.gov. If the project changes in any way after the review, the applicant must reapply through the eclearinghouse for a new review. There are no exceptions.

If you have any questions regarding this letter or the review process please contact the e-Clearinghouse office at 502-573-2382, ext. 274.

Sincerely,

Lee Nalley, SPOC
Kentucky State Clearinghouse

Attachment

Department for Environmental Protection
Louanna Aldridge

This review is based upon the information that was provided by the applicant through the Clearinghouse for this project. An endorsement of this project does not satisfy, or imply, the acceptance or issuance of any permits, certifications, or approvals that may be required from this agency under Kentucky Revised Statutes or Kentucky Administrative Regulations. Such endorsement means this agency has found no major concerns from the review of the proposed project as presented other than those stated as conditions or comments.

Kentucky Division for Air Quality Regulation 401 KAR 63:010 Fugitive Emissions states that no person shall cause, suffer, or allow any material to be handled, processed, transported, or stored without taking reasonable precaution to prevent particulate matter from becoming airborne. Additional requirements include the covering of open bodied trucks, operating outside the work area transporting materials likely to become airborne, and that no one shall allow earth or other material being transported by truck or earth moving equipment to be deposited onto a paved street or roadway. Please note the <http://air.ky.gov/SiteCollectionDocuments/Fugitive%20Dust%20Fact%20Sheet.pdf>

Kentucky Division for Air Quality Regulation 401 KAR 63:005 states that open burning is prohibited. Open Burning is defined as the burning of any matter in such a manner that the products of combustion resulting from the burning are emitted directly into the atmosphere without passing through a stack or chimney. However, open burning may be utilized for the expressed purposes listed on the <http://air.ky.gov/Pages/OpenBurning.aspx>.

All solid waste generated by this project must be disposed at a permitted facility. If underground storage tanks are encountered, they must be properly addressed. If asbestos, lead paint, and/or other contaminants are encountered during this project, they must be properly addressed.

If the proposed project site is in a designated flood hazard area, application must be made to the Division of Water for a floodplain construction permit. Permission, or exemption, depends upon design and the exact site.

Utility line projects that cross a stream will require a Section 404 permit from the US Army Corps of Engineers and a 401 Water Quality Certification from DOW.

If the construction area disturbed is equal to or greater than 1 acre, the applicant will need to apply for a Kentucky Pollutant Discharge Elimination System (KPDES) stormwater discharge permit from the Division of Water.

Best Management Practices (BMPs) should be utilized to control storm water runoff and sediment damage to water quality and aquatic habitat. For technical assistance on the kinds of BMPs most appropriate for housing and related construction, please contact the local Soil and Water Conservation District or the Division of Conservation.

If an existing water server is to be utilized for new water tap-ons (rehabilitations, new constructions), ascertain the capacity and operating condition of the originating water treatment plant and of the server (if different) in comparison to the water needs of the proposed housing. DOW cannot permit connections to water servers under tap-on bans, Agreed Orders, or Court Orders. DOW may not give approval to connections to water systems operating near, at, or over capacity. If a new water source is to be utilized, ascertain the source's (stream's or well's) low flow ability to serve the proposed project. Prior approval from DOW is required for water withdrawals of over 10,000 gallons per day and for all public drinking water. Final plans and specifications are subject to review by DOW.

If an existing wastewater server is to be utilized for new wastewater tap-ons (rehabilitations, new construction), ascertain the capacity and operating conditions of the receiving wastewater treatment facility (wastewater treatment plant or package sewage treatment plant) and of the server (if different) in comparison to the wastewater needs of the proposed housing. DOW cannot permit connections to wastewater servers under tap-on bans, Agreed Orders, or Court Orders. DOW may not give approval to connections to wastewater systems at or over hydraulic

capacity. If a new wastewater treatment facility is to be utilized, ascertain the discharge stream's ability to absorb the proposed projects treated wastewater.

DOW notes the requirements of onsite sewage disposal statutes, KRS 211.350 to 211.380, and administrative regulations, 902 KAR 10:060 to 10:110, must be met. DOW requests provisions are made for future connections to a wastewater treatment system. A Groundwater Protection Plan, as required by 401 KAR 5:037, needs to be prepared by all onsite wastewater system owners. Contact the DOW regarding requirements.

Prior approval from DOW is required for all discharges into streams and for all wastewater treatment facilities. DOW reminds the applicant to seal abandoned wastewater service connections.

Department of Housing, Buildings and Construction

Kevin Carlin

The Department of Housing Buildings and Construction, Division of Building Code Enforcement, has no comments concerning this proposed project. A building permit from this Department will be required, prior to construction.

Fish and Wildlife

Dan Stoelb

To minimize impacts to the aquatic environment the Kentucky Dept. of Fish & Wildlife Resources recommends that erosion control measures be developed and implemented prior to construction to reduce siltation into waterways located within the project area. Such erosion control measures may include, but are not limited to silt fences, staked straw bales, brush barriers, sediment basins, and diversion ditches. Erosion control measures will need to be installed prior to construction and should be inspected and repaired regularly as needed. Please contact Dan Stoelb @ 502-892-4453 or Daniel.Stoelb@ky.gov if you have further questions or require additional information.

KY Heritage Council

Yvonne Sherrick

To receive a review from the KY Heritage Council/State Historical Preservation Office (SHPO) you must follow the instructions located on their website at <http://www.heritage.ky.gov/siteprotect/> . There you will find the required documents for the Section 106 Review and Compliance for 36 CFR Part 800. This Section 106 submission process to SHPO will assist applicants and agencies in providing the appropriate level of information to receive comments from SHPO. If you have any questions please contact Yvonne Sherrick, Administrative Specialist III, (502) 564-7005, Ext. 113, yvonne.sherrick@ky.gov.

Please note: If your project is funded through Transportation Alternative (TAP), Transportation Enhancements (TE), Congestion, Mitigation, Air Quality (CMAQ), or Safe Routes to School (SRTS) you will need to send this information to Michael Jones, Historic Preservation Program Administrator with the Kentucky Transportation Cabinet via email MichaelR.Jones2@ky.gov or hard copy to Michael Jones, Office of Local Programs, KY Transportation Cabinet, 200 Mero Street Frankfort, KY 40622. Do not send materials directly to SHPO if your project involves funding from these four sources as it will cause delays in the review process. Michael Jones will consult directly with the SHPO on projects with these funding sources to complete the Section 106 review.

KYTC-Department of Highways

Jeff Dick (D 8)

If any work is performed on KYTC Right of Way, please contact Adam Dixon about obtaining an encroachment permit. Adam can be contacted at 606-677-3508.

Lake Cumberland ADD

Karen Burchett

This project aligns with the LCADD Comprehensive Economic Development Strategy. LCADD endorses this project as proposed.

Lake Cumberland ADD

Neal Cundiff

This project aligns with the LCADD Comprehensive Economic Development Strategy. LCADD endorses this project as proposed.

Lake Cumberland Area Development District

Judy Keltner

LCADD endorses this project as proposed.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Kentucky Ecological Services Field Office
330 West Broadway, Suite 265
Frankfort, Kentucky 40601
(502) 695-0468

December 21, 2020

Mr. Bennie Garland
Russell County Industrial Development Authority
P.O. Box 1068
Jamestown, Kentucky 42629

Re: FWS 2016-B-0711; Russell County Industrial Development Authority; French Valley Business Park; Russel County, Kentucky

Dear Mr. Garland:

We have received your December 20, 2020 request for verification that the concurrence letter issued by the U.S. Fish and Wildlife Service's Kentucky Field Office (KFO), dated December 1, 2016 is still valid. Per your email of December 21, 2020, the project has not changed since the initial consultation.

The French Valley Business Park in Russell County, Kentucky is a 104.2 acre property. The Russell County Industrial Development Authority (RCIDA) consulted with the KFO in 2016 on the development of a food and beverage industry site. This development resulted in the removal 0.65 acres of suitable habitat for the Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*). The RCIDA chose to offset the impacts to the species through a voluntary contribution to the Imperiled Bat Conservation Fund. This payment was received on November 30, 2016 and on December 1, 2016 the KFO issued a letter stating that the requirements of section 7 of the Endangered Species Act had been fulfilled for this project. These obligations under section 7 must be reconsidered, however, if: (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated. As none of these criteria have been met, the KFO maintains that the requirements of section 7 of the Endangered Species Act had been fulfilled for this project.

Thank you again for your request. Your concern for the protection of endangered and threatened species is greatly appreciated. If you have any questions regarding the information that we have provided, please contact Jennifer Garland at (502) 695-0468 extension 46115 or Jennifer_Garland@fws.gov.

Sincerely,

JENNIFER GARLAND

Digitally signed by JENNIFER GARLAND
Date: 2020.12.21 12:12:41 -05'00'

for Virgil Lee Andrews, Jr.
Field Supervisor

SECTION 01010 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY OF WORK

- A. Work covers construction of the new Seed Academy Lake Cumberland Regional AgriTech Center in Russell Springs, Kentucky.
- B. Encroachment Permit 08-2022-00170 is included in this specification front end documents for property address 531 French Valley Rd, Russell Springs, KY 42642.
- C. Related requirements specified elsewhere:
 - 1. Submittals- Section 01300
 - 2. Temporary Facilities- Section 01500
 - 3. Project Closeout - Section 01700
- C. Contractor's Duties:
 - 1. Except as specifically noted, provide and pay for:
 - a. Labor, materials, tools, and equipment.
 - b. Permits.
 - c. Fees.
 - d. Licenses.
 - e. Taxes.
 - f. Special Inspections
 - 2. Give required notices.
 - 3. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities which bear on performance of work.
 - 4. Promptly submit written notice to Architect of observed variance of Contract Documents from legal requirements.
 - 5. Contractor shall verify all grades, lines, levels, and dimensions indicated on the drawings and shall report any inconsistencies before commencing work.
 - 6. Each Sub Contractor shall be responsible for the layout for their specific phase of work.

1.02 CONTRACT (OWNER AND GENERAL CONTRACTOR)

- A. Construction work shall be under a single lump sum contract, which shall include all general construction, steel, concrete, mechanical, electrical, plumbing and site work, etc.

1.03 CONTRACTORS' USE OF PREMISES

- A. Confine operations at site to areas permitted by:
 - 1. Law.
 - 2. Ordinances.
 - 3. Permits.
 - 4. Contract Documents.
 - 5. Owner.
- B. Do not unreasonably encumber site with materials or equipment.
- C. Do not load structure with weight that will endanger structure.
- D. Assume full responsibility for protection and safekeeping of products stored on site.
- E. Move any stored products which interfere with operations of the Owner.

END OF SECTION

SECTION 01020 - ALLOWANCES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division - 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Requirements for the work of allowances are shown and specified.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

3.01 SCHEDULE OF ALLOWANCE

- A. The Bidder is to include the following allowance in their bid.
 - 1. Allowance No. 1 - Testing/Inspections. The architect/engineer will designate a testing/inspection representative to provide independent testing and inspection of the contractor's work. Compaction testing, normal concrete strength testing, bolt tightening, paving testing, review of utility and system testing and inspection of general installations and adjustments are included.

TOTAL ALLOWANCE #1\$30,000

END OF SECTION

**SECTION 01027 - APPLICATIONS FOR PAYMENT
REQUIREMENTS OF CONTRACTOR**

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Procedures of Contractor for preparation and submittal of applications for payment.

1.02 RELATED SECTIONS

- A. Document 00500 - Agreement: Contract Sum amounts of progress payments and retainages.
- B. Section 01028 - Modification Requirements: Procedures for changes to the Work.
- C. Section 01300 - Submittals: Submittal procedures.
- D. Section 01700 - Contract Closeout - Final Payment

1.03 FORMAT

- A. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of Work.
 - 3. Scheduled Values.
 - 4. Previous Applications.
 - 5. Work in Place and Stored Materials under this Application.
 - 6. Authorized Change Orders.
 - 7. Total Completed and Stored to Date of Application.
 - 8. Percentage of Completion.
 - 9. Balance to Finish.
 - 10. Retainage.

1.04 PREPARATION OF APPLICATIONS

- A. Present required information in typewritten form on specified AIA Documents G702 and G703 with USDA RD Attachments.
- B. Execute certification by signature of authorized officer.
- C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.

- D. List each authorized Change Order as an extension on AIA G703 Continuation Sheet, listing Change Order number and dollar amount as for an original item of Work.
- E. Prepare Application for Final Payment as specified in Section 01700.
- F. Submit partial release of liens waiver for all work completed to date with each payment application.
- G. Submit up-to-date (revised) construction schedule.

1.05 SUBMITTAL PROCEDURES

- A. Submit three copies of each Application for Payment.
- B. Submit an updated construction schedule with each Application for Payment.
- C. Payment Period: Submit at intervals stipulated in the Agreement.
- D. Submit with transmittal letter as specified for Submittals in Section 01300.

1.06 DETAILED COST BREAKDOWN

- A. Upon award of contract, Contractor will have seven working days to generate a finalized cost breakdown of the project.

1.07 SUBSTANTIATING DATA

- A. When Architect/Engineer requires substantiating information, Contractor shall submit data justifying dollar amounts in question.
- B. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

SECTION 01028 - MODIFICATION REQUIREMENTS OF CONTRACTOR

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Submittals.
- B. Documentation of change in Contract Sum and Contract Time.
- C. Change procedures.
- D. Construction Change Directive.
- E. Stipulated Sum change order.
- F. Execution of change orders.
- G. Correlation of Contractor submittals.

1.02 SUBMITTALS

- A. Submit name of the individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. Change Order Forms: AIA G701 Change Order.

1.03 DOCUMENTATION OF CHANGE IN CONTRACT SUM AND CONTRACT TIME

- A. Maintain detailed records of work performed. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.
- B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.
- C. Provide additional data to support computations:
 - 1. Quantities of products, labor, and equipment.
 - 2. Taxes, insurance, and bonds.
 - 3. Overhead and profit.
 - 4. Justification for any change in Contract Time.
 - 5. Credit for deletions from Contract, similarly documented.
- D. Support each claim for additional costs, and for work performed, with additional information:
 - 1. Origin and date of claim.
 - 2. Dates and times work was performed, and by whom.
 - 3. Time records and wage rates paid.
 - 4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.04 CHANGE PROCEDURES

- A. The Architect/Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by AIA A201, 2017 Edition, Paragraph 7.4 by issuing supplemental instructions on AIA Form G710.
- B. The Architect/Engineer may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change. Contractor will prepare and submit an estimate within seven (7) days.

1.05 CONSTRUCTION CHANGE DIRECTIVE

- A. Architect/Engineer may issue a document, signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
- B. The document will describe changes in the Work, and will designate method of determining any change in Contract Sum or Contract Time.
- C. Contractor shall include in his costs any and all costs associated with contract documents modification required by the Architect/Engineer as a part of modifications.
- D. Promptly execute the change in Work.

1.06 STIPULATED SUM CHANGE ORDER

- A. Based on Proposal Request and Contractor's fixed price quotation.

1.07 CHANGE ORDER

- A. Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- B. Architect/Engineer will determine the change allowable in Contract Sum and Contract Time as provided in the Contract Documents pending Owner approval.
- C. Maintain detailed records of work performed.
- D. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

1.08 EXECUTION OF CHANGE ORDERS

- A. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.09 CORRELATION OF CONTRACTOR SUBMITTALS

- A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- B. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- C. Promptly enter changes in Project Record Documents.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01041 - PROJECT COORDINATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Project coordination.
- B. Construction mobilization.
- C. Schedules.
- D. Submittals.
- E. Coordination drawings.
- F. Closeout procedures.

1.02 RELATED SECTIONS

- A. Section 00800 - Supplementary Conditions
- B. Section 01011 - Summary of Project: Work sequence.
- C. Section 01700 - Contract Closeout: Contract Closeout Procedures.

1.03 CONSTRUCTION MOBILIZATION

- A. Comply with procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- B. Comply with instructions for use of temporary utilities and construction facilities.
- C. Coordinate field engineering and layout work.

1.04 SCHEDULES

- A. Submit preliminary progress schedule in accordance with Section 01310.
- B. After review, revise and resubmit schedule to comply with revised Project schedule. Submit revised or up-to-date schedule with each application for payment.
- C. During progress of work revise and resubmit as directed.

1.05 SUBMITTALS

- A. Provide submittals for review and transmittal to Architect/Engineer.
- B. Submit applications for payment on AIA G702 forms for review, and for transmittal to Architect/Engineer.
- C. Submit requests for interpretation of Contract Documents, and obtain instructions through the Architect/Engineer.
- D. Process requests for substitutions, and change orders.
- E. Deliver closeout submittals for review and preliminary inspection reports, for transmittal to Architect/Engineer.

1.06 COORDINATION DRAWINGS

- A. Provide information required by Architect/Engineer for preparation of coordination drawings.
- B. Review drawings prior to submission to Architect/Engineer.

1.07 CLOSEOUT PROCEDURES

- A. Notify Architect/Engineer when Work is considered ready for Substantial Completion.
- B. Comply with Architect/Engineer's instructions to correct items of work listed in executed Certificates of Substantial Completion and for access to Owner occupied areas.
- C. Notify Architect/Engineer when Work is considered finally complete.
- D. Comply with instructions for completion of items of Work determined by Architect/Engineer's final inspection.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

**SECTION 01045 - CUTTING AND PATCHING
REQUIREMENTS OF CONTRACTOR**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements and limitations for cutting and patching of Work, including:
 - 1. Cutting, fitting, or patching that may be required to complete the work or make its several parts fit together properly.
 - 2. Uncovering work to provide for installation of ill-timed work.
 - 3. Removing and replacing defective work.
 - 4. Removing and replacing work not conforming to requirements of the Contract Documents.
 - 5. General Contractor shall be responsible for cutting and patching of construction as required to facilitate work, including work by his mechanical and electrical subcontractors. He shall assign proper trades normally associated with the materials being cut and patched to perform work.

1.02 RELATED SECTIONS

- A. Section 01010 - Summary of Work.
- B. Section 01300 - Submittals.
- C. Section 01620 - Product Delivery, Storage and Handling.
- D. Individual Product Specification Sections:
 - 1. Cutting and patching incidental to work of the section.
 - 2. Advance notification to other sections of openings required in work of those sections.

1.03 SUBMITTALS

- A. Submit written request in advance of cutting or alteration which affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate contractor.

B. Include in request:

1. Identification of Project.
2. Location and description of affected Work.
3. Necessity for cutting or alteration.
4. Description of proposed Work and Products to be us.
5. Alternatives to cutting and patching.
6. Effect on work of Owner or separate contractor.
7. Written permission of affected separate contractor.
8. Date and time work will be executed.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Primary Products: Those required for original installation.
- B. Product Substitution: For any proposed change in materials, submit request for substitution.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
- B. After uncovering existing Work, assess conditions affecting performance of work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- B. Provide protection from elements for areas which may be exposed by uncovering work.
- C. Maintain excavations free of water.

3.03 CUTTING

- A. Execute cutting and fitting including excavation and fill to complete the Work.
- B. Uncover work to install improperly sequenced work.
- C. Remove and replace defective or non-conforming work.
- D. Provide openings in the Work for penetration of mechanical and electrical work.
- E. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

3.04 PATCHING

- A. Execute patching to complement adjacent Work.
- B. Fit Products together to integrate with other Work.
- C. Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- D. Employ original installer to perform patching for weather exposed and moisture resistant elements, and sight-exposed surfaces.
- E. Restore work with new products in accordance with requirements of Contract Documents.
- F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire resistant material to full thickness of the penetrated element.
- H. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit. When possible, do not cut-and-patch work which is exposed in occupied spaces of building, in a manner resulting in reductions of visual qualities or resulting substantial evidence of cut-and-patch work, both as judged solely by Architect. Remove and replace work judged by Architect to be cut-and-patched in a visually unsatisfactory or otherwise objectionable manner.

END OF SECTION

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.

- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Deductive Alternate No. 1: Deduct Livestock area and associated spaces in their entirety. Deduct all Mechanical and Electrical systems serving those spaces. Provide an expandable end wall at the southern face of Auditorium for future addition, which shall be the new deducted finished end wall of the south wing.

B. Deductive Alternate No. 2: Deduct Greenhouse area and associate equipment in their entirety.

END OF SECTION 01230

SECTION 01252

WEATHER DELAYS

PART 1 GENERAL

1.01 EXTENSIONS OF CONTRACT TIME

- A. If the basis exists for an extension of time, an extension of time on the basis of weather may be granted only for the number of Weather Delay Days in excess of the number of days listed as the Standard Baseline for that month.

1.02 STANDARD BASELINE FOR AVERAGE CLIMATIC RANGE

- A. The Owner has reviewed weather data available from the National Oceanic and Atmospheric Administration and determined a Standard Baseline of average climatic range for the project area.
- B. Standard Baseline shall be regarded as the normal and anticipatable number of calendar days for each month during which construction activity shall be expected to be prevented and suspended by cause of adverse weather. Suspension of construction activity for the number of days each month as listed in the Standard Baseline is included in the Work and is not eligible for extension of Contract Time.
- C. Standard Baseline is as follows:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
15	15	13	11	12	11	12	10	8	8	13	15

1.03 ADVERSE WEATHER AND WEATHER DELAY DAYS

- A. Adverse Weather is defined as the occurrence of one or more of the following conditions which prevents exterior construction activity or access to the site within twenty-four (24) hours:
 - 1. precipitation (rain, snow, or ice) in excess of one-tenth inch (0.10") liquid measure
 - 2. temperatures which do not rise above 32 degrees F by 10:00 a.m.
 - 3. standing snow in excess of one inch (1.00")

- B. Adverse Weather may include, if appropriate, "dry-out" or "mud" days:
 - 1. for rain days above the standard baseline;
 - 2. only if there is a hindrance to site access or sitework, such as excavation, backfill, and footings; and,
 - 3. at a rate no greater than 1 make-up day for each day or consecutive days of rain beyond the standard baseline that total 1.0 inch or more, liquid measure, unless specifically recommended otherwise by the Designer.

- C. A Weather Delay Day may be counted if adverse weather prevents work on the project for fifty percent (50%) or more of the contractor's scheduled work day, including a weekend day or holiday if Contractor has scheduled construction activity that day.

1.04 DOCUMENTATION AND SUBMITTALS

A. WEATHER DELAY REPORT:

Use a copy of the following Weather Delay Report, indicating for each calendar month the days on which construction activity affecting the critical path of the Work was prevented by weather conditions. Mark the column for the general cause; and, under "Specifics", indicate corresponding measurement of precipitation, temperature, wind, or other influencing factors, and the construction activity that was scheduled and delayed. At the end of the month, add up the number of days delay, subtract the baseline number given in Paragraph 1.02 (C.), and show the resulting claimable days. Submit a copy of the completed report with the next application for payment and with subsequent claim for time extension. Claims for time extension based upon weather delays will be denied if a submitted report does not corroborate the claim or if no report was submitted when it was required in accordance with this paragraph.

- B. Submit daily jobsite work logs showing which and to what extent construction activities have been affected by weather on a monthly basis.

- C. Submit actual weather data to support claim for time extension obtained from nearest NOAA weather station or other independently verified source approved by Designer at beginning of project.

- D. Use Standard Baseline data provided in this Section when documenting actual delays due to weather in excess of the average climatic range.

- E. Organize claim and documentation to facilitate evaluation on a basis of calendar month periods, and submit in accordance with the procedures for Claims established in the General Conditions.

END OF SECTION

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Submittal procedures.
- B. Shop Drawings.
- C. Test reports.
- D. Certificates.
- E. Erection drawings.

1.02 REFERENCES

- A. AGC (Associated General Contractors of America) publication "The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry".

1.03 SUBMITTAL PROCEDURES FOR SHOP DRAWINGS

- A. All shop drawings must be reviewed by the General Contractor before submitting them to the Architect.
- B. Transmit each submittal with accepted form, containing the following:
 - 1. Date
 - 2. Project title
 - 3. Contractor's name and address
 - 4. Notification of any deviations from the contract documents.
 - 5. Identify project as "The Seed Academy Lake Cumberland Regional AgriTech Center"
 - 6. Other pertinent data as required.
- C. Identify Project, Contractor, Subcontractor, Manufacturer or supplier; pertinent drawing and detail number, and specification section number, as appropriate.
 - 1. Provide identification of product or material size, type, finish and color as appropriate.
 - 2. Field dimensions, clearly identified as such.
 - 3. All working and erection dimensions, views, as required to indicate fully all construction and fabrication methods, profiles and materials.
- D. On all shop drawings 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 in accordance with the requirements of the Work and Contract Documents.

1.04 CERTIFICATES

- A. When specified in individual specifications sections, submit certification by the manufacturer, installation/application/subcontractor, or the 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.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01310 - CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Format.
- B. Content.
- C. Revisions to schedules.
- D. Submittals.

1.02 RELATED SECTIONS

- A. Section 01011 - Summary of Work.
- B. Section 01027 - Applications for Payment: Application for payment.
- C. Section 01300 - Submittals: Shop drawings.

1.03 REFERENCES

- A. AGC (Associated General Contractors of America) publication "The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry".

1.04 FORMAT

- A. Prepare schedules starting with Notice to Proceed date through substantial completion, as a horizontal bar chart or Gantt chart with separate bar for each major portion of Work or operation, identifying first work day of each week.
- B. Sequence of Listings: The chronological order of the start of each item of Work.
- C. Scale and Spacing: To provide space for notations and revisions.
- D. Sheet Size: Maximum 30" x 42" OR multiples of 8½" x 11".

1.05 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages and other logically grouped activities.
- D. Provide sub-schedules for each stage of Work.
- E. Provide sub-schedules to define critical portions of the entire schedule.
- F. Include conferences and progress meetings in schedule.
- G. Show accumulated percentage of completion of each item, and total percentage of Work completed, to coincide with schedule of values in each application for payment.

- H. Provide separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished products and dates reviewed submittals will be required from Architect/Engineer. Indicate decision dates for selection of finishes.
- I. Include scheduling for fabrication of structural steel.
- J. Include scheduling of erection sequence of building structural steel, precast walls and delivery to site.
- K. Include scheduling of erection sequence of building precast walls and delivery to site.

1.06 REVISIONS TO SCHEDULES

- A. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
- B. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
- C. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect including the effect of changes on schedules of separate contractors.

1.07 SUBMITTALS

- A. Submit initial schedules within 15 days after date of Owner-Contractor Agreement. After review, resubmit required revised data within seven days.
- B. Submit revised Progress Schedules with each Application for Payment.
- C. Submit the number of opaque reproductions which Contractor requires, plus two copies which will be retained by Architect/Engineer.

1.08 DISTRIBUTION

- A. Distribute copies of reviewed schedules to Project site file, Subcontractors, suppliers, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Quality assurance - control of installation.
- B. Tolerances
- C. Mock-up.
- D. Manufacturers' field services.

1.02 RELATED SECTIONS

- A. Section 01300 - Submittals: Submission of manufacturers' instructions and certificates.
- B. Section 01410 - Testing Services.
- C. Section 01620 - Product Delivery, Storage and Handling.
- D. Section 01650 - Starting of Systems

1.03 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- G. Perform Work by persons qualified to product required and specified quality.

1.04 TOLERANCES

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

1.05 MOCK-UP

- A. Tests will be performed under provisions identified in this section and identified in the respective Product specification sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups shall be a comparison standard for the remaining Work.
- D. Where mock-up has been accepted by Architect/Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

1.06 MANUFACTURERS' 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, start-up of equipment, test, adjust and balance of equipment and additional products as specified, as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Examine and verify specific conditions described in individual specification sections.
- C. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- 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 any new material or substance in contact or bond.

END OF SECTION

SECTION 01410 - TESTING SERVICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Selection and payment.
- B. Agency responsibilities.
- C. Agency reports.
- D. Limits on testing authority.
- E. Contractor responsibilities.
- F. Schedule of tests.

1.02 RELATED SECTIONS

- A. Section 01300 - Submittals: Manufacturer's certificates.
- B. Section 01400 - Quality Control.
- C. Section 01650 - Starting of Systems: Testing, Adjusting, and Balancing of systems.

1.03 REFERENCES

- A. ASTM C802 - Practice for Conducting an Interlaboratory Test Program to Determine the Precision of Test Methods for Construction.
- B. ASTM C1021 - Practice for Laboratories Engaged in the Testing of Building Sealants.
- C. ASTM C1077 - Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
- D. ASTM C1093 - Practice for Accreditation of Testing Agencies for Unit Masonry.
- E. ASTM D290 - Recommended Practice for Bituminous Mixing Plant Inspection.
- F. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- G. ASTM D4561 - Practice for Quality Control Systems for an Inspection and Testing Agency for Bituminous Paving Materials.
- H. ASTM E329 - Practice for Use in the Evaluation of Inspection and Testing Agencies as Used in Construction.
- I. ASTM E543 - Practice for Determining the Qualification of Nondestructive Testing Agencies.

- J. ASTM E548 - Practice for Preparation of Criteria for Use in the Evaluation of Testing Laboratories and Inspection Bodies.
- K. ASTM E699 - Practice for Criteria for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating Building Components in Accordance with Test Methods Promulgated by ASTM Committee E6.

1.04 SELECTION AND PAYMENT

- A. Architect will designate a firm or firms to provide construction testing/inspection services for the following listed types of work. Contractor will pay for services of testing/inspection agency or laboratory to perform specified testing from the allowance for testing.
 - 1. Concrete footings, foundations, rebar placement
 - 2. Soil Subgrades
 - 3. Concrete slabs
 - 4. Paving
- B. Observe tests and adjustments for mechanical, electrical, plumbing, piping, welding, conducted by the various trades subcontractors and provide independent verification of results to Architect, Contractor and Owner. Payment for such services shall be made from the Contractor's bid, not the testing allowance.
- C. Employment of testing\inspection agency or laboratory in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
 - 1. Upon initial test results, if defects in the construction are found, further testing of these systems shall be the responsibility of the Contractor in order to ensure these items being tested are in compliance with the specifications.
 - 2. Testing required by defective materials or defective work shall be paid for by the Contractor and is not paid from the allowance.
 - 3. When initial tests requested by the Architect indicate non-compliance with the Contract Documents, costs of initial tests associated with that noncompliance will be deducted by the Owner from the Contract Sum, and subsequent retesting occasioned by the non-compliance shall be performed by the same testing laboratory and the costs thereof shall be paid by the Contractor.
 - 4. The test cost for and adjustments conducted for mechanical, electrical, plumbing and piping systems, including welding and bolt-tightening shall be included in the bid for the associated work.

1.05 AGENCY RESPONSIBILITIES

- A. Test samples of mixes submitted.
- B. Provide qualified personnel at site with prior approval of Architect. Cooperate with Architect/Engineer and Contractor in performance of services.
- C. Perform specified sampling and testing of Products in accordance with specified standards.
- D. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- E. Promptly notify Architect/Engineer and Contractor of observed irregularities or non-conformance of Work or Products.
- F. Perform additional tests as required by Architect/Engineer and approved by the Owner.
- G. Attend progress meetings.

1.06 AGENCY REPORTS

- A. After each test, promptly submit one copy of report to Architect/Engineer and Owner.
- B. Include:
 - 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 specifications section.
 - 6. Location in the Project.
 - 7. Type of inspection or test.
 - 8. Date of test.
 - 9. Results of tests.
 - 10. Conformance with Contract Documents.
- C. When requested by Architect/Engineer, and approved by Owner, provide interpretation of test results.

1.07 LIMITS ON TESTING AUTHORITY

- A. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Agency or laboratory may not approve or accept any portion of the Work.
- C. Agency or laboratory may not assume any duties of Contractor.
- D. Agency or laboratory has no authority to stop the Work.

1.08 CONTRACTOR RESPONSIBILITIES

- A. Cooperate with testing/inspection personnel, and provide access to the Work.
- B. Notify Architect/Engineer and testing agency 48 hours prior to expected time for operations requiring testing and inspection services.

1.09 SCHEDULE OF TESTS

- A. Individual Specification Sections: Tests required and standards for testing.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS REQUIREMENTS OF CONTRACTOR

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Temporary Controls: Barriers, enclosures and fencing, protection of the Work, and water control.
- B. Construction Facilities: Access roads, parking and progress cleaning.

1.02 RELATED SECTIONS

- A. Section 01510 - Temporary Utilities.
- B. Section 01540 - Security.
- C. Section 01550 - Access Roads and Parking Areas.
- D. Section 01580 - Project Identification and Signs.
- E. Section 01590 - Field Offices and Sheds.
- F. Section 01700 - Project Closeout: Final cleaning.

1.03 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide protection for plants designated to remain. Replace damaged plants.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.04 WATER CONTROL

- A. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.05 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

1.06 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and rubbish from site periodically and dispose off-site.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

**SECTION 01510 - TEMPORARY UTILITIES
REQUIREMENTS OF CONTRACTOR**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone service, water, and sanitary facilities.

1.02 RELATED SECTIONS

- A. Section 01580 - Project Identification and Signs.
- B. Section 01590 - Field Offices and Sheds.
- C. Section 01700 - Contract Closeout: Final cleaning.

1.03 TEMPORARY ELECTRICITY

- A. Cost: By Contractor; provide and pay for power service required from utility source or on-site generators.
- B. Provide temporary electric feeder from electrical service at approved point of available service. Do not disrupt Owner's need for continuous service.
- C. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
- D. Provide main service disconnect and over-current protection at convenient location.
- E. Permanent convenience receptacles may be utilized during construction.

1.04 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations.
- B. Permanent building lighting may be utilized during construction upon written approval from Owner.

1.05 TEMPORARY HEATING AND AIR CONDITIONING

- A. Provide and pay for heating and air conditioning devices and heat and air condition as needed to maintain specified conditions for construction operations.
- B. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications and provided by manufacturer instructions.

1.06 TEMPORARY COOLING

- A. Provide and pay for cooling devices and cooling as needed to maintain specified conditions for construction operations.

1.07 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.08 TELEPHONE SERVICE

- A. Provide, maintain, and pay for telephone service to field office at time of project mobilization.

1.09 FACSIMILE SERVICE

- A. Provide, maintain and pay for facsimile service to field office at time of project mobilization.

1.10 TEMPORARY WATER SERVICE

- A. Provide, maintain and pay for suitable quality water service required for construction operations at time of project mobilization.
- B. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.

1.11 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

1.12 WARRANTY PERIOD

- A. The warranty period for all permanent equipment used for temporary purposes by the Contractor including lighting, heating and cooling equipment shall commence from date of final completion of the entire project.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

**SECTION 01580 - PROJECT IDENTIFICATION AND SIGNS
REQUIREMENTS OF CONTRACTOR**

PART 1 - GENERAL

There will be one (1) sign for this project.

1.01 SECTION INCLUDES

- A. Project identification sign.

1.02 RELATED SECTIONS

- A. Section 01010 - Summary of Work.

1.03 QUALITY ASSURANCE

- A. Design sign and structure to withstand 60 miles/hr wind velocity.
- B. Sign Painter: Experienced as a professional sign painter for minimum three years.
- C. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

1.04 SUBMITTALS

- A. Section 01300 - Submittals: Shop drawings.
- B. Show content, layout, lettering, color, foundation, structure, sizes, and grades of members.

PART 2 - PRODUCTS

2.01 SIGN MATERIALS

- A. Structure and Framing: New wood, structurally adequate.
- B. Sign surfaces: Exterior grade plywood with medium density overlay, minimum 3/4 inch thick, standard large sizes to minimize joints.
- C. Rough Hardware: Galvanized.
- D. Paint and Primers: Exterior quality, two coats; sign background of color as selected.
- E. Lettering: Exterior quality paint, contrasting colors as selected.

2.02 PROJECT IDENTIFICATION SIGN

- A. One painted sign of construction, design, and content shown on Drawings, location designated.

- B. Content:
 - 1. Project title, logo and name of Owner as indicated on Contract Documents.
 - 2. Names and titles of authorities.
 - 3. Names and titles of Architect/Engineer and Consultants.
 - 4. Name of Prime Contractor and major Subcontractors.
- C. Graphic Design, Colors, Style of Lettering: Designated by Architect/Engineer and approved by Owner.

2.03 PROJECT INFORMATIONAL SIGNS

- A. Painted informational signs of same colors and lettering as Project Identification sign, or standard products; size lettering to provide legibility at 100-foot distance.
- B. Provide at each field office, and directional signs to direct traffic into and within site. Relocate as Work progress requires.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install project identification sign within 30 days after date fixed by Owner-Contractor Agreement.
- B. Erect at designated location.
- C. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
- D. Install sign surface plumb and level, with butt joints. Anchor securely.
- E. Paint exposed surfaces of sign, supports, and framing.

3.02 MAINTENANCE

- A. Maintain signs and supports clean, repair deterioration and damage.

3.03 REMOVAL

- A. Remove signs, framing, supports, and foundations at completion of Project and restore the area.

END OF SECTION

**SECTION 01590 - FIELD OFFICES AND SHEDS
REQUIREMENTS OF CONTRACTOR**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Temporary field offices and sheds.
- B. Maintenance and cleaning.
- C. Removal.

1.02 RELATED SECTIONS

- A. Section 01010 - Summary of Work.
- B. Section 01550 - Access Roads and Parking Areas.
- C. Section 01580 - Project Identification and Signs.
- D. Section 01620- Product Delivery, Storage and Protection.

1.03 USE OF PERMANENT FACILITIES

- A. Permanent facilities shall not be used for field offices or for storage.

PART 2 - PRODUCTS

2.01 MATERIALS, EQUIPMENT, FURNISHINGS

- A. Materials, Equipment, Furnishings: Serviceable, new or used, adequate for required purpose.

2.02 CONSTRUCTION

- A. Portable or mobile buildings, or buildings constructed with floors raised above ground, securely fixed to foundations, with steps and landings at entrance doors.
- B. Construction: Structurally sound, secure, weather tight enclosures for office and storage spaces. Maintain during progress of Work; remove at completion of Work.
- C. Temperature Transmission Resistance of Floors, Walls, and Ceilings: Compatible with occupancy and storage requirements.
- D. Exterior Materials: Weather resistant, finished.

- E. Interior Materials in Offices: Sheet type materials for walls and ceilings, pre-finished or painted; resilient floors and bases.
- F. Lighting for Offices: 50 footcandles at desk top height, exterior lighting a. entrance doors.
- G. Fire Extinguishers: Appropriate type fire extinguisher at each office and each storage area.
- H. Interior Materials in Storage Sheds: As required to provide specified conditions for storage of products.

2.03 ENVIRONMENTAL CONTROL

- A. Heating, Cooling, and Ventilating for Offices: Automatic equipment to maintain 68 degrees F heating and 76 degrees F cooling.
- B. Storage Spaces: Heating and ventilation as needed to maintain Products in accordance with Contract Documents; adequate lighting for maintenance and inspection of Products.

2.04 CONTRACTOR OFFICE AND FACILITIES

- A. Size: For Contractor's needs and to provide space for project meetings.
- B. Telephone: As specified in Section 01510.
- C. Fax: As specified in Section 01510.
- D. Furnishings in Meeting Area: Conference table and chairs to seat at least eight persons; racks and files for Contract Documents, submittals, and project record documents.
- E. Other Furnishings: Contractor's option.

2.05 STORAGE AREAS AND SHEDS

- A. Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and for inspection of products to requirements of Section 01620.

PART 3 - EXECUTION

3.01 MAINTENANCE AND CLEANING

- A. Maintain approach walks free of mud, water, and snow.
- C. Sanitary service as needed to maintain clean, odor-free environment.

3.02 REMOVAL

- A. At completion of Work remove buildings, foundations, utility services, and debris. Restore areas.

END OF SECTION

SECTION 01620 - PRODUCT DELIVERY, STORAGE & PROTECTION

PART 1 - GENERAL

1.01 APPLICABILITY

- A. This Section applies to all products furnished under this Agreement. Shipments of equipment or materials to be used by the Contractor or its subcontractors shall be delivered to the site only during regular working hours. All shipping papers and shipments shall be addressed and consigned to the Contractor giving the name of the Project with address. Under no circumstances will Owner accept shipments directed to it or the Architect/Engineer unless otherwise specified.

1.02 DELIVERY

- A. Products shall not be delivered to the Owner or the Architect/Engineer.
- B. Products shall not be delivered to the project site until related shop drawings have been reviewed by the Architect/Engineer.
- C. Products shall not be delivered to the project site until appropriate storage facilities are in place (on-site storage space is very limited).
- D. Products shall be delivered to the site in manufacturer's original, unopened, labeled containers.
- E. The Contractor shall not drop, roll or skid products off delivery vehicles. Hand carry or use suitable materials-handling equipment.

1.03 STORAGE AND PROTECTION

- A. General:
 - 1. The Contractor shall store and protect products in accordance with the manufacturer's recommendations and the requirements specified herein. No on-site existing storage facilities are available for use by the Contractor. All on-site facilities for storage shall be furnished by the Contractor.
 - 2. The Contractor shall not block or restrict the use of public right-of way, access roads or private property with stored materials.
 - 3. The Contractor shall not store products where they will interfere with operations of the Owner.
 - 4. The Contractor shall protect all products from damage or deterioration by weather.

- 5 . The Contractor shall not store any products directly on the ground.
6. The Contractor shall not store any products in drainage ditches or areas where water may stand.
7. The Contractor shall label containers to identify materials inside using the terminology found in these Specifications.

B. Uncovered Storage:

1. The following types of materials may be stored out of doors without cover:
 - a. Masonry units
 - b. Reinforcing steel
 - c. Piping
 - d. Precast concrete items
 - e. Castings
2. The above mentioned materials shall be stored on wood blocking.

C. Fully Protected Storage:

1. The Contractor shall store all products not named above in buildings or trailers which have a concrete or wooden floor, a roof; and fully enclosed walls on all sides.
2. The Contractor shall provide heated storage space for materials which would be damaged by freezing.
3. The Contractor shall protect mechanical and electrical equipment from being contaminated by dust and dirt.
4. The Contractor shall maintain temperature and humidity at levels recommended by manufacturer(s) for electrical and electronic equipment.

END OF SECTION

SECTION 01650 - STARTING OF SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Starting systems.
- B. Demonstration and instructions.
- C. Testing, adjusting, and balancing.

1.02 RELATED SECTIONS

- A. Section 01400 - Quality Control: Manufacturers field reports.
- B. Section 01700 - Contract Closeout: System operation and maintenance data and extra materials.

1.03 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable manufacturer's representative or Contractors' personnel in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

1.04 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of Substantial Completion.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
 - 1. Warranty period to begin at start-up of season.
- C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time at designated location.
- E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- F. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01700 - PROJECT CLOSEOUT REQUIREMENTS OF CONTRACTOR

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Adjusting.
- D. Project record documents.
- E. Operation and maintenance data.
- F. Spare parts and maintenance products.
- G. Warranties and bonds.

1.02 RELATED SECTIONS

- A. Section 01650 - Starting of Systems: System start-up, testing, adjusting, and balancing.

1.03 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer's review.
- B. Provide submittals to Architect/Engineer that are required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- D. Deliver all close-out documents to the Architect within forty-five (45) days of the date of Substantial Completion. Indemnify the Architect for failure to perform this requirement including legal fees incurred by the Architect in enforcing this requirement. Failure to deliver all required close-out documents to the Architect within forty-five (45) days from sign-off of AIA Document G704, "Certificate of Substantial Completion," shall invoke costs of the Architect's services to be borne by the Contractor.
- E. Submit Certificate of Substantial Completion: AIA Document G704, 1992 Edition.
- F. Submit Contractor's Affidavit of Payment of Debts and Claims: AIA Document G706, 1994 Edition.

- G. Submit Contractor's Affidavit of Release of Liens: AIA Document G706A, 1994 Edition.
- H. Submit certification prior to submission of final application for payment attesting that certain products meet Factory Mutual (FM) approval.

1.04 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment. Use experienced workmen or professional cleaners for final cleaning.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- D. Replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from the site weekly (or more often as required by accumulation). Remove waste materials, rubbish and debris from the site and legally dispose of at public or private dumping areas off-site at least once a week. Site to be approved by Owner.
- H. Each subcontractor has the responsibility for protecting equipment and finishes at the job site from damages resulting from work under his control, for all cleaning required as a result of his failure to protect equipment and finishes, and for removal of protective covers.
- I. Safety Standards: Maintain project in accordance with the OSHA safety standards, as stipulated under the Occupational Safety and Health Act of 1970 and printed May 29, 1971 in the Federal Register.
- J. Fire Protection: Store volatile waste in covered metal containers and remove from premises daily.
- K. Pollution Control: Conduct cleanup and disposal operations to comply with local ordinances and anti-pollution laws.
 - 1. Disposal of volatile fluid wastes (such as mineral spirits, oil, or paint thinner) in storm or sanitary sewer systems or into streams or waterways is not permitted.
- L. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for acceptance or occupancy.
- M. Repair, patch and touch-up marred surfaces to match adjacent finishes. Coordinate with requirements specified under the various sections of these specifications.

- N. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly-painted surfaces.

1.05 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.06 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents in clean, dry, legible condition; 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, adjusting, maintenance and operation.
- 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. Label each document "Project Record."
- 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 utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Contract drawings.
 - 6. Review applied changes to C.A.D. drawings.
- G. Submit documents to Architect/Engineer prior to claim for final Application for Payment.
 - 1. The Contractor shall submit to the Architect one set of "Record" drawings which accurately reflect the actual installation of any and all materials, piping, conduit, etc., which were not installed exactly in accordance with the contract drawings.
 - 2. Contractor shall submit to the Architect two (2) (corrected) final record copies of shop drawings marked "for job use" which reflect all changes required in previous submittals including these marked "Approved as Noted," or similarly revised by the Engineer.

1.07 OPERATION AND MAINTENANCE DATA

- A. Submit data bound in 8½ x 11 inch (A4) text pages, three D side ring binders with durable plastic covers.
- B. Prepare binder cover with printed title “OPERATION AND MAINTENANCE INSTRUCTIONS.”
- C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Contents: Prepare a 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 Architect/Engineer, 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. Identify 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. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Originals of warranties.
- E. Submit 1 draft copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect/Engineer comments. Revise content of all document sets as required prior to final submission.
- F. Submit three (3) sets of revised final volumes to Architect/Engineer within thirty (30) days of Architect/Engineer review.

1.08 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra Products in quantities specified in individual specification sections.
- B. Deliver to Project site and place in location as directed by Owner; obtain receipt prior to final payment.

1.09 WARRANTIES AND BONDS

- A. Provide notarized copies.
- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.
- D. Submit one (1) original and two (2) copies prior to final Application for Payment. All such documents shall indicate the name and location of the project and the name of the purchaser.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

Division II Site Work

SECTION 02010 - SOILS INVESTIGATION

The recommendations of Geotechnical Report for the Russell County Ag-Tech Site, Russell Springs, KY by CETCO and dated May 11, 2022, is incorporated into the requirements of the contract documents and shall be followed in its entirety.

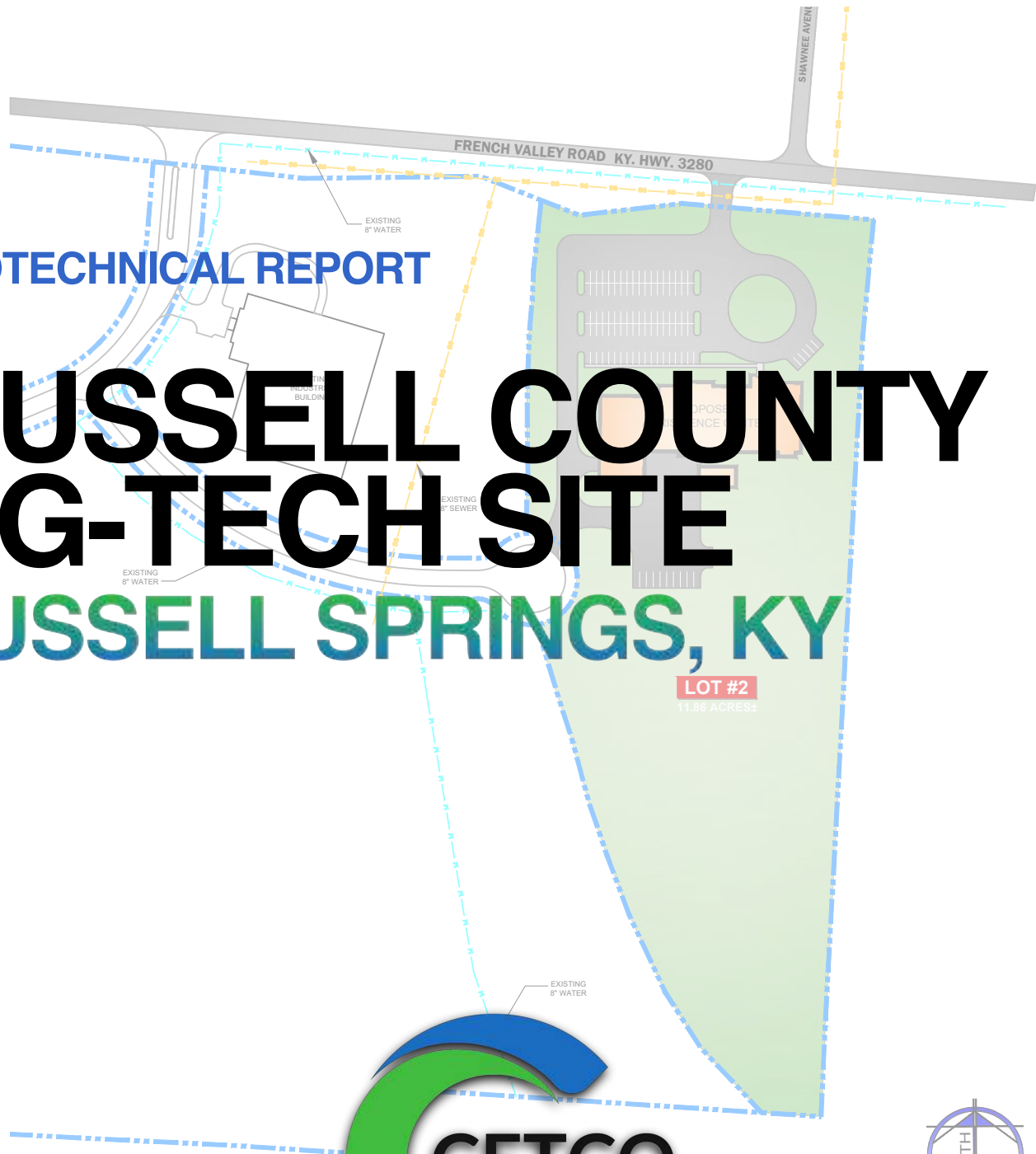
END OF SECTION

May 11, 2022

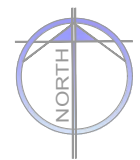
GEOTECHNICAL REPORT

RUSSELL COUNTY AG-TECH SITE

RUSSELL SPRINGS, KY



LOT #2
11.88 ACRES





May 11, 2022

Russell County Industrial Authority
Sent % Mr. Glen Ross, PE
MSE of Kentucky
via email: glenross@mselex.com

Subject: **Geotechnical Report**
Russell Co. Ag-Tech Site
Russell Springs, Kentucky
CETCO Project No. 1776-22-0103

Dear Mr. Ross:

CETCO appreciates the opportunity to provide our services to you and your project. As follows, we are providing our geotechnical report. Also, please note the report Appendix which contains many detailed findings as well as our standard of care for providing our services.

We appreciate the opportunity to provide our geotechnical services to you and the project team. Please do not hesitate to contact us for questions or comments about the information contained herein.

Cordially,

CETCO



Joseph S. Cooke, P.E.
Principal
Licensed KY 21244

Attachments: Geotechnical Report and Appendix



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Russell County Ag-Tech Site

RUSSELL SPRINGS, KENTUCKY

GEOTECHNICAL REPORT SUMMARY

We provided our services in general accordance with our previous discussions and our proposal number 1776–0137, dated April 3, 2022 and approved by the Russell County Industrial Authority on April 14, 2022. CETCO has consulted with Mr. Glen Ross, PE, of MSE and discussed the need for CETCO to provide geotechnical services including sampling and exploration with soil test borings, a site field services by our office, lab testing and analysis, review of project drawings and providing a geotechnical report. These services included providing our opinion of the conditions encountered for the purpose of design and construction of a new “Agri-Business Training Center” (which we are referring to as the Russell Co. Ag-Tech project. The project plans are in the preliminary stage, so the final location on the site, exact size and exact building type are not known at this time. However, the overall site is located just east of the existing “spec building” at the Lake Cumberland Regional Industrial Complex on the southwest side of Russell Springs, Kentucky. Provided plans indicate that the main building will be about 35,000 square feet in size and will be located on the northern section of “Lot #2”. This introductory section, which has previously been discussed with your office, provides a brief summary for quick reference. The report that follows provides much greater details for design and construction purposes.

In general, we encountered the typical “reddish cherty clay and sandy soil” found in most of Russell Springs. Soils also contained significant silt. Some gray and brown clay/sandy soils were also observed. We did not encounter hard bedrock in any of our borings (which extended to a maximum of 25 feet deep). However, some limestone/sandstone floater boulders were observed at various elevations in our borings as well as the potential top of soft sandstone bedrock at or near 18 feet deep in some locations. As with most of Russell Springs, we encountered wet conditions in our borings; typically beginning at about 8 to 13 feet deep and deeper. Most of the soil was firm or stiffer, but some soft areas were observed.

The site is suitable for the proposed ag-tech facility and associated site improvements. We believe shallow spread footings and conventional slab-on-grade floors would be suitable for most new building types. Also, conventional pavement types and thickness are suitable. The primary concerns appear to be construction-related: some soft soil pockets/layers, sandy zones, silty soils and wet zones. We do not believe large amounts of abnormal construction



practices will be needed, but some modifications are recommended and should be budgeted. Details for these issues and recommendations for design and construction as well as our other recommendations are discussed in the report.

1 PROJECT BACKGROUND

1.1 CETCO SCOPE OF SERVICES

Our scope of services included review of provided drawings, exploration of the proposed site with soil test borings at select locations and laboratory testing and geotechnical analysis. After we completed our reviews, field work and laboratory testing, we are issuing this geotechnical report as follows.

1.2 PROVIDED INFORMATION

We were provided information for the project as follows:

Provided Document	Source
Site drawings by MSE, showing a potential layout and location of the proposed new building and parking/pavement areas.	MSE.
Site location plan (aerial overlay of project boundaries).	MSE.

The following information summarizes our understanding of the project conditions

Condition	Specifics
Building/Structure Information	No building type has been selected. However, the building will likely be about 35,000 square feet in size and would be one to two stories tall.
Site Grading	The site is relatively flat, but at least 5 to 8 feet of cut and fill will be required to achieve finished sub grade elevations at some locations.
Foundations/Floor Slabs	Shallow spread footings and a slab-on-grade floor are anticipated. Maximum loading of less than 150 kips for columns and 6 kips per linear foot for continuous footings are assumed. Floor slab loads of less than 150 pounds per square feet (psf) are assumed for most of the building. Some areas of 500 psf may be possible in equipment rooms.



If any of the aforementioned information is incorrect or requires modification, please let CETCO know. Changes to our reporting, recommendations and opinions may be required.

1.3 PUBLISHED SITE AND AREA INFORMATION

We have reviewed the following published/public domain site information.

AREA TOPOGRAPHY AND PHYSIOGRAPHY

The site is located in the southeastern section of the “Pennyroyal or Mississippian Plateau” physiographic region of Kentucky. This area consists of a limestone plain characterized by “karst” topography: tens of thousands of sinkholes, sinking streams, streamless valleys, springs, and caverns. Knobby areas of the region are also present as well as some narrow valleys and moderate ridge lines. However, some of the higher elevations in the area can be “karst-free” due to uprising of differing geological bedrock formations.

SITE GEOLOGY

The Kentucky Geologic Survey public information was reviewed including the USGS Russell Springs Geologic Quadrangle. The site is underlain by the Salem and Warsaw Formations as well as a “sandstone” outcrop formation (likely either the Salem and Warsaw or the underlying Fort Payne Formation). The Salem and Warsaw is mapped as limestone and shale bedrock with abundant chert (often in beds) weathering to yellow to brownish red sandy clay soil with porous sandstone lenses. The sandstone outcrop is “weak” sandstone bedrock with thin lenses of chert, clay shale and sandy siltstone. Both of these formations can contain “karst” features such as sinkholes. However, the karst risk is much lower than conventional “red clay over limestone” areas found elsewhere in the area or this region of Kentucky. The site is mapped as “no risk or low to moderate risk” for karst development (sinkholes, caverns, erratic top of rock, springs, etc.). No sinkholes are mapped within 1 mile of the site, but the nearby swales/creek areas likely contain “springs” which are common karst features.

SITE SOIL SURVEY MAPPING

The Soil Survey of the site area was also reviewed. Issues affecting the site development included: shallow water/wet conditions and slope construction. We are providing recommendations to address these issues. Also, the soil survey lists portions of the site as having “high risk” for corrosion of steel. Typically, the main risk for corrosion would be for steel reinforcement in concrete foundations and slabs. The primary means to address this risk is to



specify at least 2 inches of concrete cover over all steel reinforcement for concrete exposed to soil.

RECENT AND CURRENT PUBLISHED AERIAL MAPPING

Aerial information back as far as 1997 were readily available for the site. The conditions observed at the site and on all these aerial maps reviewed appear to be very similar. The site appears to have been a relatively undisturbed agricultural field the entire time. The areas to the west of the site appear to be unchanged since 2010. This includes the industrial park roads and “spec” building.

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2 CETCO FINDINGS

We provided a site and area reconnaissance, logged soil test borings and explored the site using those borings. The following sections discuss our findings. Mr. Joe Cooke, PE, provided our field services during the exploration on April 21, 2022.

2.1 CURRENT SITE SURFACE CONDITIONS AND OBSERVATIONS

The overall site is a relatively level (with some gently rolling slopes/low-lying areas) open agricultural field. Aerial photos from 1997 to the present show mostly “grassy cover”, but the site appears to have some seeded ground cover crop as well as corn stalk remnants from the past year or so, which creates a slightly “cultivated” (disturbed) upper 12 inches of ground cover. The current vegetative ground cover over most of the site was knee-to-waist high grasses. Wooded and brushy vegetative areas bound the site on the east, west and south areas. The overall site is 5 to 10 feet lower in elevation than the main road on the north boundary of the site (French Valley Road), so a sharp, upward slope is present from the site up to the road.

Most of the site surface conditions were relatively firm and easy to traverse. The low-lying areas (**especially on the east-central section of the site**) were soft and wet. The support truck became stuck in this east-central area. **Despite recent rains, the ground surface did not contain ponding water (indicative of mostly good surface drainage)**. However, a few “crawfish” holes were observed on-site, especially in the east-central area. These are indications of shallow wet conditions.

A possible filled sinkhole was observed on the property to the east of the site, but no obvious sinkhole or closed depression were observed on-site.


The following pages show photos at the site at the time of our field work.

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Project Photos

Description	Photo
<p>Showing example view of the site, facing south. Knee-to-waist high grasses over much of the area with tree and brush lined perimeters.</p>	
<p>Showing the low-lying area on east-central area of the site, with support truck “stuck” in soft/wet surface conditions. Facing north.</p>	

Project Site Photos (cont.)

Description	Photo
<p>View of possible “crawfish” holes on east-central area of the site. Also, corn stalk remnants are shown.</p>	
<p>View of “thicker” vegetation ground cover on the north area of the site. Facing northwest.</p>	

Project Site Photos (cont.)-1

Description	Photo
<p>Showing example “gray sandy” zone material, typically found below 10 feet or so below the ground surface.</p>	
<p>View of recovered samples. Wet appearance on the exterior portions of the sample touching the steel, but the actual drier conditions on the inside of the sample. This is an example of “disturbance” creating a wet conditions (dilatancy) of the samples.</p>	



2.2 SUBSURFACE INFORMATION SUMMARY

A total of 2 soil test borings and 8 auger rock-soundings were utilized to explore the subsurface conditions at the site. The two soil test borings and four of the soundings were drilled within the provided plan's building location. The remaining soundings were drilled in pavement areas and nearby open areas of the site.

SUBSURFACE CONDITIONS: At our sampling locations, we encountered topsoil overlying generally orange to reddish sandy clay soils with significant silt content. This upper orange/reddish clayey soil zone was about 2 to 5 feet thick and was very silty and contained fine sand. One sample tested as a "silt" (ML) soil near the bottom of this layer. Below this upper mantle of soil, orange, brown, reddish and grayish silty sand was observed at variable depths in the borings. Coloring was in "zones" and had "thick layers". Some chert lenses (dense gravelly layers) and some sandstone/limestone floaters were encountered at variable depths. The site soils were generally firm to stiff (clays and silts) and firm to very firm (sands), but some soft/loose layers were observed. These soft/loose layers tended to coincide with soils at or just below the chert lenses or more sandy zones. In all the borings, very sandy soils were encountered for the last 8 to 15 feet. Below is a table summarizing the soil conditions at the site. Detailed findings are in the Appendix boring logs and laboratory testing pages.

Strata	Thickness	Notes
Topsoil	8 to 12 inches	
Upper strata of brown, reddish and orange lean clay soil; the layer was very silty and often contained fine sand. Generally firm and very moist	About 2 to 5 feet thick	
Chert (gravelly) lenses and floaters (limestone or sandstone boulders)	Mostly less than 4 feet thick	Observed at variable depths, but most were either 4-6 feet deep or at 16-18 feet deep.
Lower layers were generally silty and clayey, fine to medium grained SAND. Generally reddish or orange in color or gray in color. These layers were very moist to wet and generally firm to very firm in density.	About 10 to 15 feet (or more)	Located in all borings.

Hard bedrock or auger refusal were not encountered in any of our borings. However, the top of "soft" bedrock was possibly encountered in a few of the borings at around 18 to 20 feet deep. All borings were terminated at 20 to 25 feet deep.



GROUNDWATER CONDITIONS: The area is known for relatively shallow wet conditions. At the time of drilling, water was encountered in all of the borings. The depth to wet conditions is shown in the table below.

*One note is that true “water” depth is more likely to be at least 13 or more feet deep. The upper free water conditions found in three borings is likely due to disturbance during drilling creating “dilatancy” water observations. See previous pages photos of example wet soil near the sampler but the actual (real) “drier” soil conditions of intact soil samples are shown as well.

Boring Number	Depth to Wet Conditions (ft.)
B-1	7.5*
B-2	6.5*
S-1	14
S-2	13.5
S-3	13
S-4	13.5
S-5	13
S-6	13
S-7	6.5*
S-8	10

Table showing depth to wet conditions at our boring locations.

*See discussion in the paragraph above

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3 OPINIONS AND DISCUSSION

SUMMARY: In general, the project site is suitable for the proposed new building and pavement site improvements. This includes the use of shallow spread footings (for most building types and loads) and conventional building slab-on-grade floors.

3.1 PRIMARY GEOTECHNICAL ISSUES

The following issues are our opinion of the primary geotechnical-related issues at the site. Other issues are likely present, but we believe the following represent the greatest impact to the project budget, schedule, design and construction. Our recommendations address these issues.

- Silty and sandy soils
- Chert lenses and floaters
- Low-lying areas
- Shallow wet conditions

Silty and Sandy Soils

The site soils contain significant amounts of silt and sand. Silty soils and silty soils with significant amounts of sand tend to destabilize rapidly under construction traffic. **Further, these soils tend to pump and rut when only slightly “wet”. They will “fail” proof roll testing even under acceptable moisture conditions. Undercutting the soils can tend to be futile since most of the site soils are silty no matter the depth and the site soils become more sandy with depth.** Means to stabilize the material can also be very expensive.

However, area construction practice and our experience has shown that once these soils are confined (such as under slabs, pavements and footings) they tend to be stable both short-term and long-term, despite this initial appearance of instability (pumping, rutting and probing “soft”). On a case-by-case basis, the need for stabilization, undercutting or combinations thereof, should therefore be determined by CETCO.

Our recommendations contained in this report address this issue and provide guidance for some of the most common scenarios.



Lastly, the upper mantle of silty soil has been disturbed by farming means and can often be deemed “topsoil” and excess undercutting/stripping is common in similar areas. CETCO should be retained to observe topsoil removal to minimize the risk and cost of excess stripping.

Chert Lenses and Large Floaters

We observed chert lenses (gravelly layers) in our borings. Floaters (limestone or sandstone boulders and cobbles) were also encountered. Both of these types of materials were located at random areas and random depths. The lenses can be small (less than a few feet wide and thick) or larger (many feet wide and several feet thick). The floaters are usually smaller than a few feet across and thinner than 1 to 2 feet.

The chert lenses can have large pockets of water within them or near them. Dewatering may be required around these lenses. The chert lenses material can be re-used as structural fill, but chert pieces or floaters larger than 12 inches should be segregated from the fill materials and placed outside the fill areas or crushed/broken down to smaller pieces.

Low-lying Areas

Several lower elevation areas were observed on-site, especially along the east-central areas. **The topsoil and organic surface materials were thicker in these areas. Surface soils were also softer and wetter.** Additional undercutting and or the use of stabilizing materials (#2 stone, geo-grids, etc.) may be needed in the areas, especially in areas within 10 feet of any building (horizontally) or within the top 5 feet of pavement area sub grades.

Shallow Wet Conditions

Russell Springs is widely known to have areas of relatively shallow wet conditions. However, most projects in the area can be constructed with somewhat normal means without excessive dewatering budgets.

Most of the wet conditions encountered in our borings is located at about 8 to 13 feet deep from the current top of ground elevations. The site is relatively level, so deep cuts are not expected and mass earthwork should mostly encounter smaller zones of wet conditions and not this deeper widespread wet zone.

Also, the “shallow” wet conditions (encountered in 3 borings) are likely due to “disturbance” while drilling. Silty and silty sand soils (common on this site) “release” water when disturbed.



The process is called dilatancy. **The disturbances often triggering the release of water could include vibration, repetitive construction traffic or other similar construction disturbance.** This will destabilize the shallow soils in the areas. No vibratory action should be used on compaction equipment and jumping jack type compactors should be avoided. Main construction entrance areas (areas of very high amounts of repetitive traffic) should consider the use of geogrids (Tensar TX5 or greater) under gravel roads to minimize the need for deep or repetitive stabilization. Again, when the soils become confined (under footings, slabs and pavements) at the end of construction, this destabilizing action greatly reduces.

Deeper soils at the site are mostly very sandy and the water remains “free”, creating “real” and “long-term” wet conditions. Excavations deeper than about 8 feet should expect wet conditions AND very sandy soils. Storm drains/sewer line excavations often reach this depth. The use of trench boxes to minimize large-scale cutting back of excavations is warranted. Excavations at or near structures may create “undermining” conditions due to this water/sandy soil zone.

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4 RECOMMENDATIONS

The following recommendations are provided to assist in the planning, design and construction of the project.

4.1 SITE PREPARATION

We recommend that site grading should take place between about late April to early November. Earthwork taking place outside this time period will likely encounter wet conditions and weather conditions that will provide little to no assistance with drying the soils. Additionally, the following bulleted items are critical to prepare the site for earthwork and additional construction.

- Topsoil and organic materials should be removed (stripped) from the construction area and all structural fill areas. These materials should be wasted from the site or used as topsoil in landscape areas. As stated, the site contains possibly previously cultivated soils and existing “sowed” grassy cover crop materials. These existing and previous conditions can create the ***appearance*** of topsoil at depths of 18 inches or more, despite not actually being topsoil. ***CETCO should be on-site to observe topsoil removal to avoid over-stripping;***
- Areas ready to receive new fill should be proofrolled with a loaded dump truck or similar equipment judged acceptable by CETCO. **The upper mantle of site soils will not likely pass a proof roll, even under perfect conditions. These areas were more “silty” and could break down/destabilize under repeated or heavy traffic. The level of proofroll should be determined by CETCO;**
- Proofrolling should not be performed on wet subgrade. If possible, perform proof rolls after suitable dry weather periods of time;
- Low-lying areas will not pass a proof-roll. ***Undercutting of these soils is not prudent,*** since wet/soft conditions are likely down to very deep depths. The areas may require “bridging” of some sorts, as directed by CETCO;
- CETCO should determine amounts of undercutting (if any) for any area which pumps or ruts. CETCO should also determine acceptable backfill materials and backfill methods. In general any backfill should be accomplished in general accordance with section 4.2;
- Remove deleterious materials or materials that are unsuitable for use in supporting the overlying new fill. The backfill should be consistent with the requirements listed in section 4.2;



- CETCO should observe the proofrolling operations and make recommendations for any unstable or unsuitable conditions encountered.

4.2 EARTHWORK

Before new fill construction, representative samples should be obtained of the proposed fill material to determine the moisture-density and overall classification of the material. The tests also would assist in determining if the material is suitable for use as structural fill.

After the subgrade has been approved to receive new fill, the fill may commence with the following procedures and guidelines recommended:

Mass Earthwork

- Based on our observations and laboratory testing, the on-site soils appear to be suitable for use as structural fill;
- The soils appear to have highly variable amounts of sand, chert and limestone rock. Also, large floaters may be present in the soil mass. Rock larger than 12 inches will have to be wasted off-site or broken to smaller pieces;
- Rock and soil mixtures could be present in areas of the site. **New fill with rock and soil mixed should be placed and treated like soil fill and is not to be considered a rock fill.** A sheepsfoot roller should be used to compact the fill and the following fill guidelines should be used;
- No vibratory action should be used on rollers;
- Fill placement guidelines:
 - Structural fill should be placed in maximum 8-inch thick loose lifts;
 - Maximum particle size of the soil should be limited to 12 inches in any dimension;
 - Materials should have a plasticity index (PI) of less than 30.
- Quality control testing guidelines:
 - Density testing for on-site materials may not be practical for some portions of the existing materials (chert, sand, gravel and cobbles);
 - Density testing of cleaner clay/silt soils should be performed. The rate of testing should be at least 3 per lift and at least one per 10,000 square feet of soil



placement. Soil should be compacted to at least 95 percent of standard Proctor (ASTM D698) maximum dry density. Moisture content should be from minus 3 to plus 1 percent of optimum moisture content (range is such due to silty nature of the site soils);

- ***Do not over compact (or over-roll) the on-site soils.*** They are very silty and can destabilize;
- Soil should not be placed “dry” (dusty). CETCO should observe fill placement to determine acceptable soil moisture;
- Observation of fill “stability” is critical. The roller and earthwork equipment traversing over the new fill should be observed to document minimal movement occurs. This includes sheeps foot roller action observed to ensure the compactor is “walking out” of each lift;
- CETCO should observe and document fill placement and compaction operations.

Backfill Construction

These materials are placed in more confined areas than mass earthwork materials and therefore cannot be placed in full compliance with the previous recommendations. The following are general recommendations for backfill areas:

- Fill lift thicknesses will vary dependent on compaction equipment available and material types, but in no case should exceed 8 inches;
- For crushed stone/aggregate backfills in trenches or wall backfill, the lift thickness should not exceed 4 inches. Again, vibratory action on compaction equipment can destabilize the site soils. Average sized plate compactors usually do not have sufficient “force” (low weight and low wide spreading of vibration) to destabilize the soils and are approved for use. However, jumping jacks or very large plate compactors should not be used;
- Observation of stability and moisture should be similar to those mentioned previously;
- CETCO should provide addition recommendations for backfill.

Again, we recommend that site grading be started in the period from about late April to about November in order to prevent additional undercutting due to wet conditions. Drying of the site soils during other portions of the year is typically difficult.

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Site Drainage

Site drainage (water flow into, along and from the site) is key to minimize damaging effects of water flow. Excess water ponding can destabilize soils. Excessive water flow can erode soils and destabilize soils, especially at or near slopes.

For shallow groundwater seepage (less than 5 feet deep or so), the water encroaching upon construction excavations can be removed by placing a sump near the source of seepage and then pumping from the sump. Should heavy seepage occur, or should there be evidence of soil particle migration such as silting of the sump, then the geotechnical engineer should be contacted. **Wet zones are possible in the chert lenses and sandy zones and wet conditions should be expected at or near 8 feet or more depth.**

The following are general guidelines for site drainage.

- For all earthwork operations, positive surface drainage is prudent to keep water from ponding on the surface and to assist in maintaining surface stability;
- The surface should be sealed prior to expected wet weather. This can usually be accomplished with rubber-tired construction equipment or a steel-drum roller;
- During construction, water should not be allowed to pond in excavations or undercutting will likely be required;
- During the life of the project, slope the subgrade and other site features so that surface water flows away from the site structures;
- Future building structure roof drains should be piped away to proper storm drainage systems;
- Diversion ditches should be used at the toe of all slopes to keep surface water from accumulating at or near site structures;
- For excavations during construction, most free water from the subsurface conditions could likely be removed via sump pumps and open channel flow (ditches) at or near the source of seepage. However, if normal dewatering measures prove insufficient, CETCO should be retained to provide recommendations on the issue;

4.3 CUT/FILL SLOPES

The anticipated cuts and fills will likely create soil slopes of less than 5 to 7 feet. Higher slopes will require additional input from CETCO. For general slope construction of these smaller slopes, we recommend the following as maximum limit.



General Maximum Allowable Slope Grading

Material	Slope Type	Steepest Permanent Slop
Soil	Cut or Fill	2H:1V*

* For mowing and maintenance considerations a 3H:1V or flatter slope may be more desirable.

The following are general slope construction guidelines:

- Any area within 10 horizontal feet of a structure should be constructed flat (minimal sloping to allow some surface water drainage away from the structure);
- Toes of slopes should have drainage ditches directing water away from the areas;
- For areas wider than 20 feet above the top of slopes, we recommend installing lined/impervious diversion ditches to redirect surface water away from the fill slope surface;
- Compaction of soil fill near the edge of a slope is generally difficult due to poor confinement. We recommend fill slopes be constructed steeper than the above recommendations and then cut the resulting slope back to the design slope;
- Fill placed on side slopes must be placed in horizontal lifts starting at the toe of the slope while securely benching the new fill material into the existing slope. Continue to place the fill in horizontal lifts until final proposed grade is reached;

Guidelines for construction of cut soil slopes are not practical because of unpredictability of the natural soil strata changes and relative differences in soil strengths within very short distances. Also, water drainage in the natural soil mass is irregular. CETCO should be retained at the time of construction to provide guidance on cut soil slope construction.

4.4 SITE SEISMIC DESIGN

The Kentucky Building Code (KBC), as updated was reviewed to determine the Site Seismic Classification. Based on our review of geologic data, our experience, and subsurface conditions encountered, we recommend a Seismic SITE CLASS "D" for the site.

A detailed geotechnical earthquake engineering analysis was not performed. However, based on a review of published literature and our experience with similar subsurface conditions, we believe the potential for slope instability, liquefaction (sandy soils at the site are very clayey), and surface rupture due to faulting or lateral spreading resulting from earthquake motions is low.



4.5 FOUNDATIONS

The following recommendations are also based on the previously described project information, typical industrial building types, the subsurface conditions encountered in the borings, the results of laboratory testing, empirical correlations for the soil types encountered, and CETCO's analyses and experience.

Typically, the site conditions encountered and newly/properly compacted engineered fill can support most building types with shallow spread footings for loads of less than 150 kips. **A maximum allowable net bearing pressure of 2,000 pounds per square foot (psf) is recommended for footings bearing on firm or better native soils (silt, clay or sand) or compacted engineered fill (silt, clay or sand).** Additional design considerations for project foundations are outlined as follows:

- Design footings with a minimum dimension of 24 inches wide;
- Place all exterior footing bottoms to at least **30 inches below finished exterior grade** (due to silty soil encountered);

Shallow Foundation Construction Considerations

The soils encountered in this exploration may lose strength if they become wet during construction. Therefore, we recommend the foundation subgrades be protected from exposure to water. The following guides address protection of footing subgrades and our recommended remediation for any soft soils encountered.

- Bearing condition evaluations should be conducted using dynamic cone penetration (DCP) and hand auger borings at all footing locations in cut areas and areas with less than 3 feet of fill under footings.
- To protect against "moisture loss" or "soil drying" during warmer months, foundation concrete should be placed the same day as excavation.
- Remove any soils disturbed by exposure prior to foundation concrete placement.
- Level or suitably bench the foundation bearing area.
- Remove loose soil, debris, and excess surface water from the bearing surface prior to concrete placement.
- CETCO must observe all foundation excavations and provide recommendations for treatment of any unsuitable conditions encountered.



- **The on-site soils contain significant silt and can appear to be wet and unstable shortly after excavation and exposure to unconfined conditions.** However, most conditions should “tighten up” within a few hours of exposure. If they do not appear to be more stable/dry, a possible wet pocket could have been exposed or the soils may indeed be too soft. CETCO should be retained to evaluate actual conditions.

4.6 FLOOR SLABS

Normal conventional type slabs can be supported by engineered fill soils or native soils. The areas should be proof rolled at the direction of CETCO prior to slab gravel base placement. Further, the subgrade should be prepared according to the recommendations contained within this report. The following features are recommended as part of the floor slab construction:

- If possible, avoid construction of slabs during the hottest/driest months (typically July, August or September) due to potential “dry soil” conditions.
- Keep the crushed stone or gravel moist, but not wet, immediately prior to slab concrete placement to minimize curling of the slab due to differential curing conditions between the top and bottom of the slab.
- Retain CETCO to review the actual subgrade conditions prior to slab construction and make recommendations for any unsuitable conditions encountered.

4.7 PAVEMENT AREAS

No CBR testing was conducted. Our recommendations are based on a correlated CBR of 4 (for similar silty and silty sand soils). We have also assumed a 15 year life with a typical “educational facility pavement” EAL count (not including significant bus traffic). The most significant areas of traffic are assumed to be the main entrances and main intersections of the parking lot.

Pavement Area Subgrade Recommendations

Adequate soil/subgrade support is critical for any pavement area. Please refer the Earthwork section of this report for subgrade preparation. Prior to stone base placement we recommend an additional proofroll of the subgrade should be performed to verify subgrade conditions. Recommendations for undercutting/repair of the subgrade can be made at that time by CETCO.



Pavement Drainage

Adequate drainage and slope of the pavement subgrade and pavement section should be provided to promote adequate drainage. Edges of the pavement should be provided a means of water outlet by extending the aggregate base course through to side ditches or providing drain pipes and weep holes at catch basin walls.

Light Duty Parking

Based on the above traffic and design parameters and our experience with similar projects, we recommend using the following pavement section for parking lot areas:

Parking Pavement Sections

Component	Parking Lots Only
Surface Course	1
Asphalt Base Course	2
Base Material (DGA)	8

Heavy Duty Pavement

For entrances, main roads, main drives and all loading dock areas, we recommend the following pavement section:

Heavy-Duty Pavement Sections

Component	Parking Lots Only
Surface Course	1
Asphalt Base Course	3
Base Material (DGA)	10

If a bus traffic or similar heavily traffic area is planned, we should be contacted for additional recommendations.

All asphalt should be mixed, placed, and compacted in accordance with Kentucky Transportation Cabinet Standard Specifications. Also, the dense graded aggregate (DGA) should be placed and compacted in accordance with KyTC Specifications.



Dumpster Areas

The dumpster pad and dumpster unloading area should be concrete pavement. At least 6 inches of concrete thickness should be used overlying at least 6 inches of compacted DGA base stone.

4.8 POST-REPORT GEOTECHNICAL CONSULTING

CETCO services as “geotechnical engineer of record” include answering questions pertaining to the materials presented in this report and the appendix. However, if conditions arise during construction that are different than those encountered during our exploration or if additional recommendations are needed, CETCO should be retained to provide that guidance. Construction observation and testing are beyond the typical scope of the geotechnical engineer, but are essential to completing the geotechnical engineer’s anticipated completion of their recommendations. CETCO should always be contracted as the testing/inspection firm for any project that applies their geotechnical report information. This always saves time, risk and project costs.

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5 NOTES ON THE REPORT

The assessment of site environmental conditions or the presence of contaminants in the soil, rock, surface water or groundwater of the site was beyond the scope of this exploration.

The recommendations provided are based in part on project information provided to us and they only apply to the specific project and site discussed in this report. If the project information section in this report contains incorrect information or if additional information is available, you should convey the correct or additional information to us and retain us to review our recommendations. We can then modify our recommendations if they are inappropriate for the proposed project.

Regardless of the thoroughness of a geotechnical exploration, there is always a possibility that conditions between borings/test pits will be different from those at specific boring/test pit locations and that conditions will not be as anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered. Unanticipated conditions and inadequate procedures should be reported to the design team along with timely recommendations to solve the problems created. We recommend that the owner retain CETCO to provide this service based upon our familiarity with the project, the subsurface conditions and the intent of the recommendations.

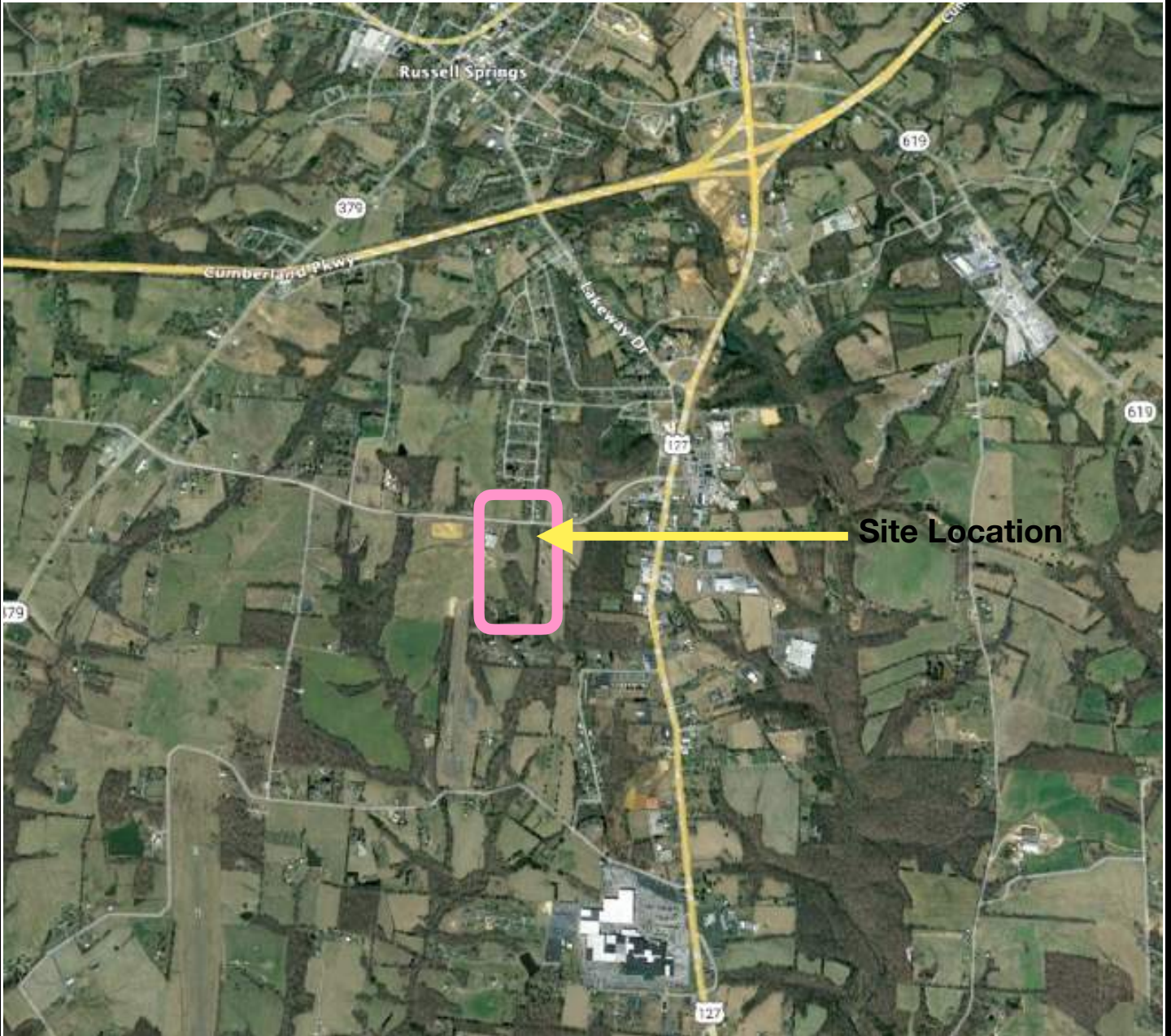
We recommend that this complete report be provided to the various design team members, the contractors and the project owner. Potential contractors should be informed of this report in the "instructions to bidders" section of the bid documents. The report should not be included or referenced in the actual contract documents.

We wish to remind you that our exploration services include storing the samples collected and making them available for inspection for 30 days. The samples are then discarded unless you request otherwise.



APPENDIX

**SITE LOCATION PLAN
BORING LOCATION PLAN
TEST BORING LOGS
FIELD STANDARDS
LABORATORY TESTING
LABORATORY STANDARDS**



Site location plan adapted from Google Earth Pro, with further adaptations from CETCO professionals.




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Lexington, KY 40515
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SITE LOCATION PLAN
for
Russell Co. Ag-Tech
Russell Springs, Kentucky

CETCO Project: 1776-22-0103
Date: May 5, 2022
Checked by: JSC
Drawing: 1 of 1



 B-X or S-X
 (Borings or
 Soundings)

Boring location plan adapted from MSE Site Plan and Google Earth Pro Aerial, with further adaptations from CETCO professionals. Locations are approximate.



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BORING LOCATION PLAN
 for
 Russell Co. Ag-Tech
 Russell Springs, Kentucky

CETCO Project: 1776-22-0103
 Date: May 5, 2022
 Checked by: JSC
 Drawing: 1 of 1, Scale: NTS



Project: Russell Co. Ag-Tech
 Job Number: 1776-22-0103
 Location: Russell Springs, KY
 Date: 4/21/2022

Boring: B-1
 Elevation: NA
 Water Depth: 7.5' at completion
 Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____	<input type="checkbox"/> Mobile B-80 <input type="checkbox"/> Mobile B-34 <input type="checkbox"/> CME- 550 <input type="checkbox"/> CME- 55 <input checked="" type="checkbox"/> Acker Rebel	X 4" OD SFA <input type="checkbox"/> 4¼" ID HSA <input type="checkbox"/> 3¼" ID HSA <input type="checkbox"/> _____	Manual X Automatic Safety	<u>Cloudy to P.C., 60's</u> _____ _____

Depth (ft.)		Description	Sample Depth		SPT Blow Count			Recovery	SPT	UD	Core
From	To		From	To	6"	6"	6"				
0.0	0.7	Topsoil	0.0	1.5	1	2	2	1.5'	X	<input type="checkbox"/>	<input type="checkbox"/>
0.7	2.0	Light brown and orange, LEAN CLAY (CL), silty, with fine sand, very moist, FIRM	1.5	3.0	5	7	9	1.5'	X	<input type="checkbox"/>	<input type="checkbox"/>
			4.0	5.5	5	5	6	1.3'	X	<input type="checkbox"/>	<input type="checkbox"/>
2.0	7.0	Red and orange, LEAN CLAY (CL) and SAND (SM), very silty, with light brown striations, moist, STIFF/FIRM	6.5	8.0	4	8	17	1.5'	X	<input type="checkbox"/>	<input type="checkbox"/>
			9.0	10.5	23	23	36	1.4'	X	<input type="checkbox"/>	<input type="checkbox"/>
7.0	10.0	Light brown, with black concretions, SAND (SM), with some silt, fine to medium, very moist to wet, FIRM to DENSE	14.0	15.5	11	30	33	1.4'	X	<input type="checkbox"/>	<input type="checkbox"/>
			19.0	20.5	1	1	1	1.5'	X	<input type="checkbox"/>	<input type="checkbox"/>
			24.0	25.5	3	4	4	1.5'	X	<input type="checkbox"/>	<input type="checkbox"/>
10.0	18.0	Gray, with orange and brown, SAND (SM), with gravel, very moist to wet, DENSE							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.0	25.5	Orange brown and red, SAND (SC), with clayey zones, medium, wet, VERY LOOSE. Layered in the last 2 feet.							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		BORING TERMINATED AT 25.5 FEET WITHOUT REFUSAL							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Project: Russell Co. Ag-Tech
 Job Number: 1776-22-0103
 Location: Russell Springs, KY
 Date: 4/21/2022

Boring: S-1
 Elevation: NA
 Water Depth: 14' at completion
 Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____	<input type="checkbox"/> Mobile B-80 <input type="checkbox"/> Mobile B-34 <input type="checkbox"/> CME- 550 <input type="checkbox"/> CME- 55 <input checked="" type="checkbox"/> Acker Rebel	X 4" OD SFA <input type="checkbox"/> 4¼" ID HSA <input type="checkbox"/> 3¼" ID HSA <input type="checkbox"/> _____	Manual <input checked="" type="checkbox"/> Automatic Safety	<u>Cloudy to P.C., 60's</u> _____ _____ _____

Depth (ft.)		Description	Sample Depth		SPT Blow Count			Recovery	SPT	UD	Core
From	To		From	To	6"	6"	6"				
		SOUNDING ONLY. DESCRIPTIONS							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		BASED ON OBSERVATIONS AND							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		RECOVERED AUGER CUTTINGS.							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0.0	1.0	TOPSOIL							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.0	6	Brown LEAN CLAY (CL), silty, moist							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	11	Brown to orange brown, silty fine							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		SAND (SM), very moist							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	18	Orange brown, silty fine SAND (SM),							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		very moist to wet. NOTE: VERY							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		SOFT LAYERS IN THIS ZONE							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		(drilling observations)							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	20	Orange brown and gray, SAND (SM),							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		with numerous gravel lenses and							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		possible floaters, wet							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		BORING TERMINATED AT 20 FEET							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		WITHOUT REFUSAL							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Project: Russell Co. Ag-Tech
 Job Number: 1776-22-0103
 Location: Russell Springs, KY
 Date: 4/21/2022

Boring: S-2
 Elevation: NA
 Water Depth: 13.5' at completion
 Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____	<input type="checkbox"/> Mobile B-80 <input type="checkbox"/> Mobile B-34 <input type="checkbox"/> CME- 550 <input type="checkbox"/> CME- 55 <input checked="" type="checkbox"/> Acker Rebel	X 4" OD SFA <input type="checkbox"/> 4¼" ID HSA <input type="checkbox"/> 3¼" ID HSA <input type="checkbox"/> _____	Manual X Automatic Safety	<u>Cloudy to P.C., 60's</u> _____ _____

Depth (ft.)		Description	Sample Depth		SPT Blow Count			Recovery	SPT	UD	Core
From	To		From	To	6"	6"	6"				
		SOUNDING ONLY. DESCRIPTIONS							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		BASED ON OBSERVATIONS AND							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		RECOVERED AUGER CUTTINGS.							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0.0	1.0	TOPSOIL							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.0	4.5	Gravel lenses/"floaters" with brown							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		LEAN CLAY (CL), moist							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.5	13.5	Orange brown, silty fine SAND (SM),							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		very moist. NOTE: VERY SOFT							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		LAYERS AT 6-7 FEET (drilling							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		observation)							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.5	15.5	VERY SOFT AND WET LENSES							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.5	20	Orange brown and gray, SAND (SM),							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		with numerous gravel lenses and							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		possible floaters, wet							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		BORING TERMINATED AT 20 FEET							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		WITHOUT REFUSAL							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Project: Russell Co. Ag-Tech
 Job Number: 1776-22-0103
 Location: Russell Springs, KY
 Date: 4/21/2022

Boring: S-3
 Elevation: NA
 Water Depth: 13' at completion
 Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____	<input type="checkbox"/> Mobile B-80 <input type="checkbox"/> Mobile B-34 <input type="checkbox"/> CME- 550 <input type="checkbox"/> CME- 55 <input checked="" type="checkbox"/> Acker Rebel	X 4" OD SFA <input type="checkbox"/> 4¼" ID HSA <input type="checkbox"/> 3¼" ID HSA <input type="checkbox"/> _____	Manual <input checked="" type="checkbox"/> Automatic Safety	<u>Cloudy to P.C., 60's</u> _____ _____ _____

From	Depth (ft.)		Description	Sample From	Depth To	SPT Blow Count			Recovery	SPT	UD	Core
	To	6"				6"	6"					
			SOUNDING ONLY. DESCRIPTIONS							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			BASED ON OBSERVATIONS AND							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			RECOVERED AUGER CUTTINGS.							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0.0	1.2		TOPSOIL							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2	5.5		Brown LEAN CLAY (CL), silty, moist							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.5	6.1		Floater?							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.1	13		Orange brown, silty fine SAND (SM),							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			very moist to wet. NOTE: VERY							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			SOFT LAYERS IN THIS ZONE							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			(drilling observations)							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	16		Orange brown, silty fine SAND (SM),							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			with some gravel, wet							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	20		Orange brown and gray, SAND (SM),							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			with numerous gravel lenses and							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			possible floaters, wet							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			BORING TERMINATED AT 20 FEET							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			WITHOUT REFUSAL							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Project: Russell Co. Ag-Tech
 Job Number: 1776-22-0103
 Location: Russell Springs, KY
 Date: 4/21/2022

Boring: S-4
 Elevation: NA
 Water Depth: 13.5' at completion
 Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____	<input type="checkbox"/> Mobile B-80 <input type="checkbox"/> Mobile B-34 <input type="checkbox"/> CME- 550 <input type="checkbox"/> CME- 55 <input checked="" type="checkbox"/> Acker Rebel	X 4" OD SFA <input type="checkbox"/> 4¼" ID HSA <input type="checkbox"/> 3¼" ID HSA <input type="checkbox"/> _____	Manual <input checked="" type="checkbox"/> Automatic Safety	<u>Cloudy to P.C., 60's</u> _____ _____

Depth (ft.)		Description	Sample Depth		SPT Blow Count			Recovery	SPT	UD	Core
From	To		From	To	6"	6"	6"				
		SOUNDING ONLY. DESCRIPTIONS							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		BASED ON OBSERVATIONS AND							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		RECOVERED AUGER CUTTINGS.							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0.0	1.0	TOPSOIL							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.0	3.5	Brown, LEAN CLAY (CL), silty, moist,							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5	6	Gravel lenses with orange clay							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	8	Orange brown, silty fine SAND (SM),							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		very moist							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	15	Gray to orange brown, silty fine							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		SAND (SM), wet. NOTE: VERY							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		SOFT FROM 13.5 TO 15 FEET							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		(drilling observation)							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	20	Orange brown, silty fine SAND (SM),							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		with gravel, wet. NOTE: DRILLED							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		FIRM (drilling observation)							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		BORING TERMINATED AT 20 FEET							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		WITHOUT REFUSAL							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Project: Russell Co. Ag-Tech
 Job Number: 1776-22-0103
 Location: Russell Springs, KY
 Date: 4/21/2022

Boring: S-8
 Elevation: NA
 Water Depth: 10' at completion
 Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____	<input type="checkbox"/> Mobile B-80 <input type="checkbox"/> Mobile B-34 <input type="checkbox"/> CME- 550 <input type="checkbox"/> CME- 55 <input checked="" type="checkbox"/> Acker Rebel	X 4" OD SFA <input type="checkbox"/> 4¼" ID HSA <input type="checkbox"/> 3¼" ID HSA <input type="checkbox"/> _____	Manual <input checked="" type="checkbox"/> Automatic Safety	<u>Cloudy to P.C., 60's</u> _____ _____ _____

Depth (ft.)		Description	Sample Depth		SPT Blow Count			Recovery	SPT	UD	Core
From	To		From	To	6"	6"	6"				
		SOUNDING ONLY. DESCRIPTIONS							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		BASED ON OBSERVATIONS AND							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		RECOVERED AUGER CUTTINGS.							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0.0	0.8	TOPSOIL							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0.8	2	Brown, LEAN CLAY (CL), silty, moist,							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	8	Brown, silty fine SAND (SM), very							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		moist							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	8.5	Gravelly lenses							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.5	12.5	Orange and grayish brown, silty							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		fine SAND (SM), with some gravel,							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		wet							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.5	18.3	Gray, silty fine SAND (SM), wet							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		and soft (drilling observation)							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.3	20	Gravel lenses with some sand/clay,							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		wet							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		BORING TERMINATED AT 20 FEET							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		WITHOUT REFUSAL							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Laboratory Testing Summary Table

Project Name:	Russell Co. Ag-Tech	Date:	April 26, 2022
Project Location:	Russell Springs, KY	Reviewed by:	Joe Cooke, PE
Client:	Russell Co. Industrial Authority	CETCO Project Number: 1776-22-0103	

Sample ID	Depth (ft)	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Finer than #200 Sieve	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-1, 4-5.5'	4-5.5	33.8	47	31	16	45.1		
B-1, 9-10.5'	9-10.5	26.5				13.7		
B-1, 0-1.5'	0-1.5	20.5						
B-1, 1.5-3'	1.5-3	29.6						
B-1, 6.5-8'	6.5-8	26.5						
B-1, 14-15.5'	14-15.5	28.5						
B-1, 19-20.5'	19-20.5	53.4						
B-2, 0-1.5'	0-1.5	17.1						
B-2, 1.5-3'	1.5-3	21.4						
B-2, 4-5.5'	4-5.5	28.8						
B-2, 6.5-8'	6.5-8	25.0						
B-2, 9-9.5'	9-9.5	24.1						
B-2, 14-15.5'	14-15.5	27.8						
B-2, 19-20.5'	19-20.5	58.6						
B-2, 24-25.5'	24-25.5	40.0						

Atterberg Limits Chart

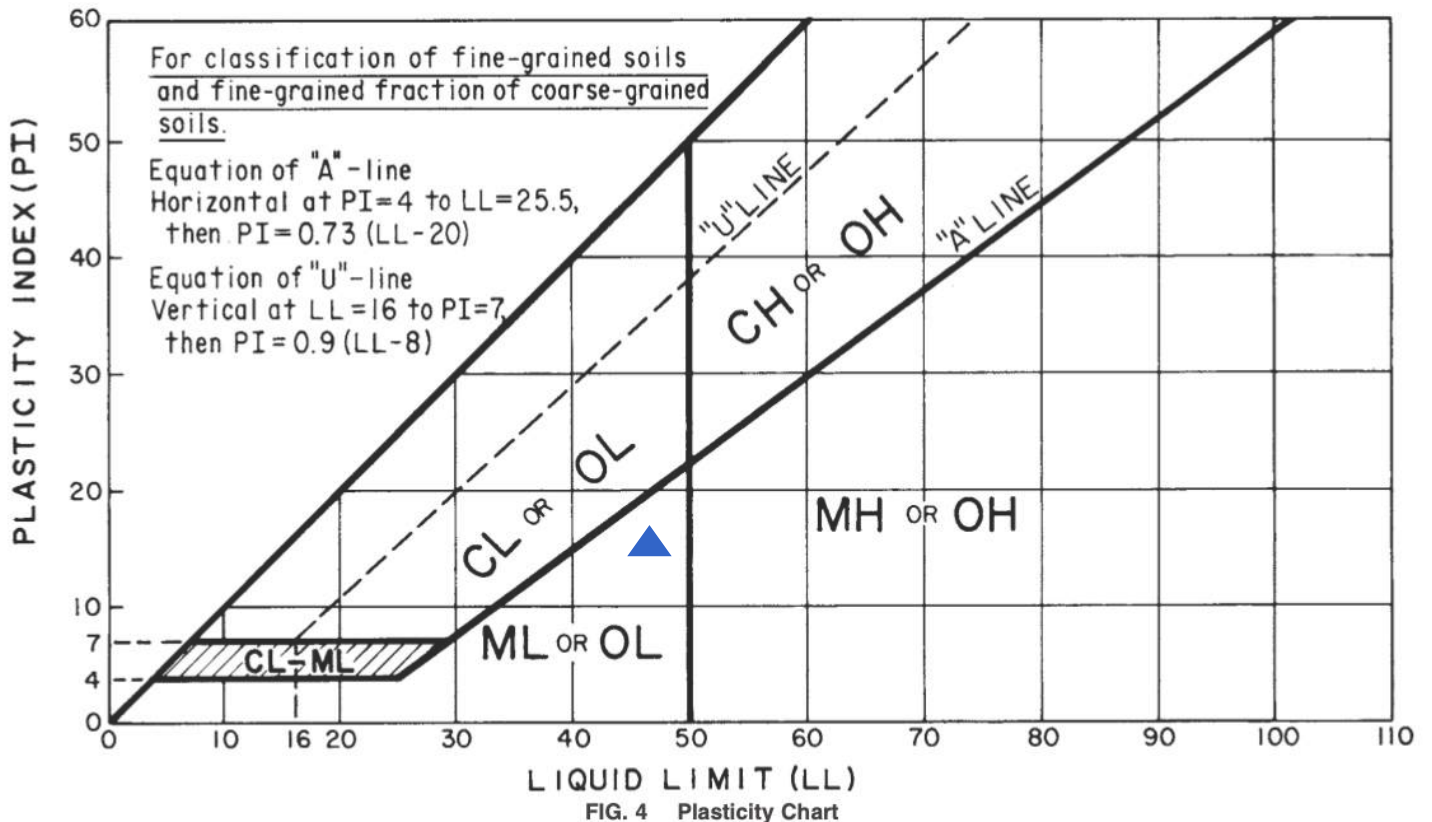
Project Name: Russell Co. Ag-Tech Date: April 26, 2022

Project Location: Russell Springs, KY Reviewed by: Joe Cooke, PE

Client: Russell Co. Industrial Authority CETCO Project Number: 1776-22-0103

“Atterberg Limits”, ASTM D4318

Sample ID	Depth (ft)	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Finer than #200 Sieve	
B-1, 4.0'-5.5'	▲	4-5.5	33.8	47	31	16	45.1





LABORATORY STANDARDS AND PROCEDURES

Soil Classification: Soil classifications provide a general guide to the engineering properties of various soil types and enable the engineer to apply past experience to current problems. In our investigations, samples obtained during drilling operations are examined in our laboratory and visually classified by an engineer. The soils are classified according to consistency (based on number of blows from standard penetration tests or “by hand” stiffness), color and texture. These classification descriptions are included on our “Boring Logs” or “Test Pit Logs”

The classification system discussed above is primarily qualitative and for detailed soil classification two laboratory tests are necessary: grain size tests and plasticity tests. Using these test results the soil can be classified according to the AASHTO or Unified Classification Systems (ASTM D2487). Each of these classification systems and the in-place physical soil properties provides an index for estimating the soil's behavior. The soil classification and physical properties obtained are presented in this report.

Atterberg Limits: Portions of the samples are taken for Atterberg Limits testing to determine the plasticity characteristics of the soil. The plasticity index (PI) is the range of moisture content over which the soil deforms as a plastic material. It is bracketed by the liquid limit (LL) and the plastic limit (PL). The liquid limit is the moisture content at which the soil becomes sufficiently “wet” to flow as a heavy viscous fluid. The plastic limit is the lowest moisture content at which the soil is sufficiently plastic to be manually rolled into tiny threads. The liquid limit and plastic limit are determined in accordance with ASTM D4318.

Moisture Content: The Moisture Content is determined according to ASTM D2216.

Percent Finer Than 200 Sieve: Selected samples of soils are washed through a number 200 sieve to determine the percentage of material less than 0.074 mm in diameter.

“Proctor” (Moisture-Density Test): Often called by its original author's name, the “Proctor” test is a moisture-density relationship test to determine “maximum dry density” and “optimum moisture content” curves using a set amount of force of “compaction” at variable moisture contents in a pre-determined mold size. The test is typically ASTM D698, method A, for standard effort. For a “modified” effort (higher amount of force), ASTM D 1557, again method A, is usually used. Due to high amounts of clay as well as typical compaction construction equipment used, the standard Proctor (ASTM D698) is the most common method used. For materials with larger grain sizes, methods B, C and D of each ASTM method can be used.

Rock Strength Tests: To obtain strength data for rock materials encountered, unconfined compression tests are performed on selected samples. In the unconfined compression test, a cylindrical portion of the rock core is subjected to increasing axial load until it fails. The pressure required to produce failure is recorded, corrected for the length to diameter ratio of the core and reported.

FIELD SERVICES STANDARDS AND PROCEDURES

Field Operations: The general field procedures employed by CETCO are summarized in ASTM D420 which is entitled “Investigating and Sampling Soils and Rocks for Engineering Purposes.” This recommended practice lists recognized methods for determining soil and rock distribution and ground water conditions. These methods include geophysical, in situ methods and test pits as well as borings.

Borings are drilled to obtain subsurface samples using one of several alternate techniques depending upon the subsurface conditions. These techniques typically include:

- a. Continuous 2-1/2 or 3-1/4 inch I.D. hollow stem augers;
- b. Wash borings using roller cone or drag bits (mud or water);
- c. Continuous flight augers (ASTM D 1425).



These drilling methods are not capable of penetrating through material designated as "refusal materials." Refusal, thus indicated, may result from hard cemented soil, soft weathered rock, coarse gravel or boulders, thin rock seams, or the upper surface of sound continuous rock. Core drilling procedures are required to determine the character and continuity of refusal materials.

The subsurface conditions encountered during drilling are reported on a field test boring record by our field personnel (typically engineers). The record contains information concerning the boring method, samples attempted and recovered, indications of the presence of various materials such as coarse gravel, cobbles, etc., and observations between samples. Therefore, these boring records contain both factual and interpretive information. The field boring records are on file in our office.

The soil and rock samples plus the field boring records are reviewed by a geotechnical engineer. The engineer classifies the soils in general accordance with the procedures outlined in ASTM D2488 and prepares the final boring records which are the basis for all evaluations and recommendations.

The final boring records represent our interpretation of the contents of the field records based on the results of the engineering examinations and tests of the field samples. These records depict subsurface conditions at the specific locations and at the particular time when drilled. Soil conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in a change in the subsurface soil and ground water conditions at these boring locations. The lines designating the interface between soil or refusal materials on the records and on profiles represent approximate boundaries. The transition between materials may be gradual. The final boring records are included with this report.

The detailed data collection methods used during this study are discussed on the following pages.

Soil Test Borings: Soil test borings were made at the site at locations shown on the attached Boring Plan. Soil sampling and penetration testing were performed in accordance with ASTM D1586.

The borings were made by mechanically twisting a hollow stem steel auger into the soil. At regular intervals, the drilling tools were removed and soil samples obtained with a standard 1.4 inch I.D., 2 inch O.D., split tube sampler. The sampler was first seated 6 inches to penetrate any loose cuttings, then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated the "penetration resistance". The penetration resistance, when properly evaluated, is an index to the soil strength and foundation supporting capability.

Representative portions of the soil samples, thus obtained, were placed in glass jars and transported to the laboratory. In the laboratory, the samples were examined to verify the driller's field classifications. Test Boring Records are attached which graphically show the soil descriptions and penetration resistances.

Core Drilling: Refusal materials are materials that cannot be penetrated with the soil drilling methods employed. Refusal, thus indicated, may result from hard cemented soil, soft weathered rock, coarse gravel or boulders, thin rock seams or the upper surface of sound continuous rock. Core drilling procedures are required to determine the character and continuity of refusal materials.

Prior to coring, casing is set in the drilled hole through the overburden soils, if necessary, to keep the hole from caving. Refusal materials are then cored according to ASTM D2113 using a diamond-studded bit fastened to the end of a hollow double tube core barrel. This device is rotated at high speeds, and the cuttings are brought to the surface by circulating water. Core samples of the material penetrated are protected and retained in the swivel-mounted inner tube. Upon completion of each drill run, the core barrel is brought to the surface, the core recovered is measured, the samples are removed and the core is placed in boxes for storage.

The core samples are returned to our laboratory where the refusal material is identified and the percent core recovery and rock quality designation is determined by a soils engineer or geologist. The percent core recovery is the ratio of the sample length obtained to the depth drilled, expressed as a percent. The rock quality designation (RQD) is obtained by summing

Field and Lab Procedures



up the length of core recovered, including only the pieces of core which are four inches or longer, and dividing by the total length drilled. The percent core recovery and RQD are related to soundness and continuity of the refusal material. Refusal material descriptions, recoveries, and RQDs are shown on the "Test Boring Records".

Water Level Readings: Water table readings are normally taken in conjunction with borings and are recorded on the "Boring Logs". These readings indicate the approximate location of the hydrostatic water table at the time of our field investigation. Where impervious soils are encountered (clayey soils) the amount of water seepage into the boring is small, and it is generally not possible to establish the location of the hydrostatic water table through water level readings. The ground water table may also be dependent upon the amount of precipitation at the site during a particular period of time. Fluctuations in the water table should be expected with variations in precipitation, surface run-off, evaporation and other factors.

The time of boring water level reported on the boring records is determined by field crews as the drilling tools are advanced. The time of boring water level is detected by changes in the drilling rate, soil samples obtained, etc. Additional water table readings are generally obtained at least 24 hours after the borings are completed. The time lag of at least 24 hours is used to permit stabilization of the ground water table which has been disrupted by the drilling operations. The readings are taken by dropping a weighted line down the boring or using an electrical probe to detect the water level surface.

Occasionally the borings will cave-in, preventing water level readings from being obtained or trapping drilling water above the caved-in zone. The cave-in depth is also measured and recorded on the boring records.

Rock Classification: Rock classifications (if any) provide a general guide to the engineering properties of various rock types and enable the engineer to apply past experience to current situations. In our explorations, rock core samples obtained during drilling operations are examined in our laboratory and visually classified by an engineer. The rock cores are classified according to relative hardness and RQD (see Guide to Rock Classification Terminology), color, and texture. These classification descriptions are included on our Boring Records.

Test Pits: Occasionally, our field sampling includes the use of "test pits". Similarly to soil test borings, our classifications on the materials observed and sampled are performed in general accordance with ASTM standards. These excavations are performed by excavators of various sizes and the width/length/depth of the excavations vary as well. Typically, only the soil or "loose" rock areas can be sampled or excavated. The samples taken are usually taken at highly variable depths and the engineer or field personnel have extreme discretion on the sample sizes and locations. These are typically sealed in "zip lock" type baggies and transported back to our office for lab testing and further classification. Visual descriptions of rock materials (sand, gravel, cobbles, boulders, etc.) are provided on both samples taken and observations of spoils removed and sides of excavations. Typically, photos of both the mass excavation and spoil pile are provide on the test pit logs in our reports. Groundwater levels are noted and can include water flow at the excavation bottom or at points of depth in the excavation sides. "Refusal" usually means that the excavator cannot remove additional materials at the excavation bottom. Some excavations may also have very large boulders than cannot be removed by the excavator used. Depths indicated on the logs are usually measured with steel tape or cloth tape. Final complete details of the test pit findings and opinions are provided in the "Test Pit Logs" in our reports. Lastly, test pit excavations have no set standards and are performed at our engineers discretion.

SECTION 02936 - SEEDING

PART 1 - GENERAL

1.01 Work Included

The work described herein shall consist of application of seed, fertilizer and agricultural limestone to establish turf.

PART 2 - PRODUCTS

201 Seed

Seed shall be of the following mixture:

<u>Seed Type</u>	<u>Percentage</u>
Fine Lawn Fescue	60%
Bluegrass	25%
Perennial Rye	15%

Seed shall be applied uniformly at the rate of three pounds per 1,000 square feet.

202 Agricultural Limestone

Agricultural limestone shall have a minimum calcium carbonate equivalent of 90 percent and shall be ground to such a fineness that at least 90 percent will pass a 10-mesh sieve and at least 50 percent will pass a 60-mesh sieve. Agricultural ground limestone shall be from quarries approved by the Kentucky Department of Agriculture.

Agricultural limestone shall be applied uniformly at the rate of 100 pounds per 1,000 square feet.

203 Fertilizer

Fertilizer shall be commercial grade, free flowing, uniform in composition.

Fertilizer shall be 10-20-20 applied uniformly at the rate of 25 pounds per 1,000 square feet.

204 Mulch

Mulch shall be clean straw and shall be applied at a rate of 100 pounds per 1,000 square feet.

PART 3 - EXECUTION

3.01 Delivery, Storage and Handling

Fertilizer and limestone shall be delivered to the site in the original, unopened containers bearing the manufacturer's guaranteed chemical analysis, name, trade name, trademark, and conformance to State and Federal laws. In lieu of containers, fertilizer and limestone may be furnished in bulk and a certificate indicating the above information shall accompany each delivery.

Seed, limestone and fertilizer shall be kept in dry storage away from contaminants, insects and rodents.

3.02 Seeding

Seed shall be broadcast uniformly. The seed shall be covered to an average depth of 1/4 inch by means of spike-tooth harrow, cultipacker, no till drill or other approved device. Seed shall not be broadcast when winds are above 10 mph. Immediately after seeding, the entire area shall be firmed with a roller not exceeding 90 pounds for each foot of roller width and the soil moistened to a depth of 6-8 inches. If seeding is performed with a cultipacker-type seeder or if seed is applied in combination with hydromulching, rolling will not be required.

3.03 Maintenance

Seeded areas shall be protected and maintained by watering and replanting as may be necessary to produce a uniform stand of grass. Maintenance shall continue until a dense, uniform turf is established composed of the grasses specified and until acceptance, and shall include repair of damage caused by erosion.

End of Section

Division III

Concrete Work

SECTION 03310 - CONCRETE WORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work Included: Extent of concrete work is shown on drawings.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not limited to, General Conditions, Supplementary Conditions, and Division 1 of these Specifications.

1.02 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of following codes, specifications and standards, except where more stringent requirements are shown or specified:
 - 1. ACI 301 "Specifications for Structural Concrete for Buildings"
 - 2. ACI 318 "Building Code Requirements for Reinforced Concrete"
 - 3. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."
- B. Concrete Testing Services
 - 1. Engage a testing laboratory acceptable to Architect/ Engineer to perform material evaluation tests and to design concrete mixes.
 - 2. Owner will engage testing laboratory to perform sampling and testing during placement of concrete.
 - 3. Owner will engage a testing laboratory to conduct tests of compression test specimens.
 - 4. Materials and installed work may require testing and retesting as directed by Architect/ Engineer, at any time during progress of work. Allow free access to material stockpiles and facilities. Re-testing of rejected materials and installed work shall be done at Contractor's expense.

1.03 SUBMITTALS

- A. Product Data: Submit data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, joint systems, curing compounds, and others as requested by Architect/ Engineer.
- B. Shop Drawings - Reinforcement: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, diagrams of bent bars, and arrangement of concrete reinforcement. Include special reinforcement required at openings through concrete structures.
- C. Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design test as specified.
- D. Material Certificates: Provide materials certificates in lieu of materials laboratory test

reports when permitted by Architect/ Engineer. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

PART 2 - PRODUCTS

2.01 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection. Use plywood complying with U. S. Product Standard PS-1 "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
- B. Forms for Unexposed Finish Concrete: Form concrete surfaces which will be unexposed in finished structure with plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
- C. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

2.02 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A615, Grade 60, deformed.
- B. Welded Wire Fabric: ASTM A185, welded steel wire fabric.
- C. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications, unless otherwise acceptable.
 - 1. For exposed-to-view concrete surfaces: Where legs of supports are in contact with forms, provide supports with legs which are plastic protected (CRSI, Class 1) or stainless steel protected (CRSI, Class 2).

2.03 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150, Type I, unless otherwise acceptable to Architect/ Engineer. Use one brand of cement throughout project, unless otherwise acceptable to Architect/ Engineer.
- B. Fly Ash: ASTM C618, Type C or Type F. Loss on ignition shall not exceed 3½%. Limit

use of fly ash to not exceed 25% of total cementitious material content by weight. Higher limits are acceptable for CLSM.

- C. Normal Weight Aggregates: ASTM C33, and as herein specified. Provide aggregates from a single source for exposed concrete.
 - 1. For exterior exposed surfaces, do not use fine or coarse aggregates containing spalling-causing deleterious substances.
- D. Water: Drinkable.
- E. Admixtures: The amount of water soluble chloride ions added to the mix by the admixtures shall not exceed 0.3% by weight of cement. Provide admixture manufacturer's written certification of weight of added chloride ions per ounce for each admixture.
 - 1. Air-Entraining Admixture: ASTM C260.
 - 2. Water-Reducing Admixture: ASTM C494, Type A
 - 3. Mid-Range Water-Reducing Admixture (MRWR): ASTM C494, Type A or Type F
 - 4. Water-Reducing, Non-Chloride Accelerator Admixture: ASTM C494 Type E
 - 5. Water-Reducing, Retarding Admixture: ASTM C494, Type D

2.04 RELATED MATERIALS

- A. Moisture Barrier: Provide moisture barrier cover over prepared base material where indicated. Use only materials which are resistant to decay when tested in accordance with ASTM E154, as follows:
 - 1. Polyethylene sheet not less than 6 mils thick.
- B. Non-Shrink Grout: CRD-C 621, factory pre-mixed grout.
- C. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C309, Type I, Class A with % solids not less than 19%. Moisture loss not more than 0.03 gr./sq. cm. when applied at 300 square ft./gal.
- D. Bonding Compound: Polyvinyl acetate or acrylic base, rewettable type.
- E. Isolation joint (expansion joint):
 - 1. Provide preformed strips, non-extruding and resilient bituminous type, of thickness indicated, complying with ASTM D1751.
 - 2. If sealants specified in Section 07920 are used in the joints built under this Section, Contractor will provide a filler complying with ASTM D1752.

2.05 PROPORTIONING AND DESIGN OF MIXES

- A. Mix designs shall be prepared by personnel with KRMCA Level II Certification or equal. Prepare design mixes for each type and strength of concrete as follows:
1. Prepare concrete mixes, other than slab on grade concrete in accordance with ACI 301 Section 4.2.3
 2. Prepare slab on grade concrete mixes in accordance with ACI 302 Section 5.2.4 (Method B).
- B. Submit written reports to Architect/ Engineer of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Architect/ Engineer.
- C. Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules:
1. 3500 psi 28-day compressive strength
 2. 3000 psi 28-day compressive strength
 3. 1000 psi 28-day compressive strength - CLSM
 4. 500 psi 28-day compressive strength - CLSM
 5. 100 psi 28-day compressive strength - CLSM
- D. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner, and as accepted by Architect/ Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect/ Engineer before using in work.
- E. Admixtures:
1. Use water-reducing admixture or mid range water-reducing admixture in concrete as required for placement and workability. The use of a water-reducing admixture is required for slabs on grade.
 2. Use non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50 degrees F. (10 degrees C.).
 3. Use air-entraining admixture in exterior exposed concrete. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus-or-minus 1½% within following limits:
 - a. Concrete structures and slabs exposed to freezing and thawing or de-icer chemicals
5.5% 1-1/2" maximum aggregate.
6.0% 1" maximum aggregate.
6.0% 3/4" maximum aggregate.
 4. Use admixtures for water-reducing and set-control in strict compliance with

manufacturer's directions.

- F. Water-Cement Ratio: Water-Cement ratio shall not exceed 0.53.
- G. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
 - 1. Ramps, slabs, and sloping surfaces: 4 inches.
 - 2. Concrete containing a mid-range water-reducing admixture (MRWR): Not more than 6 inches after addition of MRWR to site verified 2 inch to 3 inch slump concrete.
 - 3. Other Concrete: 4 inches.
- H. Concrete Mixes:
 - 1. Ready-Mix Concrete: Comply with requirements of ASTM C94 and as herein specified. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required.
- I. Controlled Low Strength Material (CLSM):
 - 1. Controlled Low Strength Material (flowable fill): A low strength mixture consisting of portland cement, sand, class F fly ash and water.
 - 2. Design mixes shall comply with the recommendations of the Kentucky Ready-Mix Concrete Association.

PART 3 - EXECUTION

3.01 FORMS

- A. Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.
- B. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.
- C. Construct forms to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.
- D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.
- E. Provide temporary openings where interior area of formwork is inaccessible for cleanout,

for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

- F. Chamfer exposed corners and edges as indicated, using wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- G. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection, and to prevent spalling concrete surfaces upon removal. Unless otherwise indicated, provide ties so portion remaining within concrete after removal is 1" inside concrete and will not leave holes larger than 1" diameter in concrete surface.
- H. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses and chases from trades providing such items. Accurately place and securely support items built into forms.
- I. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Retighten forms and bracing after concrete placement as required to eliminate mortar leaks and maintain proper alignment.

3.02 PLACING REINFORCEMENT

- A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.
- C. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.
- D. Place reinforcement to obtain at least minimum coverages for concrete protection. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

3.03 JOINTS

- A. Construction Joints: Locate and install construction joints as indicated or, if not indicated, locate so as not to impair strength and appearance of the structure, as acceptable to Architect/ Engineer.
- B. Provide keyways at least 1/1-2" deep in construction joints in walls; keyways in

construction joints in slabs to follow ACI recommendations for keyed construction joints.

- C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise noted.
- D. Isolation (Expansion) Joints in Slabs-on-Grade: Construct isolation joints in slabs-on-grade at points of contact between slabs on grade and vertical surfaces, such as column pedestals, foundation walls, grade beams and elsewhere as indicated.
 - 1. Joint Filler and sealant materials are specified in Division 7 sections of these specifications.
- E. Contraction (Control) Joints in Slabs-on-Grade: Construct contraction joints in slabs-on-grade to form panels of patterns as shown.
 - 1. Contraction joints shall be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
 - 2. Joint sealant material is specified in Division 7 sections of these specifications.

3.04 INSTALLATION OF EMBEDDED ITEMS

- A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto.
- B. Position and secure in place all embed items before placing concrete in forms.

3.05 PREPARATION OF FORM SURFACES

- A. Clean re-used forms of concrete matrix residue, repair and patch as required to return forms to acceptable surface condition.
- B. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.
- C. Thin form-coating compounds only with thinning agent of type and in amount and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.
- D. Coat steel forms with a non-staining, rust-preventive form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

3.06 CONCRETE PLACEMENT

- A. Preplacement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.
- B. Coordinate the installation of joint materials, perimeter insulation and moisture barriers with placement of forms and reinforcing steel.
- C. General: Comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete" and as herein specified.
- D. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.
- E. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
- F. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with recommended practices.
- G. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.
- H. Maintain reinforcing in proper position during concrete placement operations.
- I. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified.
 - 1. When air temperature has fallen to or is expected to fall below 40 degrees F (4 degrees C.), uniformly heat water and/or aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees F (10 degrees C), and not more than 80 degrees F. (27 degrees C) at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt and other materials containing antifreeze agents or

chemical accelerators, unless otherwise accepted in mix designs.

- J. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 degrees F (32 degrees C). Mixing water may be chilled or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is Contractor's option.
 2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
 3. Fog spray forms, reinforcing steel and subgrade just before concrete is placed.
 4. Use water-reducing retarding admixture (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.

3.07 FINISH OF FORMED SURFACES

- A. Rough Form Finish: For formed concrete surfaces not exposed to view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.
- B. Smooth Form Finish: For formed concrete surfaces exposed to view or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, painting or other similar system. This is as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed.
- C. Smooth Rubbed Finish: Provide smooth rubbed finish to scheduled concrete surfaces, which have received smooth form finish treatment, not later than one day after form removal.
1. Moisten concrete surfaces and rub with carborundum brick or other abrasive until a uniform color and texture is produced. Do not apply cement grout other than that created by the rubbing process.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strikeoff smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.08 MONOLITHIC SLAB FINISHES

- A. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified.
1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or by hand-floating if area is small or inaccessible to power units. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
- B. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed to view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint or other thin film finish coating system.
1. After floating, begin first trowel finish operation using a power-driven trowel.
 2. Begin final troweling when surface produces a ringing sound as trowel is moved over surface.
 3. Consolidate concrete surface by final troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to the following tolerances:
Overall flatness and levelness: Ff 24, Fl 18
Minimum flatness and levelness: Ff 18, Fl 12
 4. Grind smooth surface defects which would telegraph through applied floor covering system.
- C. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply trowel finish as specified, then immediately follow with slightly scarifying surface by fine brooming.
- D. Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, steps and ramps and elsewhere as indicated.
1. Immediately after trowel finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect/ Engineer before application.

3.09 CONCRETE CURING AND PROTECTION

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
1. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing.
 2. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

- B. Curing Methods: Perform curing of concrete by moist curing, moisture-retaining cover curing, or curing and sealing compound as herein specified.
1. Moist curing: Provide moist curing by covering concrete surface with absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent covers.
 2. Moisture-retaining cover curing: Provide moisture-retaining cover curing by covering concrete surfaces and edges with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 3. Curing and sealing compound: Provide curing and sealing compound to interior slabs and to exterior slabs, walks, and curbs, as follows: Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Re-coat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
 4. Do not use membrane curing compounds on surfaces which are to be covered with coating material applied directly to concrete, liquid floor hardener, waterproofing, dampproofing, membrane roofing, flooring (such as ceramic or quarry tile, glue-down carpet), painting and other coatings and finish materials, unless otherwise acceptable to Architect/ Engineer.
- C. Curing Formed Surfaces: Cure formed concrete surfaces, by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing methods specified above, as applicable.
- D. Curing Unformed Surfaces: Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by application of curing and sealing compound unless otherwise noted.
1. Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover unless otherwise directed.

3.10 REMOVAL OF FORMS

- A. Formwork not supporting weight of concrete, such as sides of walls, piers, and similar parts of the work, may be removed after cumulatively curing at not less than 50 degrees F. (10 degrees C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

3.11 REUSE OF FORMS

- A. Clean and repair surfaces of forms to be reused in work. Split, frayed, de laminated or

otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.

- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Architect/ Engineer.

3.12 MISCELLANEOUS CONCRETE ITEMS

- A. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.
- B. Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated.
- C. Reinforced Masonry: Provide concrete grout for reinforced masonry lintels and bond beams where indicated on drawings and as scheduled. Maintain accurate location of reinforcing steel during concrete placement.

3.13 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect/ Engineer.
 - 1. Cut out honeycomb, rock pockets, and voids over 1/4" in any dimension, down to solid concrete but, in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water and brush-coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.
- B. For exposed to view surfaces: Blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- C. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect/ Engineer. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on surface; and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.
- D. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.
- E. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for

smoothness and verify surface plane to tolerances specified for each surface and finish. Correct high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness using a template having required slope.

- F. Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.015" wide, spalling, pop-outs, honeycomb, rock pockets and other objectionable conditions.
- G. Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.
- H. Repair defective areas, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Fill areas with concrete repair mortar. Place, compact and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- I. Repair isolated random cracks and single holes not over 1" in diameter with concrete repair mortar. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix repair mortar in accordance with manufacturers printed instructions. Place repair mortar after bonding compound has dried. Finish to match existing concrete. Keep patched area continuously moist for not less than 72 hours.
- J. Perform structural repairs with prior approval of Architect/ Engineer for method and procedure, using specified epoxy adhesive and mortar.
- K. Repair methods not specified above may be used, subject to acceptance of Architect/ Engineer.

3.14 QUALITY CONTROL TESTING DURING CONSTRUCTION

- A. The owner will engage a testing laboratory to perform and report compressive strength tests. All concrete sampling and testing shall be performed by an ACI certified level 1 technician.
- B. Sampling and testing for quality control during placement of concrete will include the following:
 - 1. Sampling Fresh Concrete: ASTM C172.
 - 2. Slump: ASTM C143: one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
 - 3. Air Content: ASTM C173, volumetric method for lightweight or normal weight concrete; ASTM C231 pressure method for normal weight concrete; one for each day's pour of each type of concrete.
 - 4. Concrete Temperature: Test hourly when air temperature is 40 degrees F (4 degrees C)

and below, and when 80 degrees F (27 degrees C) and above; and each time a set of compression test specimens is made.

5. Compression Test Specimen: ASTM C31; one set of 3 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
 6. Compressive Strength Tests: ASTM C39; one set for each day's pour exceeding 5 cubic yards plus additional sets for each 100 cubic yards over and above the first 50 cubic yards of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days. When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.
- C. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive by more than 500 psi.
- D. Test results will be reported in writing to Architect/ Engineer and Owner within 24 hours that tests are made. Reports of compressive strength tests will contain the project identification name and number, date of concrete placement, slump and temperature at time of sampling, name of concrete testing service, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but will not be used as the sole basis for acceptance or rejection.
- F. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by the Architect/ Engineer. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

END OF SECTION

SECTION 03354

POLISHED CONCRETE FINISHING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Grinding and honing of the slab surface to receive clear reactive, penetrating liquid hardener/densifier to interior concrete.
2. Application of clear reactive, penetrating liquid hardener.
3. Progressively polishing and burnishing of the slab surface to achieve Finish Requirements.
4. Application of stain resistant surface treatment.

B. Related Requirements:

1. Section 01 25 0- Substitution Procedures.
2. Section 01 33 0- Submittal Procedures.
3. Section 01 60 0- Product Requirements.
4. Section 03 30 0- Cast-in-Place Concrete.
5. Section 07 90 0- Joint Sealants.

1.02 REFERENCES

A. The date of the standard that is in effect is the date of receipt of bids for the project.

B. American Concrete Institute (ACI) – Specification for Polished Concrete Slab Finishes ACI 310.1-20.

C. American National Standard Institute / National Floor Safety Institute

1. ANSI/NFSI B101.1 Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials.
2. ANSI/NFSI B101.3-Test Method for Measuring Wet DCOF of Common Hard-Surface Floor Materials.

D. American Society of Concrete Contractors (ASCC).

ASTM International (ASTM):

1. C1353 – Standard Test Method for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic Using a Rotary Platform, Double-Head Abraser
2. D523- Standard Test Method for Specular Gloss.
3. D1308 - Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.
4. D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
5. E96/96M Method B (Water Method) - Standard Test Methods for Water Vapor Transmission of Materials.
6. G154 -Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Meeting: Convene before the start of work on new concrete slabs or patching of existing concrete slabs and start of application of concrete finish system.
 - 1. Require attendance of parties directly affecting work of this Section, including the Owner's Representative, Contractor, Architect, concrete installer, and applicator. Meeting should only convene when required parties are present.
 - 2. Review the following:
 - a. Physical requirements of completed concrete slab and slab finish.
 - b. Locations and time of test areas.
 - c. Protection of surfaces not scheduled for finish application.
 - d. Surface preparation.
 - e. Application procedure.
 - f. Quality control.
 - g. Cleaning.
 - h. Protection of finish system.
 - i. Coordination with other work.

1.04 SUBMITTALS

- A. Product Data:
 - 1. Submit manufacturer's product data sheets and tested physical and performance properties on products to be used for the work.
- B. VOC Certification: Submit certification that products furnished comply with regulations controlling use of volatile organic compounds (VOC).
- C. Certificates:
 - 1. Certificates by manufacturer stating that installer is listed applicator of special concrete finishes, and has completed the necessary training programs.
- D. Floor Protection Plan.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Concrete Polishing Council (CPC) Craftsman Supervisor or equivalent on site during work.
 - 2. Applicator to be familiar with the specified requirements and the methods needed for proper performance of work of this section. Applicator must have availability of proper equipment to perform work within scope of this project on a timely basis. Applicator should have successfully performed a minimum of 5 projects of similar scope and complexity.
- B. Mock-up: On-site, prior to the start of the polished concrete finishing process.
 - 1. Require attendance of parties directly affecting work of this Section, including the Contractor, Architect, applicator, and Owner's Representative.
 - 2. Notify the above parties one week in advance of date and time when mock-up will be completed.
 - 3. Demonstrate the materials, equipment and application methods to be used for work specified herein in a pre-approved location approximately 50 sq. ft. in area or as directed by Architect or Owner's Representative.

4. Retain approved mock-up during construction as a standard for judging the completed work. Areas may remain as part of the completed work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original containers, with seals unbroken, bearing manufacturer labels indicating brand names and directions for storage.
- B. Store concrete hardener/densifier and surface protectant treatment in environment recommended on published manufacturer's product data sheets.
 1. Store containers upright in a cool, dry, well-ventilated place, out of the sun, with temperature between 40 and 100 degrees Fahrenheit.
 2. Protect from freezing.
 3. Store away from other chemicals and potential sources of contamination.
 4. Keep lights, fire, sparks, and heat away from containers.
 5. Do not drop containers or slide across sharp objects.
 6. Do not stack pallets more than three high.
 7. Keep containers tightly closed when not in use.

1.07 FIELD CONDITIONS

- A. Environmental limitations:
 1. Comply with manufacturer's written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation, and other conditions affecting performance and finishing requirements.
- B. Close areas to traffic during floor application and after application for time period recommended in writing by manufacturer.
- C. Protect the completed slab to prevent damage by the other trades during floor completion.
- D. Temperature Limitations:
 1. Apply when surface and air temperature are between 40 and 90 degrees Fahrenheit unless otherwise indicated by manufacturer's written instructions.
 2. Apply when surface and air temperatures are expected to remain above 40 degrees Fahrenheit for a minimum of 8 hours after application unless otherwise indicated by manufacturer's written instructions.
- E. Apply when air conditions are calm to minimize surface treatment contacting surface not intended to be finished.
- F. Do not apply to frozen substrate. Allow adequate time for substrate to thaw if freezing conditions exist before application.
- G. Apply a minimum of 24 hours after rain event. Suspend application when rain is anticipated for a period of 8 hours after application, unless otherwise indicated by manufacturer's written instructions.
- H. Temporary Heat: Ambient temperature of 50 degrees Fahrenheit minimum.

- I. Ventilation: Provide adequate ventilation in confined or enclosed areas in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Substitutions: In accordance with Section 01 25 0 – Substitution Procedures.

2.02 MATERIALS

- A. Penetrating Concrete Hardener/Densifier: Lithium silicate hardener/densifier.
 1. Product: Consolideck LS, manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.
 2. Subject to compliance with the following requirements:
 - a. Comply with national, state and district AIM VOC regulations and contain 50 g/L or less.
 - b. Registered as an approved NSF International/Nonfood Compound Registration.
 - c. Abrasion Resistance: Greater than 50 percent improvement over untreated samples when tested in accordance with ASTM C1353.
 - d. Achieve 'High Traction Range' readings when tested in accordance with ANSI B101.1 and ANSI B101.3.
 - e. Adhesion: Greater than 10 percent increase in pull-off strength when compared to an untreated sample when tested in accordance with ASTM D4541.
 - f. Water Vapor Transmission: 100 percent retained when compared to untreated samples when tested in accordance with ASTM E96/96M Method B (Water Method).
 - g. UV Stability: No degradation or yellowing of material when tested in accordance with ASTM G154.
- B. Interior Concrete Protective Treatments:
 1. General Purpose semi-gloss film forming premium sealer, lithium silicate hardener/densifier.
 - a. Product: Consolideck LSGuard, manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.
 - b. Subject to compliance with the following requirements:
 - i. Comply with national, state and district AIM VOC regulations.
 - ii. Registered as an approved NSF International/Nonfood Compound Registration.
 - iii. Achieve 'High Traction Range' readings when tested in accordance with ANSI B101.1 and ANSI B101.3.
 - iv. Adhesion: Greater than 10 percent increase in pull-off strength when compared to an untreated sample when tested in accordance with ASTM D4541.
 - v. Stain Resistance: Achieve limited or no adverse effects when tested in accordance with ASTM D1308
 - vi. UV Stability: No degradation or yellowing of material when tested in accordance with ASTM G154.

2.03 EQUIPMENT

- A. Conform to ACI 310.1 Part 2.2, except where more stringent requirements are specified below.
- B. Auto Scrubber Machine: For cleaning operations.
- C. Hand Grinder or stand-up edger for edge grinding/polishing.
- D. Grinding/Polishing Equipment:
 - 1. Dry grinding/polishing machines shall include a dust extraction system, including HEPA filtration vacuum.
- E. Diamond Segments:
 - 1. Use heads from the same manufacturers throughout the entirety of the project.
- F. Diamond Heads Types:
 - 1. Metal Diamonds: 80 or 150.
 - 2. Hybrid Style Diamonds: 50 or 100.
 - 3. Resin Bonded, Phenolic Diamonds: 100, 200, 400, and 800.
- G. Burnishing Machine and Burnishing Pads to produce specified results.
 - 1. Burnishing Machine: High speed burnisher, generating pad speeds of 1,500 RPM or higher, as recommended by protective treatment manufacturer. Dust skirt must be installed at time of work.
 - 2. Burnishing Pads: as recommended by protective treatment manufacturer.
 - a. White Burnishing Pad, non-abrasive.
 - b. Consolideck Heat Pad manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrate with installer present for conditions affecting performance of finish. Correct conditions detrimental to timely and proper work. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.02 PREPARATION

- A. Clean dirt, dust, oil, grease and other contaminants that interfere with penetration or performance of specified product from surfaces. Use appropriate concrete cleaners approved by the concrete surface treatment manufacturer where necessary. Rinse

thoroughly using pressure water spray to remove cleaner residues. Allow surfaces to dry completely before application of product.

- B. Repair, patch and fill cracks, voids, defects and damaged areas in surface as approved by the Architect. Allow repair materials to cure completely before application of product.
- C. Variations in substrate texture and color will affect final appearance and should be corrected prior to application of sealer/hardener system and the polishing steps.
- D. Protect surrounding areas prior to application. If product is accidentally misapplied to adjacent surfaces, flush with water immediately before material dries.
- E. Avoid contact in areas not to be treated. Avoid contact with metal, glass and painted surfaces.
- F. Seal open joints in accordance with Section 07 90 0.
- G. Apply specified sealants and caulking and allow complete curing before application of penetrating concrete hardener/densifier.
- H. Do not proceed until unsatisfactory conditions have been corrected.

3.03 CONCRETE GRINDING, HONING, AND POLISHING

- A. Adhere to industry standard and conform to ACI 310.1 for grinding, honing, and polishing procedures for dry and wet grinding and honing, except where more stringent requirements are specified below.
- B. Scrub and rinse slab surface with clean water and vacuum with auto-scrubber between and after final passes.
- C. Sequential progression of diamond tooling steps shall be required and limited to no more than double the grit value of the previous diamonds used.
- D. Overlap adjacent passes by 25 percent.
- E. Perform each pass perpendicular to the other pass north/south then east/west; multiple passes may be needed.
- F. Progressively grind, hone and polish the slab surface utilizing approved diamond segments as necessary to produce Finishing requirements.

3.04 APPLICATION OF PENETRATING CONCRETE HARDENER/DENSIFIER

- A. Apply hardener/densifier at the rate of 500 to 700 square feet per gallon with a low pressure sprayer fitted with a 0.5 gpm spray tip. (Typically after 200-grit and no later than 400 grit).
- B. Apply sufficient material to keep concrete surface wet for 5 to 10 minute period, without producing puddles.
- C. Allow treated surface to dry.
- D. Continue progressively polishing floor with required resin diamonds as necessary to produce desired final finish.

3.05 APPLICATION OF INTERIOR CONCRETE PROTECTIVE TREATMENT

- A. Application of general purpose, semi-gloss protective treatment:
 - 1. Apply per manufacturer's published recommendations to clean, dry slab at the completion of mechanically polishing the slab surface.
 - 2. Lightly wet a clean microfiber pad with protective treatment and wring out excess, leaving the pad damp.
 - 3. Working from one control joint to another, apply a light, fine spray of protective treatment to a small section of the floor using a clean, pump-up sprayer fitted with a 0.5 gpm spray tip, at an estimated coverage rate of 2000 to 3000 square feet per gallon.
 - 4. Using the damp microfiber pad and firm downward pressure, immediately spread the protective treatment to produce a thin, even coating. Spread the product as far as possible while maintaining a wet edge. Properly applied, protective treatment dries quickly. Stop spreading once drying begins. Avoid overlapping.
 - 5. Allow to dry tack free, typically 20 to 60 minutes.
 - 6. Once dry, high- speed burnish slab surface fitted with manufacturer recommended burnishing pad to increase gloss and to help the treatment fuse and bond with the concrete for increased durability and longevity. Surface temperatures immediately behind the burnisher must achieve 90.5 degrees Fahrenheit. (Burnish between coats if multiple applications are desired.)
 - 7. Repeat above steps 1 through 6, as necessary for additional applications of protective treatment, to achieve desired final finish (Maximum 3 coats).

3.06 SLAB PROTECTION

- A. Comply with provisions of ACI 310.1 specification for slab protection, except where more stringent requirements are specified below.
- B. Protect finished floors to prevent damage including staining, gouges and scratching by construction traffic and activities until possession.
- C. Do not drag or drop equipment or material across the slab which will scratch or chip it.

- D. Inspect tires for debris prior to use on slab. Remove embedded items which may cause damage to floor slab.
- E. Clean up spills on slab immediately. Provide cleaning chemicals and absorptive materials.
- F. Develop a concrete protection procedure which addresses the following procedures:
 - 1. Communication of protection plan to subcontractors and vendors.
 - 2. Procedures for cleaning up slab spills, including use of and availability of cleaning chemicals and absorptive materials at Site.
- G. Provide a clean slab surface using concrete maintenance cleaner within an auto scrubber, equipped with soft nylon brushes, in accordance with manufacturer's published recommendations.

3.07 FINISHING REQUIREMENTS

- A. Appearance:
 - 1. Interior exposed finished slab areas must consist of the following:
 - a. Slab surface must meet the desired sheen, as discussed in Pre-Installation meeting and be consistent with approved Mock-up.
 - b. Slab surface must have a consistent look and exhibit a finish that has no evidence of streaking or burnish marks.
 - c. White residue or hazy appearance is not acceptable.
 - d. Exposure of aggregate ACI 310.1 Table 3.2.3.1, Aggregate Exposure Class B-Fine Aggregate.
 - 2. Interior exposed finished slab areas must consist of the following CPAA Gloss Level:
 - a. Interior exposed finished slab areas must meet the ACI 310.1 Table 3.2.4.1- Appearance levels for distinctness of image (DOI) Level 2.

END OF SECTION

Division IV

Masonry

SECTION 04200 - UNIT MASONRY

PART 1 - GENERAL

- A. This Section includes all labor, materials, equipment, and related items required for the work of unit masonry as shown on the Drawings and as specified.

PART 2 - PRODUCT HANDLING

- A. Store all masonry units on screeds and under cover to properly protect from the elements until ready for use. Dirty, cracked, chipped, or otherwise damaged masonry units shall not be used.

PART 3 - ENVIRONMENTAL CONDITIONS

- A. Masonry shall not be laid in freezing weather unless suitable means are used to heat the materials and protect the work from cold and frost, and to ensure that the mortar will properly harden without freezing.

PART 4 - PROTECTION

- A. The Contractor shall protect exposed masonry materials of every kind against staining, and the tops of all walls shall be kept covered with non-staining waterproof covering at the end of each work day and at any time the work thereon is not in progress. When starting or resuming work at a new level, the top surface of the work in place shall be cleaned of all loose mortar and foreign materials and in drying weather thoroughly wetted with clean water. Then resume laying.

PART 5 - MATERIALS

- A. Masonry Units:

1. Calcium Silicate Building Stone Units: to ASTM C73, Grade SW; solid units that have been pressure formed and autoclaved; special shapes as indicated; three-size configuration; as follows:

Modular Sizes:

OC22: 2-1/4" high x 23-5/8" long x 3-13/16" deep

OC35: 3-5/8" high x random long x 3-13/16" deep

OC47: 4-7/8" high x random long x 3-13/16" deep

2. Texture: rugged chiseled finish on exposed faces.

Provide all special matching units for applications were indicated by the details or required, including sill units. Units shall conform to details and dimensions shown on the Drawings and finished surfaces shall be indistinguishable from those of building stone units specified above.

B. Masonry Wall Reinforcement:

1. Provide all prefabricated internal or external corners required by installation.

C. Anchors and ties shall be of corrosion resistant metal equal in strength, size and numbers to conform with requirements of American standard A41.1 titled American Standard Building Code Requirements for Masonry.

1. Brick wall ties. crimped wall ties for anchorage of masonry to backing in metal stud frame shall be crimped galvanized metal 22 gauge, 7/8" wide x 7" long.

PART 6 - LAYING MASONRY

A. Examination: Verify site conditions are ready to receive work. Inspect materials for fit and finish prior to installation. Do not set unacceptable units. Beginning of installation means acceptance of existing conditions.

B. Cutting Masonry Units: Cut masonry units to length with a masonry splitter. Dress split end to match face when exposed in wall.

C. Wetting Masonry Units: Where the ambient air temperature exceeds 100°F or exceeds 90°F with a wind velocity greater than 8 mph, pre-wet building stone units. Lay wetted units when surface dry.

D. Coursing: Place masonry to lines and levels indicated. Lay building stone units in random bond pattern, to the following percentage ratio, described from smallest to largest sized units: [40:40:20]. Maintain mortar joint thickness of 3/8 inch.

E. Placing and Bonding: Lay masonry in full bed of mortar, properly jointed with other work. Buttering corners of joints, deep or excessive furrowing of mortar joints are not permitted. Fully bond intersections, and external corners. Do not adjust masonry units after laying. Where resetting of masonry is required, remove, clean units and reset in new mortar.

F. Control Joints. Provide continuous 3/8" wide vertical control joints in exterior face brick were indicated by cutting half-brick closures in alternate courses, omitting mortar continuously in the joint. Control joints shall fall at normal head joint locations and shall be absolutely plumb so as to be inconspicuous in the finish work. Caulking of control joints is specified under Section 07900.

G. Weeps. Provide weep holes in exterior brick wall surfaces in all joints containing through wall membrane flashing at spacing shown on the Drawings. Weeps shall be made by laying 3/8" cotton cords at required locations. Cords shall be treated for withdrawal from joints cleanly after mortar has set.

H. Workmanship. The Contractor is cautioned that the Architect will demand first class workmanship. All masonry shall be performed by experienced masons. Any chipped, cracked, or otherwise damaged or defective work will be rejected.

PART 7 - THROUGH-WALL MEMBRANE FLASHING

- A. Install plastic through-wall membrane flashing continuously in horizontal joints of exterior walls, at window openings, etc. were shown on the Drawings. Installation shall be in strict accordance with manufacturer's printed instruction. Flashings shall extend generally from within 1/2" of exterior wall face through the wall as detailed.
- B. Where laps occur, lap sheets at least 6" and seal with cold setting cement. Roll to insure full adhesion.
- C. At obstructions, carry flashing up 6" and secure with cold setting cement.
- D. Where ties or anchors, conduit, etc. penetrate through sheet, punctures shall be made minimum size possible and mastic troweled around place to thoroughly seal the puncture.
- E. At lintels and shelf angles, flashings shall extend minimum of 6" beyond ends of lintels.

PART 8 – ADJUSTING AND CLEANING

- A. Clean as directed below and leave for one week. If no harmful effects appear, all objectionable stains removed and after mortar has set and cured, clean masonry as follows:
 - .1 Protect windows, sills, doors, trim and other work from damage.
 - .2 Remove large particles with stiff fiber brushes without damaging surface.
 - .3 Saturate masonry with clean water and flush off loose mortar and dirt.
 - .4 Dilute cleaning agent with clean water in controlled proportions.
 - .5 Apply solution to pre-soaked wall surface using soft-bristled brush.
 - .6 Thoroughly rinse cleaning solution and residue from wall surface.
- B. Use alternative cleaning solutions and methods for difficult to clean masonry only after consultation with masonry unit manufacturer.
- C. Protect units from damage resulting from subsequent construction operations. Use protection materials and methods which will not stain or damage units. Remove protection materials upon Substantial Performance of the Work, or when risk of damage is no longer present.

End of Section

Division V Metals

SECTION 05400 - LIGHT GAUGE METAL FRAMINGS

PART 1 - SCOPE

- A. Work under this section includes light gage steel studs, framing members, joist, purling's and related accessories as indicated on Drawings and specified herein.

1.01 STANDARDS:

- A. Work shall meet the requirements of the following standards.
 - 1. American Iron and Steel Institute (A.I.S.I.) Design of Cold Formed Steel Structural Members, 1980
 - 2. American Welding Society (A.W.S.) D.1.3., 1981 Structural Welding Code - Sheet Steel.
 - 3. American Society for Testing and Materials (A.S.T.M.)
 - 4. American Institute of Steel Construction (A.I.S.C.) Manual of Steel Construction, 8th Edition.
 - 5. All pertinent Federal, State and local codes.
- B. The most stringent requirements shall govern in conflicts between specified codes and standards.

1.02 SUBMITTALS:

- A. Prior to framing fabrication, submit formal fabrication and erect shop drawings for Architect's approval.
- B. Shop Drawings shall indicate:
 - 1. All member gages, spacings and sizes.
 - 2. Shop and field assembly details including cut and connections.
 - 3. Type and location of welds, bolts and fastening devices.

PART 2 - MATERIALS

- A. All studs and/or joists and accessories shall be of the type, size, gauge and spacing shown on the drawings, and shall be manufactured by United States Gypsum Company, Milcor Division of Inryco, Inc. or equal.

- B. All structural members shall be designed in accordance with American Iron and Steel Institute (AISI) "Specification for the Design of Cold-Formed Steel Structural Members," edition.
- C. All framing members shall be formed from corrosion-resistant steel, corresponding to the requirements of ASTM A446, with a minimum yield strength of 40 ksi for SJ and CS-style studs, 33 ksi for CR-runners.
- D. Fabrication:
 - 1. Framing components may be preassembled into panels prior to erecting. Prefabricated panels shall be square, with components attached in a manner as to prevent racking. Members shall be held positively in place until properly fastened.
- E. Prefabricated panels shall be square with components attached in a manner as to prevent racking and to minimize distortion while lifting.
- F. All framing components shall be cut squarely for attachment to perpendicular members, or, as required for an angular fit against abutting members.
- G. Axially loaded studs shall be installed in a manner which will assure that their ends are positioned against the inside of runner web prior to fastening.
- H. Insulation equal to that specified elsewhere shall be provided in all doubled jamb studs and doubled headers not accessible to insulation contractors.
- I. Fastening of components shall be with self-drilling screws or welding. Screws shall be of sufficient size to insure the strength of the connection. Wire tying of components shall not be permitted. All welds shall be touched up with a zinc-rich paint.

PART 3 - EXECUTION

- A. Inspection shall be for proper size to ensure members are not bent or in poor condition.
- B. Product Handling:
 - 1. Upon delivery, material shall be protected from rain and snow by impervious covering or shelter.
- C. Trusses shall be securely anchored to the supporting structure as shown on the drawings.

END OF SECTION

SECTION 05500 - MISCELLANEOUS METALS

PART 1 - SCOPE

- A. This Section includes the furnishing and installation of all miscellaneous metal items required for the project as shown on the Drawings and specified herein.

PART 2 - COORDINATION

- A. Coordinate furnishing of items specified hereunder with work of other trades so that progress of related work is not delayed.
- B. Take field measurements at the job as necessary to insure fit.

PART 3 - MATERIALS

- A. Stock or manufacturer's standard items shall be as described under individual item specifications hereunder.
- B. Fabricated items, made especially for this project, shall meet general materials specifications as listed hereunder. Materials shall be of the type, class, temper, etc., which best suit intended uses.
 - 1. Steel shall conform to ASTM Specification A-7 or A-36 for structural steel. Architectural and miscellaneous steel not otherwise indicated or specified shall be mild steel.

Shop Drawings and Data: Show complete details and instructions for fabrication, assembly, and installation. Locate anchor bolts required for installation in other work.

Inserts and Anchorages: Furnish inserts and anchoring devices to be built into other work for installation of miscellaneous metal items.

Steel Plates, Shapes, Bars: ASTM A 36

Tubular Steel Items: Square and rectangular, ASTM A 501; pipe, ASTM A 120.

Cold-Rolled Steel Sheets: ASTM A 366.

Galvanized Steel Sheets: ASTM A 526, with ASTM A 525 G90 zinc coating.

Concrete Inserts: Malleable iron (ASTM A 47) or cast steel (ASTM A 27) inserts, with steel bolts, washers and shims; hot dip galvanized.

Shop Paint: FS TT-P-86, Type 2; or, SSPC-Paint 14. Apply to prepared steel surfaces at rate to provide a 2.0-mil dry film thickness.

Galvanizing: ASTM A 386 for assembled products; A 153 for iron and steel hardware.

Fabrication, General: Use materials of size and thickness shown. Shop-paint all items not specified to be galvanized after fabrication.

Curb Edge Bars: Fabricate of shapes as shown; miter corners and weld joints. Provide anchors 6" from ends of corners and 24" o.c.

Loose Bearing Plates: Provide for steel items bearing on masonry or concrete, as shown. Drill plates to receive anchor bolts.

Miscellaneous Framing and Supports: Provide as required to complete work and not included with structural steel framework.

Steel Pipe Railings: Fabricate to dimensions shown, with smooth bends and welded joints. Use 1-1/2" steel pipe unless otherwise shown.

Installation: Perform cutting, drilling, and fitting required for installation; set work accurately in location, alignment and elevation, measured from established lines and levels. Provide anchorage devices and fasteners where necessary for installation to other work.

PART 4 - SHOP PAINTING AND PROTECTIVE COATING

- A. All ferrous metal shall be properly cleaned and given one shop coat of red lead, zinc chromate, or other approved rust resisting paint. Anchors that are built into masonry or concrete shall be coated with asphalt paint unless specified to be galvanized. Where galvanized or zinc coated metal is required, it shall not be shop primed unless specifically called for, but all abraded places and welding shall be touched up with aluminum paint. No prime coat is required for non-ferrous metal.
- B. Where hot-dip galvanized or hot zinc coating is specified, it shall be done in accordance with the Standard Specifications of the American Hot Dip Galvanizers Association.

PART 5 - FASTENINGS

- A. Welding. Perform all welding in accordance with American Welding Society publication AWS D1.0, latest edition with current supplements and addenda.
 - 1. Welds shall be made only by operators experienced in performing the type work indicated.
 - 2. Welds normally exposed to view in the finished work shall be uniformly made and ground smooth.

3. Where welding is done in proximity to glass or finished surfaces, such surfaces shall be protected from damage due to weld sparks or spatter.
- B. Bolted Screwed, and Riveted Connections. In general, use bolts for field connections only as directed. Provide washers under all heads and nuts bearing on wood. Draw all nuts tight and nick threads of permanent connections to prevent loosening. Use beveled washers where bearing is on sloped surfaces.
1. Where screws must be used for permanent connection in ferrous metal, use flat head type, countersunk.
 2. Where rivets are used, they shall be machine driven, tight, heads centered, countersunk and finished flush and smooth.

PART 6 - MISCELLANEOUS ITEMS

- A. Anchoring Devices. Furnish all miscellaneous metal anchoring devices required to be built into concrete or masonry or welded to steel framing members for anchorage of collateral work which are not specified to be furnished under other sections of the Specifications. Items include, but are not necessarily limited to the following:
1. Anchor bolts for miscellaneous anchorage built into concrete or masonry not furnished under work of structural steel shall be hex-head steel machine bolts of sizes shown in the details, shall conform to ASTM A354, and shall be furnished with nuts and plate washers of size to suit the particular application.
- B. Loose Lintels. Furnish all loose steel angle and/or plat lintels not furnished as part of structural steel under work of Section 05120 as required for support of masonry over openings. Members shall be of sizes shown, and, unless otherwise indicated, shall have minimum bearing at each end of 8".

End of Section

Division VI
Wood and Plastic

SECTION 06100 - ROUGH CARPENTRY

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 work of this section.

1.02 Description of Work

- A. Definition: Rough carpentry includes carpentry work not specified as part of other sections and which is generally not exposed, except as otherwise indicated.
- B. Types of Work in this Section include rough carpentry for:
 - 1. Wood grounds, nailers and blocking.
 - 2. Wood furring.
 - 3. Plywood backing panels.
- C. Architectural woodwork is specified in another section within Division 6.
- D. Comply with provisions of Section 01028 - Modification Requirements.

1.03 Submittals

- A. Wood Treatment Data: Submit chemical treatment manufacturer's instructions for handling, storing, installation and finishing of treated material.
 - 1. Preservative Treatment: For each type specified, include certification by treating plant stating type of preservative retained and conformance with applicable standards.
 - 2. For water-borne treatment, include statement that moisture content of treated materials was reduced to levels indicated prior to shipment to project site.
 - 3. Fire-Retardant Treatment: Include certification by treating plant that treatment material complies with specified standard and other requirements.

1.04 Product Handling

- A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks and under temporary coverings including black polyethylene and similar material.
 - 1. For lumber and plywood pressure treated with waterborne chemicals, sticker between each course to provide air circulation.

1.05 Project Conditions

- A. Coordination: Fit carpentry work to other work, scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow attachment of other work.

PART 2 - PRODUCTS

2.01 Lumber General

- A. Lumber standards: Manufacture lumber to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.
- B. Inspection Agencies: Inspection agencies and the abbreviations used to reference with lumber grades and species include the following:
 - 1. NLGA - National Lumber Grades Authority
 - 2. SPIB - Southern Pine Inspection Bureau
 - 3. WGLIB - West Coast Lumber Inspection Bureau
 - 4. WWPA - Western Wood Products Association
- C. Grade Stamps: Factory - mark each piece of lumber with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
- D. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
 - 1. Provide dressed lumber, S4S, unless otherwise indicated.
 - 2. Provide seasoned lumber with 19% maximum moisture content at time of dressing and shipment for sizes 2" or less in nominal thickness, unless otherwise indicated.

2.02 Dimension Lumber

- A. Provide wood for support or attachment of other work including bucks, nailers, blocking, furring, grounds, stripping and similar members. Provide lumber of sizes indicated, worked into shapes shown, and as follows:
 - 1. Moisture content: 19% maximum for lumber items not specified to receive wood preservative treatment.
- B. Grade: Standard Grade light framing size lumber of Spruce-Pine-Fir graded under WWPA, or Southern Pine graded under S.P.B. rules.

2.03 Plywood

- A. Trademark: Factory-mark each construction panel with APA trademark evidencing compliance with grade requirements.
- B. Plywood Backing Panels: For mounting electrical or telephone equipment, provide fire-retardant treated plywood panels with grade designation, APA C-D PLUGGED INT with exterior glue, in thickness indicated, or, if not otherwise indicated, not less than $\frac{3}{4}$ ".

2.04 Miscellaneous

- A. Fasteners and Anchorages: Provide size, type, material, and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, screws, bolts, nuts, washers, and anchoring devices. Provide metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommend nails. Supplement fasteners for fascia framing with Simpson or Teco galvanized metal connectors as required.
 - 1. Where rough carpentry work is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners and anchorages with a hot-dip zinc coating (ASTM A153).
- B. Building Paper: ASTM D226, Type I; asphalt saturated felt, non-perforated, 15 lb. type.

2.05 Wood Treatment by Pressure Process

- A. Preservative Treatment: Where lumber or plywood is indicated as "Trt-Wd" or "Treated," or is specified herein to be treated, comply with applicable requirements of AWWA Standards C2 (Lumber and C9 Plywood) and of AWPB Standards listed below. Mark each treated item with the AWPB Quality Mark Requirements.
- B. Complete fabrication of treated items, prior to treatment, where possible. If cut after treatment, coat cut surfaces with heavy brush coat of same chemical used for treatment and to comply with AWWA M4. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.
- C. Fire-Retardant Treatment: Where fire retardant treated wood ("FRTW") is indicated, pressure impregnate lumber and plywood with fire-retardant chemicals to comply with AWWA C20 and C27, respectively, for treatment type indicated below; identify "FRTW" lumber with appropriate classification marking of Underwriters Laboratories, Inc., U.S. Testing, Timber Products Inspection or other testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Provide a 4' x 4' sheet for phone/data equipment.

PART 3 - EXECUTION

3.01 Installation, General

- A. Discard units of material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement.
- B. Set carpentry work to required levels and lines, with members plumb and true and accurately cut and fitted.
- C. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards.
- D. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

3.02 Wood Grounds, Nailers, and Blocking

- A. Provide wherever shown and where required for screening or attachment of other work. Form to shapes as shown and cut as required for true and level of work to be attached. Coordinate location with other work involved.
- B. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise shown. Build into masonry during installation of masonry work. Where possible, anchor to form work before concrete placement.

3.03 Plywood Panels

- A. General: Comply with applicable recommendations contained in Form No. E 30D "APA Design/Construction Guide - Residential & Commercial," for types of construction panels and applications indicated.

END OF SECTION

SECTION 06400 - PLASTIC LAMINATE CASEWORK AND COUNTERTOP'S

PART 1 - DESCRIPTION

- A. Furnish and install plastic laminate casework and countertops as shown on the drawings and specified herein.
- B. Work included:
 - 1. Casework - plastic laminate faced.
 - 2. Plastic laminate covered countertops for wood and laminate casework.
 - 3. Plastic laminate covered shelves.
 - 4. Standard hardware and accessories.
 - 5. Plastic laminate window stools throughout building at exterior windows as detailed.
- C. Related work specified elsewhere:
 - 1. Rough carpentry: Section 6100
 - 2. Finish carpentry: Section 6200
 - 3. Gypsum Drywall: Section 9250
 - 4. Resilient base: Section 9650
 - 5. Mechanical work: Division 15
 - 6. Electrical work: Division 16
 - 7. Metal casework: Section 11600

PART 2 - QUALITY ASSURANCE

- A. Custom plastic laminate faced casework shall match in design, material, finish and detail the stock plastic laminated casework. The materials, workmanship and installation of all casework provided under this section shall be the responsibility of this contractor.
 - 1. The contractor providing the work described herein, may be a custom casework contractor with a casework manufacturer as a subcontractor/supplier; or a stock casework with a custom casework manufacturer as a subcontractor/supplier.
- B. Any casework manufacturers requesting approval shall provide to architect, all information and specifications of the products they wish to use in bidding, ten days prior to bid date. Approval will be contingent upon whether the products meet the required specifications.
- C. The architect reserves the right to disapprove any subcontracting fabricator proposed for this project. The casework contractor shall submit to the architect, prior to fabrication, a letter signed by a responsible officer of the fabricator indicating satisfactory evidence of having completed comparable work for the past five years on similar projects utilizing equipment, methods and workmanship meeting the standards specified in this section.
- D. If requested by the architect, manufacturers requesting approval shall submit full size production line samples of the following units at least ten days prior to bid opening.
 - 1. One cabinet base unit, 36" wide with door and drawer, complete with laminate top to fit.

E. Reference standards:

1. Architectural Woodworking Institute (AWI) "Quality Standards".
2. National Electrical Manufacturers Association (NEMA) "LD 1 thru LD3" High Pressure Decorative Laminates.
3. Federal Specifications (FS) "LLL-H-00810: Building Board (Hardboard), Hard Pressed, Vegetable Fiber".
4. American National Standard (ANSI) A208.1-79 "Mat-Formed Wood Particleboard".
5. Commercial Standards (CS) "C.S. 35: Adhesives".

PART 3 - SUBMITTALS

- A. Certifications: Letter of subcontractor's qualifications and experience within the past five years and references of work completed.
- B. Color Selection: Complete range of color, textures and patterns of the proposed plastic laminate manufacturer, based upon the preliminary color selections listed hereinafter, with architect's approval. Final approval shall be contingent upon providing colors, textures and patterns matching preliminary selections.
- C. Shop Drawings: Submit shop drawings of items specified herein. Indicate: plan views, elevations, sections and details of each item; location in the building of each item; conditions in relation to adjacent materials and construction; methods of assembling sections; location and installation requirement size(s); shape and thickness of materials, joints and notations of special features; sink locations; and drawings required to illustrate deviations from the contract requirements.
- D. Rough in drawings: submit separate utility rough in drawings which indicate points of connection to each utility involved. Reference dimensions from building components.

PART 4 - PRODUCTS DELIVERY, HANDLING AND STORAGE

- A. Schedule casework for fabrication and delivery to avoid delay in work progress. Delivery to job site shall not be earlier than one month before casework can be installed. Verify delivery date with general trades contractor.
- B. Receive, unload, check, store, protect and distribute materials specified in this section.
- C. Store materials to maintain the moisture content of the wood members between 6% and 15%. Store in areas or rooms with temperatures at 70°F ± 10°F.
- D. Store under cover in a ventilated building not exposed to extreme temperature and humidity changes. Do not store or install casework until concrete, masonry and plaster work is dry.

PART 5 - JOB CONDITIONS

- A. Prior to fabrications of items of casework which are dependent upon building dimensions, take accurate field measurements of location of walls, drop soffits, columns, piers and other applicable building elements. Major discrepancies between dimensions given on the drawings and field dimensions shall be brought to the attention of the general trade's contractor. Compensate for minor dimensional changes so that fabricated items can be delivered to the job, and can be scribed to fit properly.

- B. In no instance shall any casework be stored or installed in any area unless the area is broom clean, closed in and possessing a relative humidity below 50% at 70°F.

PART 6 - WARRANTY

- A. Warranty in writing that defects due to use of improper materials or workmanship in casework provided under this contract for the period of one year from the date of substantial completion of the work, shall be rectified promptly by the casework contractor at his own expense upon notification of condition.

PART 7 - GENERAL

- A. Casework, both stock and custom shall be plastic laminate construction consisting of high-pressure decorative laminate bonded to 3/4" thick particle board.
 - 1. Fabrication shall comply with applicable requirements for "Custom grade" as indicated in Section 400 of the AWI architectural woodwork quality standards and guide specifications.
- B. Cabinet units shall be assembled at the mill, insofar as access openings to installation location will permit. Where items must be built into sections, design the units so they can be assembled at the site into one integral item, with exposed joints flush, tight and uniform. Similar adjoining doors and drawers shall be in alignment and each door and drawer shall operate smoothly, without bind or excessive play.
- C. Casework units shall be complete with bases, shelves, counter and work tops, finish and operating hardware, drawer accessories and miscellaneous accessories as indicated on the drawings and specified herein.
- D. Coordination work:
 - 1. Division 9: Provide physical openings for recessed casework.
 - 2. Section 6100: Provide grounds and blocking necessary for attachment and support of wall mounted casework.
 - 3. Plumbing Prime Contractor: provide lay-in sinks, faucets and fittings; templates for cutouts for installation; provide supply and waste lines including traps to rough in points based on information supplied by the casework contractor; and provide final connections.
 - a. Division 15: Provide stainless steel sinks with integral with tops and backsplashes, include tailpieces, drains and strainers.
 - 4. Electrical prime contractor: provide electrical fixtures and equipment noted on drawings including related boxes, conduit and conductors. Provide electrical components complete, terminating through the back of the casework unit either with a junction box or a 2" conduit stub. Allow conductors to protrude 8" to permit final connection by Division 16.

5. Division 16: Locate rough-ins based on information given on casework rough-in drawings and be responsible for work necessary to make final connections.
6. Division 9650: Apply resilient base to casework after casework has been installed.
7. Division 5500: Provide steel support braces.

E. Definitions shall conform to the following:

1. Exposed portions are those visible from a normal point of view when doors and drawers are closed. Interiors of open cabinets, and open shelving are considered exposed.
2. Semi-exposed portions are those areas not considered exposed, but which are visible from a normal point of view when solid doors and drawers are open. Backs of hinged doors, drawer parts except the exposed exterior front, and shelving in the storage areas are considered semi exposed.
3. Concealed portions include sleepers, web frames, dust panels and other surfaces not visible after installation.

PART 8 - MATERIALS

A. Particle board: 45 lbs. Minimum density and of balance construction, with moisture content less than 8%. Particle board shall conform to ANSI A208.1 and meet or exceed CS-236-66, FS LLL-B-800A and ASTM D1037-78.

1. Surfaces shall be smooth with all chips, shavings or flakes well scoured so that there shall be no visible telegraphing of the core face through the plastic laminate.
2. Square and rectangular cutouts shall have radiused corners not less than ½".
3. At cut edges, exposed or not and where cutouts occur, the edges shall be completely sealed to prevent moisture absorption. Cutouts for pipes shall be round.
4. Meet the following performance requirements: Submit compliance data from the manufacturer prior to fabrication.
 - a. Screw holding face: 371 lbs.
 - b. Modulus of rupture: 2400 psi
 - c. Modulus of elasticity: 450,000 psi
 - d. Internal bond: 90 psi
 - e. Surface hardware: 90 psi

B. Edging: Flat edge design for cabinet body in color matched laminate or PVC. Color as selected by architect.

C. Plastic Laminate: High pressure decorative laminate surfacing material meeting the minimum NEMA Standards for abrasion resistance, heat resistance, stain resistance, moisture resistance, dimensional stability and general rules for fabrication and installation.

1. Plastic laminate materials shall be as selected by the Architect from full product line of national manufacturers such as Formica, Wilsonart, Pionite, Nevamar, Arborite, or an approved equal.
2. Exposed horizontal work surfaces: NEMA GP50, PF (Post-forming) satin surface.
3. Exposed vertical work surfaces: NEMA GP 28 laminate.
4. Semi exposed surfaces: 10 mil polyester laminate in conformance to ASTM D1300, factory bonded at 200 psi at 300°F, minimum. Color shall be manufacturers white.
5. Backing sheet: NEMA BK20 and shall be used where laminate covered work is not restrained from warping or twisting by the method of attachment or by supports. Minimum standard of AWI Custom work shall apply.
6. Bonding adhesive: Water resistant type and as recommended by the approved plastic laminate manufacturer. Plastic laminate shall be applied to the core in the shop, using commercial methods, application and presses.
7. Sealant used for sealing particle board or plywood edges shall be HYBOND 80 by Pierce Stevens Corporation, Safecoat Seal by Dwell Smart, or an approved equal

D. Assembly adhesives used in assembly, installation and other applications, shall be one of the following or an approved equal:

1. HYBOND 80
2. HYBOND WHITE
3. CANPLAST 100

E. Provide hardware as follows: This is not intended to be a complete listing, but as a guide to establish quality:

1. Hinges shall be cast steel cup and hinge concealed hinges #75M5550 by BLUM
 - a. Hinges shall have independent three-way adjustment of doors.
 - b. One pair of hinges per door of 30" or less, one- and one-half pair of hinges per door of 48" and one hinge for every 12" of door over 48".

- c. Each hinge shall be removable by means of a clip mechanism lever attached to the hinge.
 - d. Hinges shall be mounted into corresponding hinge plates.
 - e. Hinges shall have 125 ° free movement of swing and be self-closing within two inches of close.
 - f. Hinges shall have a lifetime warranty against defects from workmanship and materials.
 - g. Hinges shall be installed into door panels by means of a pre-drilled hole and press fitted into panel substrate.
2. Pulls for all doors and drawer fronts shall be manufacturers standard bent wire pull, brushed chrome finish, three-inch centers. Nomenclature for this ABP865-26D by AMEROCK, Yale Locks, or an approved equal.
 3. Drawer slides shall be side mounted, bottom supported, 4-point suspension slides with nylon roller bearing and epoxy coating.
 4. All file drawers shall have either Pendaflex, Decor, file followers, or an approved equal.
 5. All shelf clips shall be BLUM nylon covered steel pin (5mm) that will mount into pre-drilled end panels for a support of at least 250 lbs; Yale, or an approved equal.
 6. Locks, noted on drawings, shall be cam tumbler by NATIONAL LOCK, Yale, or an approved equal.
 7. Clothes rods and mounting flanges shall be Knappe-Voght #770 and #734, Hardware Decor, or an approved equal.
 8. Optional sliding doors are mounted on steel tracks and use ball bearing sheaves mounted in the doors.
 9. Grommets shall be spring loaded closure type in assorted sizes.

PART 9 - CONSTRUCTION

- A. All cabinets shall be of 3/4" thick MCP by Domtar, 3/4" thick solid wood by Wellborn or an approved equal, finished ends and dowel pinned to tops, bottoms or backs, shall be laminated with plastic laminate and edged with matching PVC.

1. End panels shall consist of a single panel of MCP drilled and dowel pinned to tops, bottoms or braces by way of fluted hardwood dowel pins nested in white glue.
 2. All cabinet boxes shall be case clamped for a minimum of seven minutes in a Holzer case clamp to insure squareness.
 3. End panels shall be drilled for shelves, bottoms, tops and braces using the 32mm drilling system. All components will be drilled in corresponding patterns.
 4. End panels shall be rabbited at the rear for acceptance of 3/8" thick MCP back. The back will be mounted using mechanical fasteners. The back shall be removable.
 5. End panels shall have integral toe kicks and shall have a front of 3/4" MCP mechanically fastened to the end panels.
- B. Doors shall be of 11/16" thick laminated panel products with the front face laminated in the architect's color selection. The semi-exposed side shall be covered by white HPL plastic laminate. The edges shall be covered by PVC or self-edged.
- C. Drawers shall be constructed of 1/2" thick MCP, rabbited, glued and mechanically fastened for a strong bond. Bottoms shall be of 3/8" thick MCP mechanically fastened to the drawer box frame. Top edges shall be covered in white PVC edging. Drawer fronts are same construction as doors. Drawer fronts shall be removable from drawer box for easy alignment. Drawers shall have epoxy coated, nylon roller bearing, side mounted, bottom supported slides by BLUM.
- D. Shelves shall be of 3/4" thick MCP and edged with matching PVC edging. Shelves shall not be constructed over 42" in length.
- E. Braces shall be of 3/4" thick MCP and shall span the width of the cabinet box. Braces shall be edged on visible sides with PVC edging. On sink or range base cabinets the front brace shall be mounted vertically and shall be laminated to match the cabinet exterior.
- F. Backs shall be of 3/8" thick MCP and be rabbited in and mechanically fastened to the end panels.
- G. Wall cabinets shall be of 3/4" thick MCP and shall be dowel pinned in the same manner as the bases. Wall backs are 3/8" thick rabbited and mechanically fastened to end panels.

- H. Finished backs shall be of 3/4" MCP laminated with plastic laminate on face and edged with PVC.
- I. Top supports shall be of 3/4" MCP laminated on both sides and edged with PVC or plastic laminate.

PART 10 - COUNTERTOPS

- A. Countertops and backsplash shall be custom made with square, self-edge and shall be constructed of 3/4" thick medium density fiberboard (MDF) or 45# density particleboard (CS 236-66: Type 1, Grade B, Class 2) covered on all exposed surfaces with horizontal grade 10/HGS, .050" thickness, high pressure laminate as manufactured by a nationally known laminate company.
 - 1. Colors and patterns of plastic laminate shall be as selected by the Architect from full product line of national manufacturers such as Formica, Wilsonart, Pionite, Nevamar and Arborite, or an approved equal.
 - 2. Provide cutouts properly sized and located in tops for sinks and rims by others.
 - 3. Provide end splash, flush with all edges of countertop, where countertop abuts wall surfaces.

PART 11 - BRACING

Where countertops have no casework below for support, bracing or "cleats" shall be constructed 1½" x 1½" x length and covered by GP 28 plastic laminate on all exposed sides. These cleats shall be mounted at walls with mechanical fasteners to support the weight of the countertop.

PART 12 - WINDOW STOOLS

Plastic laminated window stools shall be 22mm moisture-resistant chipboard, Class E1, according to DIN EN 312/5, finished on top, bottom and sides with horizontal grade (HP) high pressure laminate as manufactured by a nationally known laminate company, using moisture-resistant adhesives. Provide sealant to back exposed edge of window stools, and caulk continuously between window and the laminate stool.

Colors and patterns of plastic laminate shall be as selected by the Architect from full product line of national manufacturers such as Formica, Wilsonart, Pionite, Nevamar and Arborite, or an approved equal.

PART 13 - COORDINATION

- B. Coordinate work of this section with related work of other sections as necessary to obtain proper installation of all items.
- C. Verify site dimensions of cabinet location in buildings prior to fabrication.
- D. Do not install casework until all concrete, masonry and plaster work is dry.

PART 14 - INSTALLATION

- A. Installation shall consist of assembling to form complete units, placing, leveling, scribing, trimming and anchoring.
 - 1. Filler between wall and casework shall not exceed 1" unless noted otherwise and shall be recessed 1/16" + from the face of casework.
 - 2. Plastic-laminate covered ceiling enclosures shall be flush with the face of the doors and 1/8" proud on the sides of exposed ends or backs.
- B. Fasten items to building construction as detailed or as otherwise required to provide a secure, permanent installation.
- C. Where fastening spacings or sizes are not shown, use spacings and sizes of bolts, screws, etc., which will develop the full strength of the members being fastened. Thus, failure due to over stress must occur in the members before occurring in the fastenings.
 - 1. Fastening to concrete shall be by anchor bolts embedded in masonry or by self-drilling masonry anchor.
 - 2. Fastening to masonry shall be of similar manner.
 - 3. Fastening to plaster or drywall construction shall be into wood studs or blocking placed there early in the construction. Toggle bolts may be used only in such cases where no blocking can be found, but fasteners must still penetrate solid wall supports for a secure installation.

PART 15 - PROTECTION

Upon installation of casework and countertops, all installed materials shall be covered with appropriate protection from further construction. The General Contractor will be responsible for repairing or replacing any product damaged by subsequent construction and finish work, with no additional cost to the Owner.

End of Section

Division VII
Thermal and Moisture Protection

SECTION 07200 - BUILDING INSULATION

PART 1 - SCOPE

- A. This Section includes all labor, materials, equipment and related items required to complete the work of building insulation as shown on the drawings and as specified.

PART 2 - SUBMITTALS

- A. Certificates of Compliance with applicable Federal Specifications shall be submitted to the architect for approval prior to delivery of any building insulation to the project. "R" values of insulation proposed to be furnished shall be included in certifications.
- B. Samples in duplicate of each type of building insulation shall be submitted to the architect for approval if requested.

PART 3 - MATERIALS

- A. Batt insulation shall be semi-rigid, spun glass fiber blankets; see Architectural plan sheets for R factor.
 - 1. Non-exposed blankets shall be enclosed on one side with strong asphalted paper vapor barrier where noted on plan sheets. Blankets shall be as wide as required to fit into stud, by longest available lengths.
 - 2. Exposed blankets for installation in wall space shall be Fiberglass batt faced (FSK-25)(Class A), having minimum material thermal resistance as noted.
- B. Sound attenuation blankets for areas where noted shall comply with requirements of ASTM C665-84, Type I. Same shall be 3" or 6" "Thermofiber", as manufactured by United States Gypsum; "Thermal-Acoustical Batts", as manufactured by Johns-Manville; "Noise Barrier Batt Insulation", as manufactured by Owens/Corning; or an approved equal.

PART 4 - INSTALLATION

- A. Batt insulation shall be installed in stud, in strict accordance with manufacturer's installation instructions. Insulation shall have full coverage in spaces involved, with tightly fitted butt joints where necessary and free from voids.
 - 1. Install insulation to the outside of any water piping occurring in exterior walls. In these cases, no insulation shall occur between water piping and wall finish.

END OF SECTION

SECTION 07212 - BOARD INSULATION

PART 1 - GENERAL

1.01 Work Included

- A. Board insulation at foundation wall.

1.02 Related Work

- A. Section 04330 - Reinforcement Unit Masonry System

1.03 References

- A. FS HH-I-524 - Insulation Board, Thermal (Polystyrene).

1.04 System Description

- A. Materials of this Section shall provide a continuous thermal barrier at building exterior wall.

PART 2 - PRODUCTS

2.01 Acceptable Insulation Manufacturers

- A. Styrofoam Brand
- B. AMOCO
- C. Foamular - R
- D. Substitutions: Under provisions of Section 01600, 01630.

2.02 Insulation Materials

- A. Insulation Extruded Cellular Polystyrene; thermal resistance "R" per inch of 5.0; minimum compressive strength of 30 psi water absorption by volume in accordance with ANSI/ASTM D2842 0.3 percent square.

2.03 Acceptable Adhesive Manufacturers

- A. Max Bond, by H.B. Fuller Company
- B. Liquid Nails, LN 601, Macco Adhesives
- C. Foam Adhesive by Franklin Int.

2.04 Adhesive Materials

- A. Adhesive Type recommended by insulation manufacturer for application.

PART 3 - EXECUTION

3.01 Preparation

- A. Verify substrate and adjacent materials and insulation boards are dry and ready to receive insulation and adhesive.
- B. Verify substrate surface is flat, free of honeycomb, fins, irregularities, materials that will impede adhesive bond.
- C. Verify insulation boards are unbroken, free of damage.

3.02 Installation - Perimeter Insulation

- A. Exterior sheathing for the face brick at the front of the building.

End of Section

SECTION 07270 - FIRESTOPPING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provide all material, labor, equipment and services necessary to provide firestopping as follows:
 - 1. Through-penetration firestopping in fire rated construction.
 - 2. Construction-gas firestopping at connections in the same or different materials in fire rated construction.
 - 3. Construction-gap firestopping occurring within fire rated wall, floor or floor-ceiling assemblies.
 - 4. Construction-gap firestopping occurring at the top of fire rated walls.
 - 5. Through-penetration smoke-stopping in smoke partitions.
 - 6. Construction-gap smoke-stopping in smoke partitions.
- B. Firestopping specified in other Sections of these specifications:
 - 1. Plumbing Penetrations: Section 15
 - 2. Fire dampers and manufactured devices: Section 15
 - 3. Raceway seals and manufactured electrical devices: Section 16
- C. Alternates: Refer to "Description of Alternates" pages for description of alternates affecting work of this Section.

1.02 REFERENCES

- A. Underwriters Laboratories
 - 1. U.L. Fire Resistant Directory
 - a. Through-penetration firestop devices (XHCR)
 - b. Fire resistance ratings (BXUV)
 - c. Through-penetration firestop systems (XHEZ)
 - d. Fill, void or cavity material (XHHW)
- B. American Society for Testing and Materials Standards:
 - 1. ASTM E814-88: Standard Test Method for Fire Tests of Through-Penetration Firestops.

1.03 DEFINITIONS

- A. Assembly: Particular arrangement of materials specific to given type of construction described or detailed in referenced documents.
- B. Barriers: Time rated fire walls, smoke barrier walls, time rated ceiling/floor assemblies and structural floors.
- C. Firestopping: Methods and materials applied in penetrations and unprotected openings to limit spread of heat, fire, gasses and smoke.
- D. Penetration: Opening or foreign material passing through or into barrier or structural floor such that full thickness of rated materials is not obtained.
- E. Construction Gaps: Gaps between adjacent sections of walls, exterior walls, at wall tops between top of wall and ceiling, and structural floors or roof decks; and gaps between adjacent sections of structural floors.
- F. System: Specific products and applications, classified and numbered by Underwriters Laboratories, Inc., to close specific barrier penetrations.
- G. Sleeve: Metal fabrication or pipe section extending through thickness of barrier and used to permanently guard penetration. Sleeves are described as part of penetrating system in other sections and may or may not be required.

1.04 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. Fire-rated construction: Maintain barrier and structural floor fire resistance ratings including resistance to cold smoke at all penetrations, connections with other surfaces or types of -construction, at separations required to permit building movement and sound or vibration absorption, and at other construction gaps.
 - 2. Smoke barrier construction: Maintain barrier and structural floor resistance to cold smoke at all penetrations, connections with other surfaces and types of construction and at all separations required to permit building movement and sound or vibration absorption, and at other construction gaps.

1.05 SUBMITTALS

- A. Comply with all requirement of Section 01300, Submittals.

1.06 QUALITY ASSURANCE

- A. Installer's qualifications: Firm experienced in installation or application of systems similar in complexity to those required for this Project, plus the following:
 - 1. Acceptable to or licensed by manufacturer, State or local authority where applicable.

2. At least two (2) years' experience with systems.
 3. Successfully completed at least five (5) comparable scale projects using this system.
- B. Local and State regulatory requirements: Submit forms or acceptance for proposed assemblies not conforming to specific UL Firestop System numbers, or UL classified devices.
- C. Materials shall have been tested to provide fire rating at least equal to that of the construction.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Packing and shipping:
1. Deliver products in original unopened packaging with legible manufacturer's identification.
 2. Coordinate delivery with scheduled installation date, allow minimum storage at site.
- B. Storage and protection: Store materials in a clean, dry, ventilated location. Protect from soiling, abuse, moisture and freezing when required. Follow manufacturer's instructions.

1.08 PROJECT CONDITIONS

- A. Existing conditions:
1. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.
 2. Proceed with installation only after penetrations of the substrate and supporting brackets have been installed.
- B. Environmental requirements:
1. Furnish adequate ventilation if using solvent.
 2. Furnish forced air ventilation during installation if required by manufacturer.
 3. Keep flammable materials away from sparks or flame.
 4. Provide masking and drop cloths to prevent contamination of adjacent surfaces by firestopping materials.
 5. Comply with manufacturing recommendations for temperature and humidity conditions before, during and after installation of firestopping.

1.09 GUARANTEE

- A. Submit copies of written guarantee agreeing to repair or replace joint sealers which fail in joint adhesions, co-adhesion, abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability or appear to deteriorate in any other manner not clearly specified by submitted manufacturer's data as an inherent quality of the material for the exposure indicated. The guarantee period shall be one (1) year from date of substantial completion.

PART 2 - PRODUCTS

2.01 THROUGH-PENETRATION STOPPING OF FIRE-RATED CONSTRUCTION

- A. Systems or devices listed in the U.L. Fire Resistance Directory under categories XHCR and XHEZ may be used, providing that it conforms to the construction type, penetrant type, annual space requirements and fire rating involved in each separate instance, and that the system is symmetrical for wall applications. Systems or devices must be asbestos-free.
 - 1. Additional requirements: Withstand the passage of cold smoke either as an inherent property of the system, or by the use of a separate product included as a part of the U.L. system or device, and designed to perform this function.
 - 2. Acceptable manufacturers and products: Those listed in the U.L. Fire Resistance directory for the U.L. System involved and as further defined in the Systems And Applications Schedule.
 - 3. All firestopping products must be from a single manufacturer. All Trades shall use products from the same manufacturer.

2.02 CONSTRUCTION-GAP FIRESTOPPING OF FIRE-RATED CONSTRUCTION

- A. Firestopping at construction gaps between edges of floor slabs and exterior wall construction.
- B. Firestopping at construction gaps between tops of partitions and underside of structural systems.
- C. Firestopping at construction gaps between tops of partitions and underside of ceiling or ceiling assembly.
- D. Firestopping of control joints in fire-rated masonry partitions.
- E. Firestopping expansion joints.
- F. Acceptable manufacturers and products: Those listed in the U.L. Fire Resistance Directory for the U.L. System involved and as further defined in the Systems and Applications Schedule.

2.03 SMOKE-STOPPING AT SMOKE PARTITIONS

- A. Through-penetration smoke-stopping: Any system complying with the requirements for through-penetration Firestopping in fire-rated construction, as specified in The Systems and Applications Schedule is acceptable, provided that the system includes the specified smoke seal or will provide a smoke seal. The length of time of the fire resistance may be disregarded.
- B. Construction-gap smoke-stopping: Any system complying with the requirements for construction-gap Firestopping in fire-rated construction, as specified in the Systems and Applications Schedule is acceptable, provided that the system includes the specified smoke seal or will provide a smoke seal. The length of time of the fire resistance may be disregarded.

2.04 ACCESSORIES

- A. Fill, void or cavity materials: As classified under category XHHW in the U.L. Fire Resistance Directory.
- B. Forming materials: As classified under category XHKU in the U.L. Fire Resistance Directory.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
 - 1. Verify barrier penetrations are properly sized and in suitable condition for application of materials.
 - 2. Do not proceed until unsatisfactory conditions have been corrected.

3.02 CLEANING SURFACES

- A. Clean surfaces to be in contact with penetration seal materials, of dirt, grease, oil, loose materials, rust or other substances that may affect proper fitting, adhesion or the required fire resistance.

3.03 INSTALLATION

- A. Install penetration seal materials in accordance with printed instructions of the U.L. Fire Resistance Directory and in accordance with manufacturer's instructions.
- B. Seal holes or voids made by penetrations to ensure an effective smoke barrier.
- C. Where floor openings without penetrating items are more than 4" in width and subject to traffic or loading, install firestopping materials capable of supporting same loading as floor.

- D. Protect materials from damage on surfaces subject top traffic.
- E. Place firestopping in annular space around fire dampers before installation of damper's anchoring flanges which are installed in accordance with fire damper manufacturer's recommendations.
- F. Where large openings are created in walls or floors to permit installation of pipes, ducts, cable tray, bus duct or other items, close unused portions of opening with firestopping material tested for the application. See U.L. Fire Resistance Directory.
- G. Install smoke stopping as specified for firestopping.
- H. Where rated walls are constructed with horizontally continuous air space, double width masonry, or double stud frame construction, provide vertical, 12" wide fiber dams for full thickness and height of air cavity at maximum 15' intervals.

3.04 FIELD QUALITY CONTROL

- A. Examine penetration sealed areas to ensure proper installation before concealing or enclosing areas.
- B. Keep areas of work accessible until inspection by applicable code authorities.
- C. Perform under this Section, patching and repairing of firestopping cause by cutting or penetration by other Trades.

3.05 ADJUSTING AND CLEANING

- A. Clean up spills of liquid components.
- B. Neatly cut and trim materials as required.
- C. Remove equipment, materials and debris, leaving area in undamaged, clean condition.

END OF SECTION

SECTION 07900 - JOINT SEALERS

PART 1 - SCOPE

- A. This Section includes all labor, materials, equipment, and related items required for the work of caulking as shown on the Drawings and as specified herein. Work under this Section includes but is not necessarily restricted to the following:
 - 1. Caulking of exterior or interior expansion or control joints in concrete or masonry.
 - 2. Other joints, exterior or interior, in the building construction shown, specified, or required to be caulked.

PART 2 - SUBMITTAL

- A. Contractor shall submit to the Architect, in duplicate, for approval the following items prior to furnishing any materials at the job site.
 - 1. Sample cards of all exposed caulking and sealant for color approval. Unless otherwise directed, apply samples in minimum 3" runs on cards.
 - 2. One lineal foot of each type of backer material proposed.

PART 3 - PRODUCT HANDLING

- A. Deliver caulking, and related accessories to the job site in factory sealed, unopened containers bearing manufacturer's name and product designation.
- B. Store materials in unopened containers, following manufacturer's recommendations for storage temperature and shelf life.
- C. Follow manufacturer's recommendation for handling products containing toxic substances. Keep flammable materials away from heat, sparks, and open flames. Use recommended solvents and cleaning agents for cleaning tools and equipment.

PART 4 - ENVIRONMENTAL CONDITIONS

- A. Schedule caulking operations so that working joints are most likely to be normal size. Apply materials within manufacturer's recommended surface and ambient temperature range.

PART 5 - PROTECTION

- A. Use masking tape where practicable to control lap of materials onto adjacent surfaces or to facilitate tooling. Remove tape immediately after caulking operation.

PART 6 - MATERIALS

- A. General. All caulking, primers, and accessories shall be non-staining to adjacent exposed materials. Products having similar application and usage shall be of the same manufacturer and type. Unless otherwise specified, colors shall be selected from approved manufacturer's standard color sections. Use gun consistency compounds unless otherwise required by job conditions.
- B. Exterior caulking shall be a one or two-component polysulfide base, elastic, synthetic rubber compound, conforming to Federal Spec. TT-S-00230, and shall be "Sonolastic" as manufactured by the Sonneborn Building Products, Inc., "Synthacalk" as manufactured by the Pecora Chemical Corp., or "Rubber Calk 500" as manufactured by the Products Research & Chemical Corp or an approved equal.
 - 1. Colors shall be from manufacturer's standards as selected by the Architect.
- C. Interior caulking for general use shall be a one-component acrylic latex compound, and shall be "Sonolac" as manufactured by the Sonneborn Building Products, Inc. "AC-20" as manufactured by the Pecora Chemical Corp., or "Latex Caulk" as manufactured by DAP, Inc.
- D. Primers shall be as manufactured and recommended for each substrate by the manufacturer of each caulking compound used in the work.
- E. Backer materials shall be as recommended for and compatible with each caulking used, and shall be as follows unless otherwise required to meet specific job conditions.
 - 1. Backer rod for use in all joints requiring backer for caulking shall be a soft, closed cell polyethylene foam meeting requirements of AASHO Specifications M153-54, Type I and III, and shall be as manufactured by the Dow Corning Corp., Sonneborn Building Products, Inc., or Williams Products, Inc.
- F. Release material, where required, shall be polyethylene film.

PART 7 - MIXING

- A. Job mix multi-component sealants with suitable power operated equipment, following specific directions of sealant manufacturer.
- B. Base and accelerator components of multi-part sealants shall have batch control numbers clearly indicated on containers. Control numbers for mixed components shall be identical.

PART 8 - CONDITION OF SURFACES

- A. Inspect all surfaces to receive caulking materials, and report all defects. Starting work implies acceptance of surfaces as satisfactory. Verify that joints and spaces to be caulked are of proper width.

- B. Concrete surfaces shall be thoroughly cured.
- C. Apply no caulking materials in contact with surfaces contaminated with oil, grease, bituminous materials, form release agents, bond breakers, deleterious curing compounds, water repellents, and other special surface treatments. Aluminum surfaces shall be free of lacquer. Costs incurred by removal of such contaminants shall be borne by the trades responsible for their presence.

PART 9 - PREPARATION

- A. Thoroughly clean all joints, removing all foreign matter such as dirt, dust, moisture, frost, rust, paint, lacquer, and protective coatings. Blow all joints free of loose particles.
- B. Use no cleaning solvents which leave residue. Wipe joints free of solvent using clean, dry white cloths or white lint less paper. Do not permit solvent to air dry.
- C. Follow manufacturer's directions for products and surfaces.

PART 10 - INSTALLATION

- A. Unless otherwise required by these specifications, install materials in strict accordance with manufacturer's specifications and recommendations, using approved equipment.
- B. Usage of various materials shall be as specified under Article 6 above.
- C. Prime surfaces as recommended by the manufacturer's immediately prior to caulking or sealing. Make preliminary tests to ensure that primers will not stain exposed materials or deteriorate backer materials.
- D. Unless otherwise required by caulking manufacturer's specifications and recommendations, use backer material to control caulking and sealant depth as follows (depths measured at bond face).
 - 1. Polysulfide and Polyurethane Sealants. For joints up to 1/2" wide and less, make depth equal to width but not less than 1/4". Joints over 1/2" wide shall be 3/8" deep.
 - 2. Acrylic Sealant. For joints 1/2" wide and less, make depth equal to width but not less than 1/4". Joints over 1/2" wide shall be 3/8" deep.
 - 3. Do not twist or stretch preformed backer materials during installation.
- E. At joints subject to movement, where required by nature of backer material used or where sealant contacts back of joint, use release material between backer material or back of joint and sealer to confine adhesion to surfaces of materials being joined. Follow manufacturer's recommendation exactly.

- F. Neatly tool joints to slightly concave surface using tooling agent recommended by sealant manufacturers. Repair any air pockets exposed by tooling. Tool so as to compress material and improve adhesion to surfaces joined.

PART 11 - PATCHING

- A. Patch or replace defective or damaged sealants as directed by the Architect. Be responsible for damage to adjacent surfaces caused by caulking and sealing operations.

PART 12 - CLEANING

- A. Clean adjacent surfaces soiled by caulking and sealing operations. Remove wet material before it "sets". Follow manufacturer's recommendations for cleaning procedures. Cleaning agents shall not stain or be injurious to exposed surfaces nor shall they be potentially dangerous to glass and metal surfaces due to wash-off by rain.

END OF SECTION

Division VIII

Door and Windows

SECTION 08100 - METAL DOORS AND FRAMES

PART 1 - RELATED DOCUMENTS

- A. General provisions of Contract, General and Special Conditions, and General Requirements apply to this Section.

PART 2 - DESCRIPTION OF WORK

- A. Provide labor, materials, equipment, and services necessary for proper and complete installation of all hollow metal work.
- B. Include all view windows and side lights indicated on Drawings.
- C. Work Specified in Other Sections.
 - 1. Finish Hardware is specified in another Division 8 Section.

PART 3 - LABEL CONSTRUCTION

Where Label Construction is indicated in Door and Frame Schedule, materials and construction of doors and frames shall be in accordance with and bear indicated resistive rating label of Underwriters' Laboratories, Inc.

PART 4 - SUBMITTALS

Submit Shop Drawings for all work, indicating materials, uses, gauges, details of construction, connections to other work, fastenings, and anchors, to Architect for his review. Do not start fabrication until these Drawings are approved.

PART 5 - MATERIALS

- A. Manufacturers offering products complying with requirements include:
 - Steelcraft Mfg. Co.
 - Republic Steel Corporation
 - De La Fontaine
 - MPI
- B. Materials used shall be of best quality of their respective kinds.
- C. Steel in general shall be cold rolled stretcher level, prime quality steel, of U.S. Standard gauge as specified under the various headings.
- D. Doors, frames and framed openings exposed to the exterior shall be fabricated of zinc coated steel in the gauges scheduled. The steel shall be hot dipped so as to provide a ductile coating, tightly adherent to the base steel. The zinc coating shall be an A60 coating in accordance with ASTM specification A525 (.6 oz. of zinc per sq. ft. of steel total coverage.)

PART 6 - HOLLOW METAL STEEL DOORS, POLYURETHANE CORE

- A. Physical Properties:
 - “R” Factor: 11.1
 - “U” Factor: .09
 - Compression Strength: 3600 P.S.F.
- B. Doors shall be equal to those manufactured by The Steelcraft Manufacturing Company, Cincinnati, Ohio, and designated as:
 - LF-18 (1-3/4", 18 gauge steel)
- C. Doors shall be fabricated of:
 - 1. Cold rolled steel, interior.
 - 2. Galvanized steel with a zinc coating of .6 ozs. per square foot total, exterior.
- D. Door shall be flush with edge seams filled and ground smooth.
- E. Doors shall have 1/8" bevel in 2" on hinge and ground smooth.
- F. Doors shall have vertical mechanical interlocking seams on hinge and lock edges.
- G. Doors shall be provided with top and bottom inverted 14 gage steel channels spot welded within the door.
- H. Doors shall be mortised and adequately reinforced for all hardware.
 - 1. Mortised hardware reinforcements shall be drilled and tapped at the factory.
 - 2. Surface applied hardware shall be field drilled by others.
- I. Doors shall be reinforced internally with a 14 gauge steel reinforcement for surface closers when specified.
- J. Out swinging exterior doors shall be provided with top caps for protection against weather and with a polyurethane core.
- K. Doors shall be phosphatized and receive one coat of baked on prime paint.

PART 7 - FRAMES

- A. Fabricate frames of 16 ga. steel. Manufacturers offering products complying with the requirements include:
 - Steelcraft Mfg. Co.
 - Republic Steel Corp.
 - Fenestra, Inc.
- B. All frames shall have welded and mitered corners, equivalent to Steelcraft Type D-16. (Issue A).

- C. Frames in stud walls can be KD frames.
- D. Provide suitable anchors for jambs as required by wall construction. Provide a minimum of six (6) jamb anchors and two (2) base anchors per frame. Provide anchors as required for labeled frames.
- E. Reinforcing channels, where called for, shall be 12 gauge reinforcing channel in head.

PART 8 - HARDWARE REINFORCEMENTS

- A. Accurately mortise, reinforce, drill, and tap at factory all work to receive hardware, except do drilling and tapping for door checks and brackets at building.
- B. Reinforcements shall be of ample size and thickness to stiffen work against strain of service required. Reinforcements for locks and escutcheons shall be box type with spring lead contacts for lock cases.
- C. Provide cover boxes in back of all hardware cutouts in combination type frames.

PART 9 - FINISH

- A. All steel hollow metal work shall be phosphatized and receive one coat baked on prime coat.
- B. Each coat shall be baked on and sanded smooth.

PART 10 - INSTALLATION

- A. Set frames in their proper locations, plumb and true and securely braced in position.
- B. Receive, store and protect and be responsible for all doors to be installed hereunder. Report immediately to Contractor shortages, damage, improper preparation, defective finishes and warped doors. Do not install any material not perfect in every respect.
- C. Inspect openings and frames to receive doors. Report damage or discrepancy affecting proper installation of units to Contractor, and have corrective work done in a suitable and satisfactory manner.
- D. Install doors in openings as indicated on Drawings in conformance with shop drawings and hardware schedule. Install doors so they hang plumb and true, with proper clearances using items of hardware scheduled for openings.
- E. Accurately set all frames and thoroughly and rigidly anchor and fasten in place in building construction. Weld drywall anchors to frames.
- F. Check frames before and after walls are constructed to see that they are properly erected.

End of Section

SECTION 08211 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes the following:

1. Solid core doors with wood veneer faces.
2. Factory fitting flush wood doors to frames and factory matching for hardware.
3. Glazing stops and preparation of flush doors to receive glazing; glazing specified elsewhere.

- B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Architectural Woodwork: Division 6.
2. Metal Door Frames: Elsewhere in Division 8.
3. Door Hardware: Elsewhere in Division 8.
4. Glass and Glazing: Elsewhere in Division 8.
5. Field Finishing of Wood Doors: Section 09900 - Painting.

1.03 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for each type of door, including details of core and edge construction, trim for openings and louvers, and factory-finishing specifications.
- C. Shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for veneer matching and factory finishing and other pertinent data.
 1. For factory-machined doors, indicate dimensions and locations of cutouts for locksets and other cutouts adjacent to light and louver openings.
- D. Samples for verification in the form and size indicated below:
 1. Corner sections of doors approximately 12 inches (300 mm) square with door faces and edging representing the typical range of color and grain for each species of veneer and solid lumber required.
 2. Louvers consisting of blade and frame, 6 inches (150 mm) long, for each material and finish specified.
 3. Frames for light openings, 6 inches (150 mm) long, for each material, type, and finish required.

1.04 QUALITY ASSURANCE

- A. Quality Standard: Comply with the following standard:
 - 1. AWI Quality Standard: "Architectural Woodwork Quality Standards: of the Architectural Woodwork Institute for grade of door, core, construction, finish, and other requirements.
- B. Fire-Rated Wood Doors: Provide wood doors that comply with NFPA 80; are identical in materials and construction to units tested in door and frame assemblies per ASTM E 152; and are labeled and listed by UL, Warnock Hersey, or another testing and inspection agency acceptable to authorities having jurisdiction.
- C. Single-Source Responsibility: Obtain doors from one source and by a single manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect doors during transit, storage, and handling to prevent damage, soiling, and deterioration. Comply with requirements of referenced standard and manufacturer's instructions.
- B. Identify each door with individual opening numbers as designated on shop drawings, using temporary, removable, or concealed markings.

1.06 PROJECT CONDITIONS

- A. Conditioning: Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during the remainder of the construction period to comply with the following requirements applicable to Project's geographical location:
 - 1. AWI quality standard Section 100-S-11 "Relative Humidity and Moisture Content."

1.07 WARRANTY

- A. General Warranty: Door manufacturer's warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

- B. Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form signed by manufacturer, Installer, and Contractor, agreeing to repair or replace defective doors that have warped (bow, cup, or twist) more than 1/4 inch (6.35 mm) in a 42-by-84-inch (1067-by-2134-mm) section or that show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch (0.25 mm in a 75-mm) span, or do not conform to tolerance limitations of referenced quality standards.
 - 1. Warranty shall be in effect during the following period of time after date of Substantial Completion.
 - a. Solid Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide doors by one of the following:
 - 1. Solid Core Doors:
 - a. Algoma Hardwoods, Inc.
 - b. Eggers Industries, Architectural Door Division
 - c. Fenestra Corporation
 - d. Graham Manufacturing Corp.
 - e. Mohawk Flush Doors, Inc.
 - f. V-T Industries, Inc.
 - g. Weyerhaeuser Co.
 - h. Oshkosh

2.02 INTERIOR FLUSH WOOD DOORS

- A. Solid Core Doors for Transparent Finish: Comply with the following requirements:
 - 1. Faces: See Finish Schedule
 - 2. Grade: Premium
 - 3. Construction: 5 or 7 plies
 - 4. Core: Particleboard core
 - 5. Bonding: Stiles and rails bonded to core, then entire unit abrasive planed before veneering.
- B. Fire-Rated Solid Core Doors: Comply with the following requirements:
 - 1. Faces and Grade: Provide faces and grade to match non-fire-rated doors in same area of building, unless otherwise indicated.
 - 2. Construction: Manufacturer's standard core construction as required to provide fire-resistance rating indicated.

3. Blocking: Provide composite blocking designed to maintain fire resistance of door but with improved screw-holding capability of same thickness as core and with minimum dimensions as follows:
 - a. 5-inch (125-mm) top rail blocking
 - b. 5-inch (125-mm) bottom rail blocking
 - c. 5-by-18-inch (125-by-450-mm) lock blocks
 - d. 5-inch (125-mm) midrail blocking.
4. Edge Construction: Provide manufacturer's standard laminated-edge construction for improved screw-holding capability and split resistance as compared to edges composed of a single layer of treated lumber.
5. Pairs: Provide fire-rated pairs with fire-retardant stiles that are labeled and listed for kinds of applications indicated without formed-steel edges and astragals.

2.03 LIGHT FRAMES

- A. Wood-Veneered Beads for Light Openings in Fire Doors.

2.04 FABRICATION

- A. Fabricate flush wood doors to comply with following requirements:
 1. In sizes indicated for job-site fitting:
 - a. Comply with clearance requirements of referenced quality standard for fitting. Comply with requirements of NFPA 80 for fire-resistance-rated doors.
 - b. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with factory machining.
 - c. Metal Astragals: Pre-matching astragals and formed-steel edges for hardware for pairs of fire-rated doors.
- B. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.
 1. Light Openings: Trim openings with moldings of material and profile indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine installed door frames prior to hanging door:
 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.
 2. Reject doors with defects.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Hardware: For installation see Division 8 Section "Finish Hardware."
- B. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and referenced quality standard and as indicated.
 - 1. Install fire-rated doors in corresponding fire-rated frames according to requirements of NFPA 80.
- C. Job-Fit Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted with fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
 - 1. Fitting Clearances for Non-Fire-Rated Doors: Provide 1/8 inch (3.2 mm) at jambs and heads, 1/16 inch (1.6 mm) per leaf at meeting stiles for pairs of doors, and 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4-inch (6.4 mm) clearance from bottom of door to top of threshold.
 - 2. Fitting Clearances for Fire-Rated Doors: Comply with NFPA 80.
 - 3. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.
 - 4. Bevel fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) on lock edge; trim stiles and rails only to extent permitted by labeling agency.
- D. Field-Finished Doors: Refer to Division 9, Section 09900 - Painting, for finishing requirements.

3.03 ADJUSTING AND PROTECTION

- A. Operation: Rehang or replace doors damaged during installation.
- B. Finished Doors: Refinish or replace doors damaged during installation.
- C. Protect doors as recommended by door manufacturer to ensure that wood doors will be without damage or deterioration at the time of Substantial Completion.

End of Section

SECTION 08330
OVERHEAD COILING SERVICE DOORS
625 SERIES INSULATED SERVICE DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Overhead coiling insulated doors.

1.2 RELATED SECTIONS

- A. Section 05500 - Metal Fabrications: Support framing and framed opening.
- B. Section 06200 - Finish Carpentry: Wood jamb and head trim.
- C. Section 09900 – Paints and Coatings:
- D. Section 16130 - Raceway and Boxes: Conduit from electric circuit to door operator and from door operator to control station.

1.3 REFERENCES

- A. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- C. NEMA MG 1 - Motors and Generators.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Overhead coiling insulated doors:
 - 1. Wind Loads: Design door assembly to withstand wind/suction load of 20 psf (958 Pa) without damage to door or assembly components.
 - 2. Operation: Design door assembly, including operator, to operate for not less than 20,000 cycles.
- B. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.
- C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.

- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Details of construction and fabrication.
 - 4. Installation instructions.

- C. Shop Drawings: Include detailed plans, elevations, details of framing members, anchoring methods, required clearances, hardware, and accessories. Include relationship with adjacent construction.

- D. Selection Samples: For each finish product specified, complete set of color chart representing manufacturer's full range of available colors.

- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

- G. Operation and Maintenance Data: Submit lubrication requirements and frequency, and periodic adjustments required.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in performing Work of this section with a minimum of five years experience in the fabrication and installation of security closures.

- B. Installer Qualifications: Installer Qualifications: Company specializing in performing Work of this section with minimum three years and approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

- B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.
- C. Store materials in a dry, warm, ventilated weathertight location.

1.8 PROJECT CONDITIONS

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

1.9 COORDINATION

- A. Coordinate Work with other operations and installation of adjacent materials to avoid damage to installed materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

Acceptable Manufacturer: Overhead Door Corp. or reviewed equal.

2.2 INSULATED OVERHEAD COILING SERVICE DOORS

- A. Overhead Coiling Stormtite Insulated Service Doors: Overhead Door Corporation 625 Series.
 - 1. Curtain: Interlocking roll-formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.
 - a. Flat profile type F-265I for doors up to 40 feet (12.19 m) wide.
 - b. Front slat fabricated of:
 - 1) 22 gauge galvanized steel.
 - c. Slat cavity filled with CFC-free foamed-in-place, polyurethane insulation.
 - 2. Finish:
 - a. Galvanized Steel: Slats and hood galvanized in accordance with ASTM A 653 and receive rust-inhibitive, roll coating process, including 0.2 mils thick baked-on prime paint, and 0.6 mils thick baked-on polyester top coat; Polar White.
 - 1) Non-galvanized exposed ferrous surfaces shall receive one coat of rust-inhibitive primer.
 - b. Vinyl bottom seal, exterior guide and internal hood seals.
 - c. Interior guide weatherseal.
 - d. Lintel weatherseal.

3. Bottom Bar:
 - a. Two galvanized steel angles minimum thickness 1/8 inch (3 mm) bolted back to back to reinforce curtain in the guides (Powder Coated to Match Curtain).
4. Guides:
 - a. Three prime painted structural steel angles with minimum thickness of 3/16 inch (4.76 mm).
 - b. Guides weatherstripped with a vinyl weather seal at each jamb, on the exterior curtain side.
5. Brackets:
 - a. Hot rolled prime painted steel to support counterbalance, curtain and hood.
6. Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel, supporting the curtain with deflection limited to 0.03 inch per foot of span. Counterbalance is adjustable by means of an adjusting tension wheel.
7. Hood: Provide with internal hood baffle weatherseal.
 - a. 24 gauge galvanized steel with intermediate supports as required.
8. Electric Motor Operation: Provide UL listed electric operator, size as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second.
 - a. Sensing Edge Protection:
 - 1) Electric sensing edge.
 - b. Operator Controls:
 - 1) Interior Location / Push-button operated control stations with open, close, and stop buttons.
 - 2) Exterior Location / Key operation with open, close, and stop controls.
 - 3) Controls surface mounted.
 - c. Special Operation:
 - 1) Door timer operation.
 - d. Motor Voltage: see electrical plans.
9. Locking:
 - a. Interior slide bolt lock for electric operation with interlock switch.
10. Wall Mounting Condition:
 - a. Face-of-wall mounting.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify opening sizes, tolerances and conditions are acceptable.
- B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.

- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- E. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components (Electrical Contractor to supply and install power and control wires. Door Contractor to make wiring connections).
- F. Instruct Owner's personnel in proper operating procedures and maintenance schedule.

3.4 ADJUSTING

- A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.
- B. Adjust hardware and operating assemblies for smooth and noiseless operation.

3.5 CLEANING

- A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.

END OF SECTION

SECTION 08410 - ALUMINUM ENTRANCES AND WINDOWS

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 Work of this Section.

1.02 DESCRIPTION OF WORK

- A. Extent of aluminum entrances and windows is shown on drawings and schedules.
- B. Types of aluminum entrances and windows required include the following:
 - 1. Exterior entrance doors.
 - 2. Curtain Wall type framing system.
- C. Glazing: Refer to "Glass and Glazing" section of Division 8 for glazing requirements for aluminum entrances and windows, including doors.
- D. Finish hardware for aluminum doors is included as Work of this Section.
 - 1. Cylinders for locks are specified with "Finish Hardware" in another Division 8 section.
- E. Sealant around perimeter of aluminum frames is specified elsewhere in Division 7 section.
- F. Comply with provisions of Section 01028 - Modification Requirements.

1.03 SYSTEM PERFORMANCES

- A. General: Provide exterior entrance and curtain wall and windows assemblies that have been designed and fabricated to comply with requirements for system performance characteristics listed below as demonstrated by testing manufacturer's corresponding stock systems according to test methods designated.
- B. Thermal Movement: Allow for expansion and contraction resulting from ambient temperature range of 120°F (49°C).
- C. Wind Loading: Provide capacity to withstand loading indicated below, tested per ASTM E 330.
 - 1. Uniform pressure of 30 psf inward and 30 psf outward.

- D. Transmission Characteristics of Fixed Framing: Comply with requirements indicated below for transmission characteristics and test methods.
 - 1. Air and Water Leakages: Air infiltration of not more than 0.06 CFM per sq. ft. of fixed area per ASTM E 283 and no uncontrolled water penetration per ASTM E 331 at pressure differential of 8.0 psf (excluding operable door edges).
- E. Transmission Characteristics of Entrances: Provide entrance doors with jamb and head frames which comply with requirements indicated below for transmission characteristics and test methods.
 - 1. Air Leakage: Air infiltration per linear foot of perimeter crack of not more than 0.50 CFM for single doors and 1.0 CFM for pairs of doors per ASTM E 283 at pressure differential of 1.567 psf.

1.04 QUALITY ASSURANCE

- A. Drawings are based on one manufacturer's standard aluminum entrance and windows system. Another standard system of a similar and equivalent nature will be acceptable when differences do not materially detract from design concept or intended performances, as judged solely by Architect.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications, standard details, and installation recommendations for components of aluminum entrances and curtain wall and windows required for Project, including test reports certifying that products have been tested and comply with performance requirements.
- B. Shop Drawings: Submit shop drawings for fabrication and installation of aluminum entrances and curtain wall and windows, including elevations, detail sections of typical composite members, hardware mounting heights, anchorages, reinforcement, expansion provisions, and glazing.
- C. Samples: Submit samples of color of aluminum finish, on 12" long sections of extrusions or formed shapes and on 6" square sheets.

1.06 SPECIAL PROJECT WARRANTY

- A. Provide written warranty signed by Manufacturer, Installer, and Contractor agreeing to replace aluminum entrances and windows which fail in materials or workmanship within 3 years of acceptance. Failure of materials or workmanship includes excessive leakage or air infiltration, excessive deflections, faulty operation of entrances, deterioration of finish or construction in excess of normal weathering, and defects in hardware, weatherstripping, and other components of the work.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following or an approved equal:
 - 1. YKK AP America
 - 2. Kawneer Company, Inc.
 - 3. PPG Industries, Inc.
 - 4. Tubelite Div., Indal Inc.
 - 5. Amarlite/Arco Metals Co.

2.02 MATERIALS AND ACCESSORIES

- A. Aluminum Members: Alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish; ASTM B 221 for extrusions, ASTM B 209 for sheet/plate.
- B. Fasteners: Aluminum, non-magnetic stainless steel, or other materials warranted by manufacturer to be noncorrosive and compatible with aluminum components.
 - 1. Do not use exposed fasteners except where unavoidable for application of hardware. Match finish of adjoining metal.
 - 2. Provide Phillips flat-head machine screws for exposed fasteners.
- C. Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible; otherwise, nonmagnetic stainless steel or hot-dip galvanized steel complying with ASTM A 386.
- D. Concrete/Masonry Inserts: Cast iron, malleable iron, or hot-dip galvanized steel complying with ASTM A 386.
- E. Bituminous Coatings: Cold-applied asphalt mastic complying with SSPC-PS 12, compounded for 30-mil thickness per coat.
- F. Compression Weatherstripping: Manufacturer's standard replaceable stripping of either molded neoprene gaskets complying with ASTM D 2000 or molded PVC gaskets complying with ASTM D 2287. Weatherstripping shall be equal to Kawneer Sealair Weathering System, YKK, or an approved equal, which shall include head and jamb, astragal, and bottom weatherstripping.
- G. Glazing Materials: Provide manufacturers standard EDPM glazing gaskets.
- H. Sealant: Provide all sealant necessary within aluminum assemblies. Perimeter sealant around frames shall be included under Section 07900.

2.03 HARDWARE

- A. General: Refer to hardware section of Division 8 for requirements for hardware items other than those indicated herein to be provided by manufacturer of aluminum entrances.
- B. Thresholds: Extruded aluminum in mill finish, ADA compliance, complete with anchors, coordinated with pivots of size indicated or manufacturer's standard if not indicated. Set thresholds in full bed of sealant.

2.04 FABRICATION

- A. General - Sizes and Profiles: Required sizes for door and frame units, including profile requirements, are indicated on drawings.
 - 1. Details shown are based upon standard details by manufacturer indicated. Similar details by other manufacturers listed will be acceptable, provided they comply with other requirements, including profile limitations.
- B. Prefabrication: To greatest extent possible, complete fabrication, assembly, finishing, hardware application, and other work before shipment to project site. Disassemble components only as necessary for shipment and installation.
 - 1. Do not drill and tap for surface-mounted hardware items until time of installation at project site.
 - 2. Perform fabrication operations, including cutting, fitting, forming, drilling, and grinding of metal work in manner which prevents damage to exposed finish surfaces. For hardware, perform these operations prior to application of finishes.
- C. Reinforcing: Install reinforcing as necessary for performance requirements; separate dissimilar metals with bituminous paint or other separator which will prevent corrosion.
- D. Continuity: Maintain accurate relation of planes and angles, with hairline fit of contacting members.
- E. Fasteners: Conceal fasteners wherever possible.
- F. Weatherstripping: For exterior doors, provide compression weatherstripping against fixed stops; at other edges, provide sliding weatherstripping retained in adjustable strip mortised into door edge.
 - 1. Provide EPDM/vinyl blade gasket weatherstripping in bottom door rail, adjustable for contact with threshold.
 - 2. At interior doors and other locations without-weatherstripping, provide neoprene silencers on stops to prevent metal-to-metal contact.

2.05 STOREFRONT FRAMING SYSTEM

- A. General: Provide inside-outside matched resilient flush-glazed system fabricated for stick-type erection procedure, with provisions for glass replacement.
 - 1. Drawings are based on YKK, Similar by Kawneer, or an approved equal:
 - a. All aluminum doors, medium style.
 - b. All exterior windows and storefront: YKK Model YES 45TU System (2" x 4½") for 1" glazing. Aluminum door, single glazed.
 - c. Interior windows: YKK Model YES 40F-1, shall be 2" x 4" center glazed for non-insulated glass.
 - 2. Provide thermal-break frame members.

2.06 STILE-AND-RAIL TYPE ALUMINUM DOORS

- A. Frame: Provide tubular frame members, fabricated with mechanical joints using heavy inserted reinforcing plates and concealed tie-rods or j-bolts, or fabricate with structurally welded joints, at manufacturer's option.
- B. Glazing: Fabricate doors to facilitate replacement of glass, without disassembly of door stiles and rails. Provide square snap-on extruded aluminum glazing stops, with exterior stops anchored for non-removal.

2.07 FINISH

- A. All exposed aluminum surfaces shall be free of scratches and other serious blemishes.
 - 1. Finish shall be YKK standard finish YSIN, dark bronze anodized, or an approved equal.
 - 2. Hardware to match door.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for installation of aluminum entrances and windows.
- B. Set units plumb, level, and true to line, without warp or rack of framing members, doors. Anchor securely in place, separating aluminum and other corrodible metal surfaces from sources of corrosion or electrolytic action at points of contact with other materials.
- C. Drill and tap frames and doors and apply surface-mounted hardware items, complying with hardware manufacturer's instructions and template requirements. Use concealed fasteners wherever possible.

- D. Set sill members and other members in bed of sealant to provide weathertight construction.
- E. Refer to "Glass and Glazing" section of Division 8 for their installation of glass shown to be glazed into doors and framing.

3.02 ADJUST AND CLEAN

- A. Adjust operating hardware to function properly, without binding, and to provide tight fit at contact points and weatherstripping.
- B. Clean completed system, inside and out, promptly after erection and installation of glass and sealants. Remove excess glazing and sealants, dirt, and other substances from aluminum surfaces.
- C. Institute protective measures and other precautions required to assure that aluminum entrances and curtain wall and windows will be without damage or deterioration other than normal weathering at time of acceptance.

END OF SECTION

SECTION 08710

PART 1 – GENERAL

1.0 Related Documents

Drawings and general provisions of contract and Division 1 specification sections, apply to work of this section

1.01 SUMMARY

- A. Section Includes:
 - 1. Door Hardware.
 - 2. Storefront and Entrance Door Hardware.
 - 3. Installation of Finish Hardware.
- B. Related Sections:
 - 1. Section 06200 - Finish Carpentry
 - 2. Section 07900 - Joint Sealers – exterior thresholds
 - 3. Section 08100 – Metal Doors and Frames
 - 4. Section 08200 - Wood and Plastic Doors
 - 5. Section 08400 – Entrances and Storefronts
- C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.
 - 1. Windows.
 - 2. Cabinets, including open wall shelving and locks.
 - 3. Signs, except where scheduled.
 - 4. Toilet accessories, including grab bars.
 - 5. Folding Partitions, except cylinders where detailed.
 - 6. Sliding aluminum doors, except cylinders where detailed.
 - 7. Access doors and panels, except cylinders where detailed.

1.02 REFERENCES

- A. Use date of standard in effect as of BID date.
- B. American National Standards Institute – ANSI 156.18 – Materials and Finishes.
- C. ICC/ANSI A117.0 – 1998 – Specifications for making buildings and facilities usable by physically handicapped people.
- D. ADA – Americans with Disabilities Act of 1990.
- E. BHMA – Builders Hardware Manufacturers Association.
- F. DHI – Door and Hardware Institute
- G. NFPA – National Fire Protection Association
 - 1. NFPA 80 – Fire Doors and Windows
 - 2. NFPA 101 – Life Safety Code
 - 3. NFPA 105 – Smoke and Draft Control Door Assemblies
 - 4. NFPA 252 – Fire Tests of Door Assemblies

1.03 SUBMITTALS

ARCHITECT'S HARDWARE SCHEDULE:

Architect's hardware schedule is by hardware set number. Refer to drawings for designation of hardware set number applicable to each opening. Certain additional items of hardware and/or hardware accessories specified herein shall be finished and noted on the hardware schedule.

SUPPLIER'S HARDWARE SCHEDULE

A complete hardware schedule, indicating type, number, location, and finish shall be submitted to architect for approval, together with such samples as may be required for review. Opening numbers shall be same as used in contract documents. Schedule shall be prepared according to Door and Hardware Institute recommendations (schedule and sequence format) and shall include degree of door closer installation.

Supplier's hardware schedule will be reviewed by architect for type, quality, finish, and for function (other than hand). Contractor shall be responsible for checking schedule for correct hand of locksets and for supplying quantity of items required by contract documents.

Provide supplementary or revised hardware schedules if deemed necessary by architect.

Do not ship or deliver hardware to job prior to review of hardware schedules by architect.

Hardware schedule shall be submitted in the following format. Hardware schedules submitted to architect for review not in this format will be rejected:

HARDWARE SET 1

1 Sgl Door #001 Exterior from Corridor RHR 90 deg
Each leaf 3'0 x 7'0 x HMF x NLWD

Item, quantity, manufacturer's #, size, product type, finish, and product information

3 ea Hinge	BB1191 NRP 4.5 x 4.5	26D	HA
1 ea Cylinder	951 x GG MK	26D	FA
1 ea Exit Device	25R NL-OP	626	FA
Etc.			

1.04 QUALITY ASSURANCE

All hardware shall be furnished by an established Builders Hardware firm who maintains and operates an office, display, and stock in this area, and who is a regular authorized distributor of the lock they propose to furnish. All hardware schedules submitted for approval shall carry the signature and seal of a certified Architectural Hardware Consultant.

1.05 PROJECT CONDITIONS

Delivery storage and handling: Hardware supplier shall receive and check all hardware at his warehouse. Drop shipments to the jobsite from various manufacturers will not be permitted. All hardware shall be in its original packaging and plainly labeled and numbered to agree with the numbers and as listed in the hardware schedule. The contractor shall submit his schedules for approval to the architect before proceeding with any work. When required, hardware supplier shall deliver hardware and/or hardware templates to the various door manufacturers. The general contractor shall provide storage facilities for the finish hardware after delivery to the job site.

1.06 ITEMS NOT INCLUDED

Hardware for metal windows, toilet partitions, cabinets, access panels, etc. is not included in this section. See other sections for hardware to be furnished by others.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

Numbers given in this schedule are of the following manufacturers.

<u>PRODUCTS</u>	<u>MFG. SPECIFIED</u>	<u>APPROVED EQUAL</u>
Hinges	Ives	Hager, Bommer
Locks	Falcon	Schlage, Best
Exit Devices	Falcon	Von Duprin, Precision
Closers	LCN	Corbin-Russwin, Sargent
Trim/Auxiliary	Ives	Hager, Rockwood
Weather Strip	NGP	Pemko, Hager

2.02 HARDWARE FINISHES

US 32D	(630)	Hinges, Locks, Pivots, Bolts
US 32D	(630)	Push/Pulls, Exit Devices, Stops
Sprayed Aluminum		Door Closers
Aluminum		Thresholds

2.03 HINGES

Ball Bearing Hinges shall be five-knuckle construction. Hinges for exterior doors shall be stainless steel with non-removable pins, in the finish specified. Oil impregnated bearings are not an acceptable substitute for ball bearings. All hinges shall be 4 1/2" x 4 1/2", unless otherwise specified.

2.04 LOCKSETS

Furnish locksets and cylinders by same manufacturer. Cylinders shall be provided with small format interchangeable cores keyed to the owner's specifications. All lever locks shall be mortise or bored type as indicated. Lock bodies and lock trim shall be by the same manufacturer. Backset on all lever locks and deadlocks shall be 2 3/4" or 2 3/8" as required. All deadlocks shall have 1" throw bolts and be equipped with armor fronts. Trim for locksets shall be as indicated in the hardware sets. Locksets shall be ANSI/BHMA A156.2 series 4000 Grade 1 Cylindrical lock as scheduled.

2.05 EXIT DEVICES

Characteristics:

- a. Tested to be in accordance with ANSI A156.3, 1994, Grade 1. All exit devices to be heavy duty, with one-piece removable covers. The housing shall be manufactured from extruded aluminum without exposed screws or rivets.
 - b. Exit Devices shall be "UL" listed for Life Safety. All exit devices for fire-rated door openings shall have "UL" labels for "Fire Exit Hardware". All exit devices shall conform to NFPA 80 and NFPA 101 requirements.
 - c. All series exit devices shall be "touchpad" (modern) types, incorporating a hydraulic fluid damper, which decelerates the touchpad on its return stroke and eliminates noise associated with the exit device operation.
- All exit devices shall be non-handed. The touchpad shall extend a minimum of 1/2 of the door width and shall be a minimum of 2-3/16" in height. Plastic touchpads shall not be acceptable. The touchpad height shall exceed height of mechanism case or rail assembly to eliminate "Pinch Points". If the touchpad height does not exceed the height of the mechanism case or rail assembly, provide a factory installed insert / filler on the top and bottom of the touchpad along the mechanism case and rail assembly; to prevent "Pinch Points".

- d. All latch bolts to be the deadlocking type. Latch bolts shall have a self-lubricating coating to reduce wear. Plated or plastic coated latch bolts shall not be acceptable.
- e. All metal end caps to be standard with all exit devices.
- f. Exit device strikes, where surface applied, shall be a roller type and have an anti-slip mounting plate.
- g. All outside exit device trim shall be forged brass, full escutcheon. The pull shall have a grip that is 6 ¼' CTC and project 2 11/16".
- h. The exit device end caps shall be secured with three (3) screws to a truss bracket.
- i. The "touchpad" exit devices shall be patterned punched to designate code requirements; where required.
- j. All exit devices shall be made of brass, bronze, stainless steel, or aluminum material, plated to the standard architectural finishes to match the balance of the door hardware.
- k. Electric Latch retract options will require Power Supply from the same manufacturer.

2.06 CLOSERS

Door closers shall be full rack and pinion type. Closers shall be surface mounted. Equip closers with (2) two key operated regulating valves for individual control of both closing and latching speeds. Regulating valves shall be accessible from top of closer only and shall be completely unobtrusive. Closer shall have minimum of 15% door closing power adjustment and adjustable back check. Enclose closer in a cover of plastic. Closers on all exterior out-swinging doors and others as scheduled shall be parallel arm installation. Closer bodies and/or closer feet to be mounted on surface of door shall be supplied with sex bolts.

2.07 PUSH AND PULL UNITS

Push plates and pulls shall be solid stainless steel with a satin finish. Minimum thickness is .050; size and design are indicated in Hardware Sets.

2.08 PROTECTIVE PLATES

Kick, Armor, and Mop plates shall be height listed in schedule and width of 2" less than door width, or 1" less than door width of each leaf on pairs of doors. Plates shall be minimum thickness .050 stainless steel unless otherwise indicated.

2.09 THRESHOLDS

Provide (aluminum) thresholds where scheduled, with machine screws and lead expansion shields.

2.10 DOOR STOP

Provide door stops wherever necessary to prevent door or hardware from striking any adjacent partition or obstruction. Provide wall type whenever possible. All door stops and holders mounted on concrete floor or masonry walls shall have machine screws and lead expansion shields.

2.11 SILENCERS

Provide GJ-64 silencers for all hollow metal frames. Single doors shall have three (3) silencers. Double doors shall have two (2) silencers.

2.12 KEYING

Key locks to owner's specification. Obtain owners approval and signature on final approved keying. Perform all keying at lock factory, and register key data there. Deliver all master keys to Owner. No master keys shall be delivered to any other person.

PART 3 – EXECUTION

3.01 APPLICATION

INSTALLATION: Work shall be done by the **Hardware Supplier**, using skilled and experienced craftsman trained in the trade of installing finish hardware. Mortised items shall be neatly set in and made flush with door or frame surface. Manufacturer's instructions and recommendations shall be strictly followed.

FASTENERS: Hinges, pivots, locks, and exit devices shall be installed with proper sex bolts, wood or machine screws as supplied by the manufacturer. Surface closers shall be mounted to door with sex bolts. Door pulls shall be installed on doors with thru-bolts as supplied by manufacturer.

3.02 HARDWARE SETS

Hardware Set 1 Tag# 1

Continuous Hinges	112 HD
Concealed Vertical Rod	CD24C 718C
Concealed Vertical Rod	CD25C EO Inactive Leaf
Mortise Cylinder	C987
Rim Cylinder	C953
Ladder Pull	9266 72" Round Tip 630
Closer	4040XP Cush 18PA, 30, 61
Threshold	By Aluminum Door Provider
Weather Strip	By Aluminum Door Provider
Door Sweep	By Aluminum Door Provider
Permanent Core	C607

Hardware Set 2 Tag# 16

Continuous Hinges	112 HD
Concealed Vertical Rod	CD24R 718C
Concealed Vertical Rod	CD25C EO Inactive Leaf
Mortise Cylinder	C987
Rim Cylinder	C953
Ladder Pull	9266 72" Round Tip 630
Closer	4040XP Cush 18PA, 30, 61
Threshold	By Aluminum Door Provider
Weather Strip	By Aluminum Door Provider
Door Sweep	By Aluminum Door Provider
Permanent Core	C607

Hardware Set 3 Tag# 6, 7, 13, 40

Ball Bearing Hinge	5BB1 NRP 630
Rim Exit Device	CD25R NL-OP
Rim Exit Device	CD25R EO Inactive Leaf
Key Removable Mullion	KR4023
Mortise Cylinder	C987
Rim Cylinder	C953
Straight Pull	8103 EZHD-12 CTC
Closer	4040XP Cush
Threshold	425EV
Weather Strip	160VA
Mullion Seal	5100C
Door Sweep	97V
Meeting Stile Astragal	115NA
Permanent Core	C607

Hardware Set 4 Tag# 3, 4, 10, 12, 14

Ball Bearing Hinge	5BB1 NRP 630
Rim Exit Device	CD25R NL-OP
Mortise Cylinder	C987
Rim Cylinder	C953
Straight Pull	8103 EZHD-12 CTC
Closer	4040XP Cush
Threshold	425EV
Weather Strip	160VA
Door Sweep	97V
Permanent Core	C607

Hardware Set 5 Tag # 22

Ball Bearing Hinge	5BB1
Passage Latch	T101S Dane
Closer	1461 R w/PA
Kick Plate	8400 B-CS 10" x 2" LTDW
Wall Stop	407CVX

Hardware Set 6 Tag # 19, 20, 21, 26, 28, 33, 37, 45

Ball Bearing Hinge	5BB1
Office Lockset	T511 BD Dane
Kick Plate	8400 B-CS 10 x 2" LTDW
Wall Stop	407CVX
Permanent Core	C607

Hardware Set 7 Tag # 24, 25

Ball Bearing Hinge	5BB1
Privacy Indicator	MA321 DGM
Closer	1461 R w/PA
Kick Plate	8400 B-CS 10" x 2" LTDW
Wall Stop	407CVX

Hardware Set 8 Tag # 27, 34, 35, 43, 44

Ball Bearing Hinge	5BB1
Storeroom Lockset	T581 BD Dane
Closer	1461 R w/PA
Kick Plate	8400 B-CS 10 x 2" LTDW
Wall Stop	407CVX
Permanent Core	C607

Operational Intent: Classroom Doors are to be normally closed and locked. Instructor to open door to allow students to enter. Door can also be opened via manual key from corridor side.

Hardware Set 9 Tag # 29, 31, 32, 36, 41, 42, 46

Ball Bearing Hinge	5BB1
Storeroom Lockset	T581 BD Dane
Kick Plate	8400 B-CS 10 x 2" LTDW
Wall Stop	407CVX
Permanent Core	C607

Hardware Set 10 Tag# 23

Ball Bearing Hinge	5BB1
Flush Bolt	FB458-12 Top & Bottom
Storeroom Lockset	T581 BD Dane
Surface Overhead Stop	454H Both leaves

Hardware Set 11 Tag# 30

Ball Bearing Hinge	5BB1
Flush Bolt	FB458-12 Top & Bottom
Storeroom Lockset	T581 BD Dane
Closer	1461 R w/PA Active Leaf
Surface Overhead Stop	454H Inactive Leaf
Coordinator	3092 Trimco
Kick Plate	8400 B-CS 10 x 1" LTDW
Permanent Core	C607

Hardware Set 12 Tag# 38

Ball Bearing Hinge	5BB1	
Concealed Vertical Rod	CD25C-L	
Concealed Vertical Rod	CD25C-L	
Mortise Cylinder	C987	
Closer	4040XP	Cush
Kick Plate	8400	B-CS 10 x 1" LTDW
Permanent Core	C607	

Hardware Set 13 Tag # 17, 18

Ball Bearing Hinge	5BB1	
Storeroom Lockset	T581	BD Dane
Electric Strike	MDS 100-32D	
Closer	1461	R w/PA
Kick Plate	8400	B-CS 10 x 2" LTDW
Wall Stop	407CVX	
AI Phone Intercom System		
1 JODV PS182OULJOS-1B		
1 JOW-2D 2-Door adapter for JOJOW-2D		
1 Form C Relay RY-1824L		
1 Desk Stand, adjustable MCW-S/B		
1 2-conductor 18ga non-shielded cable 500' 87180250C		
Permanent Core	C607	

Operational Intent: Doors are normally closed and locked. Key side for door 17 is Vestibule 100, key side of door 18 is Reception 102. Video Intercom to be located in Vestibule 100 pressing button will alert Reception Desk that someone is at door 17. If authorized ingress is approved, the Receptionist can release the Electric Strike from the desk. Once in the Reception 102 area, if authorized ingress into the school is approved, the Receptionist can release the Electric Strike to door 18.

End of Schedule

SECTION 08800 - GLASS AND GLAZING

PART 1 - SCOPE

- A. This Section includes all labor, materials, equipment and related items required for the work of glass and glazing as shown on the Drawings and specified herein.

PART 2 - SUBMITTALS

- A. The Contractor shall submit to the Architect for approval prior to furnishing materials at the job site, in five (5) copies, manufacturer's specifications, application and performance data, etc. for all glass and glazing materials, except miscellaneous accessories specified hereunder.
- B. Samples. The Contractor shall submit if requested to the Architect for approval prior to furnishing materials at the job site, duplicate samples of the following:
 - 1. Glass of each type, not less than 3" x 5".
 - 2. Glazing compound, one (1) cartridge.

PART 3 - CODES AND STANDARDS

- A. All glazing compounds and methods of glazing shall be in accordance with applicable portions of the Flat Glass Marketing Association's "Glazing Manual", latest edition.
- B. All safety glazing shall meet requirements of the Kentucky Department of Housing, Buildings, and Construction and appropriate Kentucky Revised Statutes.

PART 4 - PRODUCT HANDLING

- A. Glass shall be delivered to the job and shall be stored on end and under cover. Glass shall be properly crated, packaged, and protected from damage. Glazing compounds shall be delivered in manufacturer's sealed containers, with attached labels properly identifying the types.

PART 5 - MATERIALS

- A. Insulating glass for installation in aluminum windows shall be of sizes shown, composed of outer and inner panes of 1/4" (color: solar grey) 1/4" clear .548, 1" O.A. , by LOF separated by a 1/2" dehydrated air space. Each unit shall be hermetically sealed and glass shall be separated by a spacer around the edges as standard with the manufacturer.
 - 1. Warranty. Each unit shall be guaranteed by the manufacturer not to develop, under normal conditions, material obstruction of vision as a result of film formation on the internal glass surfaces caused by failure of the hermetic seal other than through glass breakage for a period of ten (10) years.

- B. Compound for glazing in openings other than those which are dry-glazed shall be non-staining, one-part polysulfide base sealant, and shall be PRC "Rubber Caulk 5000", Pecora "Synthacalk GC-9", or DAP "Flexiseal". Color of compound shall be manufacturer's standard as selected by the Architect.
- C. Miscellaneous Items. Provide neoprene spacers, setting blocks, clips, and all accessories required for the work of glazing.
- D. Other material shall be as specified hereinafter.

PART 6 - GLAZING

- A. General Requirements:
 - 1. Glazing shall be done in a weathertight and waterproof manner. No glazing work shall be done when the temperature is below 40 degree F.
 - 2. Glazing surfaces shall be extremely clean, dry and completely dust free before commencing application of glazing materials.
 - 3. Remove glazing beads completely, perform glazing operations and set back in correct location. Do not mar beads, screws and the like.
 - 4. Glazing shall be done at the building after windows, frames, doors, etc. are installed.
 - 5. Remove excess glazing compound from glass and other adjacent surfaces to prevent permanent stains or other damage.
- B. Aluminum entrance doors and fixed window frames shall be glazed in strict accordance with entrance manufacturer's instructions and details for these operations.

PART 7 - CLEANING

- A. At completion, remove dirt, stains, etc. from glass. Wash and polish glass inside and outside surfaces. Exercise care so as not scratch or damage glass. Do not use acid solution or water containing caustic soaps. Leave work in perfect condition as approved by the Architect.

End of Section

Division IX

Finishes

SECTION 09260 - GYPSUM BOARD

PART 1 - GENERAL

1.01 SUMMARY

- A. Related Documents: Provisions established in General and Supplementary Conditions of the Contract, Division 1 General Requirements, and the Drawings are collectively applicable to this Section.
- B. Section Includes:
 - 1. Interior metal stud wall framing studs, 20 gage material thickness.
 - 2. Furred wall framing.
 - 3. Metal channel ceiling framing.
 - 4. Gypsum board.
 - 5. Cementitious backer board.
 - 6. Taped and sanded joint treatment.

1.02 SUBMITTALS

- A. Submit under provisions of Section 01330.
- B. Product Data: Provide data on metal framing, gypsum board, joint tape and joint compound.
- C. Submit manufacturer's installation instructions for each product proposed for use.

1.03 QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM C 840, GA-201, GA-216 and GA-600.

1.04 DELIVERY, STORAGE, HANDLING

- A. Deliver, store, handle, and protect products in conformance with manufacturer's instructions and in accordance with Section 01600.
- B. Store inside building, on sleepers, and out of water.

1.05 QUALIFICATIONS

- A. Applicator: Company specializing in performing the work of this section with minimum of 3 years documented experience.

1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable code for fire rated assemblies.
- B. Refer to Drawings for details and references to UL and GA assemblies.

PART 2 - PRODUCTS

2.01 MANUFACTURERS - GYPSUM BOARD

- A. Acceptable Manufacturers: Subject to compliance with requirements indicated, provide products of one of the following:
 - 1. U. S. Gypsum.
 - 2. Georgia-Pacific Gypsum, LLC.
 - 3. National Gypsum.
 - 4. American Gypsum Co.
 - 5. Certainteed Corp.
- B. Substitutions: Under provisions of Section 01600.
- C. Specific product references are these of U.S. Gypsum Company unless noted otherwise as a standard of quality.

2.02 GYPSUM BOARD MATERIALS

- A. Fire Rated Gypsum Board: ASTM C 36; fire resistive type X or C, UL rated; 48 inch by 5/8 inch thick, maximum permissible length; ends square cut, tapered and beveled edges.
- B. Moisture Resistant Gypsum Board: ASTM C 630; 48 by 5/8-inch thick, type X or C (fire-rated), maximum permissible length ends square cut, tapered edges.
- C. Gypsum Backing Board: ASTM C 442; fire rated type 'X'; 5/8-inch thick; V-grooved edges, ends square cut, maximum permissible length.
- D. Abuse-Resistant Gypsum Board: ASTM C1629, medium duty 5/8-inch thick.
- E. Cementitious Backer Units: ANSI A118.9, ASTM C 1288 or ASTM C 1325, with manufacturer's standard edges. Thickness (as indicated).

2.03 MANUFACTURERS - FRAMING SYSTEMS

- A. Acceptable Manufacturers: Subject to compliance with requirements indicated, provide products of one of the following:
 - 1. Clark Steel Framing Systems, Inc., Hinckley, OH.
 - 2. Consolidated Systems, Inc., Columbia, SC
 - 3. Dale/Incor Industries, Dearborn, MI.
 - 4. Delta Metal Products, Dallas, TX.
 - 5. Dietrich Industries, Inc., Hutchins, TX.

6. Knorr Steel Framing Systems. Salem, OR.
7. The Steel Network Inc., Raleigh, NC.
8. Unimast, Inc., Houston, TX

B. Substitutions: Under provisions of Section 01600.

2.04 FRAMING MATERIALS

- A. Studs and Tracks: ASTM C 645; galvanized sheet steel, gage as indicated on Drawings, 'ST' series shape, depths as indicated on Drawings. Provide with floor and ceiling runners, 'C' shaped galvanized, 1-1/4 inch leg.
- B. Shaft Wall Studs: Galvanized finish, length and depth as required, gage as recommended by manufacturer for heights encountered to maintain a maximum deflection of L/240 with 5 pound horizontal loading.
- C. Furring, Framing and Accessories: Provide in conformance with ASTM C 645, GA-216, and GA-600 and as follows:
 1. Cold Rolled Channels: 3/4inch, 1-1/2 inch and 2 inches, 16 gage, prime painted.
 2. Furring Channels: 7/8 inch deep x 1-1/4 inch face, 25 gage, galvanized.
 3. Resilient Furring: 7/8 inch deep x 1-1/4 inch face, 25 gage, galvanized with one leg attached only.
- D. Fasteners: ASTM C 514 for nails and C 1002 for screws as follows:
 1. Inserts, clips, bolts, nails or other screws as recommended by manufacturer, of type and size to suit application and to rigidly secure materials in place.
 2. Self-drilling, self-tapping bugle head screws for use with power drive tool.
 3. Metal Framing to Structure: Power driven screw fasteners to withstand 190 pound single shear resistance and 200 pound bearing force when drive through structural head or base and without exceeding allowable design stress in runner, fastener, or structural support.
 4. Metal to Metal: 3/8 inch, Type S or S-12, pan head screws.
 5. Gypsum Board to Sheet Metal Application: Type S screws.
 6. Gypsum Board to Gypsum Board Application: Type G screws.
 7. Vertical Deflection Connection (required under all steel beams where the top metal track is tied into the steel beam): Provide VertiClip® or VertiTrack™ deflection-accommodating anchorage devices, by The Steel Network Inc. Products shall conform to the following material properties and performance criteria:
 - a. Code Criteria:
 1. Meet required head of wall connection criteria as required by applicable referenced code for cyclic wall movement.
 - b. Material Composition: Meeting ASTM A653/A, SS grade 50, class 1, 50 ksi

minimum yield strength, 65 ksi minimum tensile strength, G-60 hot dipped galvanized coating.

- c. Material Thickness: 0.036 inch thick for VertiClip SLD series.
- d. Clips shall be designed for positive attachment to structure and stud web using step-bushing technology to provide frictionless vertical movement.
- e. Provide clips with attached bushing and screw of the series, size, and configuration as recommended by manufacturer.
- f. Friction-fit deep-leg track assemblies and tracks relying on steel flexure to perform are unacceptable.
- g. Substitutions: Must comply with the following:
 - 1. Meets ASTM A653/A, SS Grade 50, class 1 50 ksi minimum yield strength, 65 ksi minimum tensile strength, G-60 hot dipped galvanized coating.
 - 2. Certified for use in UL 2079-approved assemblies for cyclic movement.
 - 3. Structural testing performed per AISI requirements.

2.05 ACCESSORIES

- A. U. S. Gypsum Company products specified below as a standard of quality, unless noted otherwise.
 - 1. Acoustical Insulation: Refer to Section 07210.
 - 2. Acoustical Sealant and Tape: Non-hardening, non- skinning, for use in conjunction with gypsum board; manufactured by Tremco, Pecora, or USG.
 - 3. Corner Beads: Metal, equal to USG Durabead No. 103, galvanized.
 - 4. Casing Beads: Equal to USG No. 200-A, galvanized. 5.
 - 5. Control Joint: Equal to USG No. 093, galvanized.
 - 6. Hanger Wire: Annealed galvanized wire, of gauges indicated (or required to suit application) to rigidly support ceiling components in place.
- B. Joint Treatment and Texture Materials
 - 1. Joint Tape:
 - a. ASTM C 475 or FS SS-J-570, Type II, perforated tape.
 - b. Joint compound:
 - 1. ASTM C 475 or FS SS-J-570, Type I.
 - 2. Acceptable Product:
 - i) Taping compound: USG Durabond Joint Compound Taping.
 - ii) Topping: USG Joint Compound-All Purpose.

C. Reveal Moldings

1. Extruded aluminum, 6063 T5 alloy, clear anodized unless otherwise noted, in profiles as indicated on the Drawings, as made by Pittcon or Fry Reglet.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that site conditions are ready to receive work and opening dimensions are as indicated on shop drawings and instructed by the manufacturer.
- B. Beginning of installation means acceptance of existing substrate.

3.02 METAL STUD INSTALLATION

- A. Follow recommendations of U.S. Gypsum Co., "Gypsum Construction Handbook".
- B. Install studding in accordance with ASTM C 754, GA-201, GA- 216, and GA-600.
- C. Metal Stud Spacing: 16 inches on center, unless otherwise noted in schedule or on Drawings. Locate studs maximum of 2 inches from door frames, abutting partitions, corners, and other construction features.
- D. Stud to Structure: Refer to Drawings for indication of partitions extending stud framing through the ceiling to the structure above. Provide vertical deflection accommodating devices where each stud connects to structural members above.
- E. Stud to Ceiling: Refer to Drawings for indication of partitions extending to finished ceiling only and for partitions extending through the ceiling to the structure above.
- F. Door Opening Framing: Install double studs at door frame jambs. Install stud tracks on each side of opening, at frame head height, and between studs and adjacent studs.
- G. Blocking: Screw wood blocking to studs. Bolt or screw steel channels to studs. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, shelving, toilet accessories, and hardware.
- H. Coordinate installation of bucks, anchors, blocking, electrical and mechanical work placed in or behind partition framing.
- I. Stud Connections: Secure studs to runners with screws at door and window frames, partition intersections and corners. Where required for additional height, splice studs by nesting a minimum lap of 18 inches and attach flanges together with 2 screws in each flange. Prevent structural loading of stud systems.

- J. Restroom Chase Wall Studs: Position double row of studs vertically in runners so that studs are opposite each other in pairs with flanges pointed in same direction. Space at 16 inches on center unless otherwise noted. Anchor each stud to runner flanges with screws. Cross brace between rows of studs with wallboard, 12 inches by chase width, screw attached to stud webs at quarter points in partition height, with 1 inch screws spaced 8" off center in each stud web.
- K. Seismic Requirements: Provide lateral bracing and other measures in accordance with seismic requirements of applicable codes and regulations.

3.03 WALL FURRING INSTALLATION

- A. Erect wall furring for direct attachment to concrete block and concrete walls.
- B. Erect furring channels vertically. Secure in place on alternate channel flanges at maximum 24 inches on center.
- C. Space furring channels maximum 16 inches off center, not more than 4 inches from floor, ceiling lines and abutting walls.
- D. Erect free-standing metal stud framing tight to concrete and concrete masonry walls, attached by adjustable furring brackets in accordance with manufacturer's instructions.

3.04 FURRING FOR FIRE RATINGS

- A. Install furring as required for fire resistance ratings indicated.

3.05 SHAFT WALL INSTALLATION

- A. Shaftwall Framing: In accordance with manufacturer's installation instructions. Space studs at 16 inches on center. Cut so that studs are no more than 1/2 inch shorter than rough opening.

3.06 CEILING FRAMING INSTALLATION

- A. Install in accordance with ASTM C 754, GA-201, GA-216, and GA-600 and manufacturer's instructions.
- B. Coordinate location of hangers with other work. Use 9 gage wire for single layer wall board, and 8 gage wire for double layer. Space at maximum 48 inches on center each way, unless ceiling framing occurs at more frequent intervals.
- C. Install ceiling framing independent of walls, columns, and above-ceiling work. Locate members within 6 inches of walls. Unless shown otherwise, use 1-1/2 inch cold-rolled channels, 2 inch on double layer board, at 48 inches off center main framing with furring channels at 24 inches on center, 16 inches on center for double layer board.

- D. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches past each end of openings.
- E. Laterally brace entire suspension system.

3.07 ACOUSTICAL ACCESSORIES INSTALLATION

- A. Install resilient channels at maximum 24 inches on center. Locate joints over framing members.
- B. Place acoustical insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.
- C. Install acoustical sealant at wall perimeter of designated partitions as follows:
 - 1. Metal Framing: Two beads at contact area at intersecting walls, floors and ceilings.
 - 2. Base Layer Gypsum Board: One bead.
 - 3. Seal penetrations of partitions by conduit, pipe, ductwork, rough-in boxes, and access door frames.

3.08 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with GA 201, GA 216, GA-600 and U.S.G. "Gypsum Construction Handbook".
- B. Erect interior board horizontally if space is small so as to avoid end butt joint; otherwise install gypsum board vertically, with ends and edges occurring over firm bearing. Stagger end joints to occur at different locations on opposite sides of wall. Apply board to suspended ceilings with long dimension at right angles to framing.
- C. Erect exterior gypsum sheathing horizontally, with edges butted tight and ends occurring over firm bearing. Abut boards without forcing. Neatly fit ends and edges of boards and make cuts and penetrations so that paper facing and gypsum core are not damaged.
- D. Use screws when fastening gypsum board to metal furring or framing and nails to wood studding. Stagger fasteners opposite each other on adjacent ends and edges. Space fasteners as recommended in U.S.G., "Gypsum Construction Handbook". Do not attach gypsum board to top track on partitions extending from floor to structure above.
- E. Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum ceiling board with sealant.

- F. Place control joints at changes in back-up material, at maximum 20'-0" off center in exterior walls , and at maximum 30'- 0" off center at interior partitions. In ceilings, install at maximum 30'-0" off center each way. Provide fire resistant protections behind control joints in fire rated assemblies.
- G. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
- H. On fire rated assemblies, seal penetrations and make air-tight. Refer to Section 07840 for firestopping requirements and materials.
- I. Thicken partitions to eliminate wall surface jogs for the full length of the wall within a room to conceal structural members, pipes, panels, specialty items, and accessories.
- J. Coordinate door and other frame thicknesses as required.

3.09 JOINT TREATMENT

- A. Tape, fill, and sand exposed joints, edges, and corners to produce surface ready to receive finishes. The intent is to provide the highest quality of joint treatment work consistent with commercial construction. Leave surfaces smooth, uniform, and free of fins, depressions, ridges, cracks, and other imperfections.
- B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.
- C. Levels of Finish:
 - 1. Comply with GA-214; italicized commentary is excluded; replace words "may" and "should" with "shall."
 - 2. Locations to receive Level 4 finish: Areas to be painted.
 - 3. Locations to receive Level 3 finish: Areas to receive moisture resistant gypsum board used as a tile substrate.
 - 4. Locations to receive Level 2 finish: Fire-rated, sound-rated, and smoke-rated assemblies in ceiling plenums and concealed areas.
 - 5. Locations to receive Level 1 finish: Non-fire-rated, non-sound-rated, and non-smoke-rated assemblies in ceiling plenums and concealed areas.

3.10 TOLERANCES

- A. Maximum Variation from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09300 - CERAMIC TILE

PART 1 – GENERAL

1.1 DESCRIPTION

A. Furnish all labor, materials, tools, equipment and services necessary for and reasonably incidental to complete the tile work as shown on the drawings or specified.

B. Related documents, drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to work of this section.

C. Related Sections

1. Division 7, sealing expansion joints and other joints in tile work (joint sealant types, colors and manufacturers to be specified by Architect).
2. Division 3, Concrete. 03300

1.2 REFERENCE STANDARDS

Comply with current editions and applicable Specifications of the following:

1. American Society for Testing and Materials (ASTM).
2. American National Standards Institute (ANSI).
3. Tile Council of North America (TCNA) Handbook for Ceramic Tile Installation.

1.3 QUALITY ASSURANCE

A. Provide tile materials of each type, color and finish as indicated on Finish Schedule in architectural drawings.

B. Deliver, store and handle materials in accordance with manufacturer's instructions.

C. Tile contractor, by commencing the work of this section, assumes overall responsibility to assure that all assemblies, components and parts shown or required within the work of this section comply with contract documents and are compatible with each other and with the conditions and expected use.

D. Qualified Labor: Engage an installer with a minimum of five (5) years experience with commercial tile installations similar in material, design and scope to that indicated.

- E. Extra Stock: Furnish extra stock of quantity equal to 5% of amount installed, in full-size units, for each type, color, size and finish of tile.

1.4 SUBMITTALS

- A. Verification Samples: Submit the following for each type, color, size, and finish included in the work.

- 1. Full size tile and trim shapes.
- 2. Grout color samples.
- 3. Sealant color samples or Prefabricated Joint/Transition Strip Samples

- B. Product and Installation Data:

- 1. Porcelain tile manufacturer's product and technical data indicating compliance with applicable standards.
 - 2. Master Grade Certificates for each type of tile issued by tile manufacturer and signed by the installer, only available after the material has shipped from the manufacturer.
 - 3. Mortar and grout manufacturer's technical data sheets indicating suitability for the installation specified and compliance with applicable standards.
- 3. Sealant or prefabricated joint manufacturer's product and technical data.

1.5 ENVIRONMENTAL

- A. Comply with requirements of referenced standards and recommendations of material manufacturers for environmental conditions before, during and after installation.
- B. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- C. Maintain minimum and maximum temperature limits as recommended by manufacturers.
- D. Protect adjacent surfaces during progress of the work in this section.

- E. Illuminate the work area during installation providing the same level and angle of illumination as will be available for final inspection. The use grazing or cove type lighting where lights are located either at the wall/ceiling interface, or mounted directly to the wall prompts the light to strike the tile finish at a straight down angle, creating unwanted shadows from grout lines giving the tile layout an un-flat irregular appearance. Installing overhead lighting at a wide downward angle 18"-24" away from the tiled wall will provide a flatter more uniform appearance to the tiled surface.

PART 2 – PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Furnish tile complying with "Standard/First Grade" requirements per ANSI A137.1 - 2012, for
types of tile indicated.
- B. Comply with ANSI Standard for Tile Installation Material and current Tile Council of North America (TCNA) Handbook for products and materials indicated for setting and grouting.

2.2 TILE

- A. Unglazed and glazed porcelain tile shall be of style, color, size and finish as listed in Finish Schedule on Architectural Drawings, and shall conform to the requirements of ANSI A137.1

2.3 SETTING AND GROUTING MATERIALS

- A. Use appropriate installation mortars according to ANSI A118-2014.
- B. Grouting Materials: Select grouting materials according to the following types: Tile setting and grouting epoxy: A118.6-2010 Standard Cement Grout, A118.7-2010, High Performance Cement Grout or A118.8-2010, Modified Epoxy Emulsion Grout. Provide grout in colors selected by the Architect from standard colors available from the approved manufacturers.
- C. Use waterproofing/Anti Fracture Membrane as required according to ANSI A118.12.

2.4 EXPANSION JOINTS, CONTROL, CONTRACTION, AND ISOLATION JOINTS

- A. Refer to most current TCNA Handbook, Method EJ171 for recommendations on locating, treating and detailing various types of construction joints.
- B. Use sealant complying with ASTM C920 according to Type, Grade, Class and Uses required.
- B. Prefabricated expansion joints can also be used when suitable for installation.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates where tile will be installed for compliance with requirements for installation tolerances and other conditions effecting performance of installed tile. Before tiling concrete surfaces saturated dry (SSD), free of standing water verify that substrates for setting tile are well cured, structurally sound dry, clean, and free from oil or waxy films, curing compounds or other coatings and surface treatments. Nonstructural shrinkage cracks should be pretreated with a crack suppression membrane (to prevent telegraphing of cracks through the finished tile installation) ANSI A118.12.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected. Commencement of work signifies acceptance of substrate and installation conditions.

3.2 PREPARATION

- A. Substrate Preparation: Prepare and clean substrate in accordance with installation standards and manufacturer's instructions, and as follows:
 - 1. Remove protrusions, bumps and ridges by grinding or chipping.
 - 2. Repair, fill, and level cracks, holes, depressions and rough or chipped areas in substrate using patching material recommended by setting materials manufacturer.
 - 3. Slab to have light broom finish when tile is installed by thin-set method.
 - 4. Before tiling, verify that all surfaces to be tiled are structurally sound true to plane, and fall within maximum variations shown below: Ensure that the substrate is within the following tolerances:

- a. Horizontal surfaces (floors) - Maximum variation in substrate shall not exceed 1/4 " in ten feet* from required plane, depending on substrate.
- b. Vertical surfaces (walls) - Maximum variation in substrate shall not exceed 1/4 " in ten feet* from the required plane, depending on substrate.

* When using large format defined by TCNA Handbook as tiles with at least one edge 15" in length or greater; a more stringent tolerance 1/8" in 10' or 1/16" in 24" when measure from the high points on the surface is required.

Report all unacceptable surfaces to the architect in writing, and do not tile such surfaces until they are leveled enough to meet above requirements.

- B. Jobsite Blending: Blend tiles before installing in accordance with reference standards to produce an even range and distribution of color and finish.

3.3 INSTALLATION

- A. Manufacturers' Instructions: Perform work in compliance with standard accepted installation guidelines, manufacturer's instructions and setting materials manufacturers' instructions.

- B. Comply with appropriate ANSI A108-2014 specification and current Tile Council of North America Handbook (TCNA) for appropriate method of installation for each specification. For thin set adhesive mortar application use following technique:

- With the flat side of trowel, key mortar into substrate.
- Using the appropriate size trowel, comb mortar in one direction with notched side of the trowel.
- Set tile with a sliding motion, perpendicular to the mortar ridges.
- Obtain as near 100% coverage as possible of mortar to tile.
- Mortar coverage shall be no less than 85% and shall be sufficiently distributed to give full support under all corners and edges of the tile.
- Note: 95-100% coverage is mandatory for wet and exterior areas. Periodically, remove sheets or individual tiles to assure proper bond coverage consistent with industry specifications.

- C. Installing Tile:

1. Install tile in pattern indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Adjust to minimize tile cutting and to avoid tile less than half size.

2. When possible, smooth cut edges of tile and/or use appropriate cutter or wet saw to produce smooth cuts. Provide straight cuts which align with adjacent materials.
3. Extend tile into recesses and under equipment and fixtures to form a complete covering without interruption.
4. Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint alignment.
5. Provide tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints smooth and even, without voids, cracks, or excess mortar or grout.
6. Mix mortar in strict accordance with manufacturer's recommendations.
7. Apply setting material in accordance with manufacturer's directions and install tile before mortar has started initial cure. For thin set mortar application, use a notch trowel that will achieve the recommended coverage of mortar after tiles have been installed. Reference standard coverage information and follow manufacturer's recommendations for trowel size when using mortar.
8. Do not spread more material than can be covered within 10 to 15 minutes. If "skinning" occurs, remove mortar and spread fresh material. Spread mortar with notches running in one direction that shall be perpendicular to the pressing, pushing and pulling of tile during placement.
9. Place tile in fresh mortar, press, push and pull the tile slightly to achieve as near 100% coverage and contact of tile with setting material and substrate as possible. The coverage shall be no less than 85% and be sufficiently distributed to give full support of the tile. Make sure that all corners and edges are well supported with mortar. Leave no hollow corners or edges. NOTE: 95-100% coverage is mandatory for wet or exterior areas. A skim coat ("back-butter") of mortar can be placed onto the entire back of the tile using a trowel in order to assist in optimum adhesion and coverage of the mortar being used.
10. Ensure there is a minimum 1/8" of mortar between tile and substrate after proper bedding. Installer must periodically remove sheets or individual tiles to assure proper bond coverage consistent with industry specifications. If coverage is found to be insufficient, use a larger size notch trowel.
11. Use a beating block and hammer or rubber mallet so that faces and edges of individual tiles are flush and level with faces and edges of adjacent tiles, and to reduce lippage.
12. For running bond/brick joint patterns utilizing tiles (square or rectangular) where the side being offset is greater than 18" (nominal dimension), the running bond

offset will be a maximum of 33% unless otherwise specified by the tile manufacturer. If an offset greater than 33% is specified, specifier and owner must approve mock-up and lippage.

D. Grouting:

1. Install grout in accordance with ANSI A108.10, A108.6, A108.8, A108.9-2010 correlating to grout type chosen and manufacturer's recommendations.
2. Mix grout material in strict accordance with manufacturer's directions.
3. Apply grout to produce full, smooth grout joints of uniform width, and free of voids and gaps.
4. Before grouting entire area do a test area to assure there will be no permanent staining or discoloration of the tile and to verify that the grout is easily removed from the surface. If necessary, pre-coat exposed surfaces of tile with a grout release as recommended by the manufacturer, as this will facilitate removal of the grout.
5. Cure all setting and grouting materials in accordance with manufacturer's recommendations.

E. Cleaning and Protection:

1. If one has been used, remove grout release and clean tile surfaces so they are free of grout residue and foreign matter, in accordance with manufacturer's instructions. If a grout haze or residue remains, use a suitable grout haze remover or cleaner and contact grout manufacturer for recommendations. Flush surface with clean water before and after cleaning. Do not use harsh hydrochloric, muriatic or sulfuric acid or acid-based cleaners to clean glazed tiles or tiles grouted with latex modified grout.
2. When a heavy residue of Portland cement grout is present, acceptable tile cleaning acids may be used. However, the grout should be allowed to cure a minimum of 10 days before this aggressive cleaning method is employed. Tile and grout shall be soaked with water before cleaning. In the absence of a recommendation from the grout manufacturer, acid cleaning may be done with a saturated solution of phosphoric or sulfamic acid, mixed in accordance with manufacturer's recommendations.
3. Protect all floor tile installations with clean construction paper or other heavy covering during construction period to prevent staining or damage. After cleaning,

provide protective covering and maintain conditions to protect tile work from damage or deterioration. Where tiled surfaces will be subject to equipment or wheel traffic or heavy construction traffic, and during move-in of furniture and equipment, cover protective covering with 1/4" hardboard, plywood or similar material. No foot or wheel traffic permitted on floor for at least 3 days after grouting. Owner/specifier is responsible for protecting tile from damage including allowing sufficient time for installed materials to cure properly typically 30-45 days is required for full cure of thin set bonding mortars.

4. Leave finished installation clean and free of cracked, chipped, broken, un-bonded, and otherwise defective tile work.

END OF SECTION

SECTION 09511 - SUSPENDED ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 Work Included

- A. Suspended metal grid ceiling system.
- B. Acoustical tile panels.

1.02 Related Work

- A. Air diffusion devices in ceiling system.
- B. Light fixtures in ceiling system.

1.03 References

- A. ASTM C635 - Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- B. ASTM C636 - Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
- C. UL - Underwriter's Laboratories System Ratings.

1.04 Quality Assurance

- A. Manufacturer: Company specializing in the manufacture of ceiling suspension system and ceiling tile panels, three years minimum experience.
- B. Installer: Company shall have experience installing the approved manufacturer.

1.05 Regulatory Requirements

- A. Conform to applicable code for fire rated assembly where required.

1.06 Submittals

- A. Submit shop drawings and product data for review.
- B. Indicate on shop drawings, grid layout and related dimensioning, junctions with other work or ceiling finishes, interrelation of mechanical and electrical items related to system.
- C. Provide product data on metal grid system components, and acoustic units.
- D. Submit samples to Owner and Architect for review.
- E. Submit manufacturer's installation instruction.

1.07 Environmental Requirements

- A. Maintain uniform temperature of minimum 60 degree F (16 degrees C), and humidity of 20 to 40 percent prior to, during, and after installation.

1.08 Sequencing/Scheduling

- A. Do not install acoustical ceilings until building is enclosed, sufficient heat is provided, dust generating activities have terminated and overhead work is completed, tested, and approved.
- B. Schedule installation of acoustic units after interior work is dry.

1.09 Extra Stock

- A. Provide one carton [of each type used] extra tile panels to Owner.

PART 2 - PRODUCTS

2.01 Manufacturer - Suspension System

- A. Suspension system shall be from the same manufacturer as acoustic units.

2.02 Suspension System

- A. Armstrong "15/16" Prelude ML" exposed tee system for square lay-in units, or an approved equal.
- B. Grid Finish: White
- C. Support Channels and Hangers: Size and type to suit application, to rigidly secure acoustic ceiling system including integral mechanical electrical components with maximum deflection of 1/360.

2.03 Acoustic Units

- A. Armstrong "Fine Fissured – High NRC" #1754, 24"x24"x7/8", square lay-in, color: white, USG, CertainTeed or approved equal.
- B. Armstrong "Fine Fissured" #1728, 24"x24"x5/8", square lay-in, color: white, USG, CertainTeed or approved equal.

PART 3 - EXECUTION

3.01 Inspection

- A. Verify that existing conditions are ready to receive work.
- B. Verify that layout of hangers will not interfere with other work.
- C. Beginning of installation means acceptance of existing conditions.

3.02 Installation

- A. Install system in accordance with ASTM C636 manufacturer's instructions and as supplemented in this Section.
- B. Install system capable of supporting imposed loads to a deflection of 1/360 maximum.
- C. Install after major above ceiling work is complete. Coordinate the location of hangers with other work.
- D. Supply hangers or inserts for installation of mechanical and electrical if metal deck is not supplied with hanger tabs, coordinate the installation of hanger clips during steel deck erection. Provide additional hangers and inserts as required.
- E. Hang system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers (and related carrying channels) to span the extra distance.
- G. Center system on room axis leaving equal border units, unless otherwise directed by reflected ceiling plan.
- H. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- I. Do not eccentrically load systems, or produce rotation of runners.
- J. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths. Miter corners. Provide edge moldings at junctions with other interruptions.
- K. Form expansion joints as required.

L. Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.

M. Install acoustic units level, in uniform plane, and free from twist, warp and dents.

3.03 Tolerances

A. Variation from flat and level surface: 1/8 inch in 10 ft.

End of Section

SECTION 09650 - RESILIENT FLOORING

PART 1 - GENERAL

1.01 SUMMARY

- A. Extent of resilient flooring and accessories as shown on Drawings and Specified herein.

Work includes:

1. Vinyl Cove Base
2. Resilient Edge Strips

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data and installation instructions for resilient flooring and accessories in accordance with Section 01300.
- B. Samples: Submit, for verification purposes, samples of each type, color and pattern of resilient flooring and accessory required, indicating full range of color/pattern variation.
- C. Maintenance Instructions: Submit copies of manufacturer's recommended maintenance practices for each type of resilient flooring required to Owner.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of standard quality of manufacturers as specified. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

Refer to Finish Schedule on Drawings for styles and colors of specified materials.

- A. Vinyl Cove Base, 4" or 6" high x .080 thickness set-on type, as manufactured by Johnsonite, Mannington, or approved equal, and furnished in 120' long rolls meeting the requirements of ASTM F1861, Type TV, Group 1 and ASTM E-648/NFPA 253, Class 1.
- B. Resilient Edge Strips: ADA compliant, homogeneous vinyl or rubber transition strips as required where change of flooring types occur. Color to match flooring or as selected by Architect from standard colors available.
- C. Adhesives: As recommended by flooring manufacturer to suit material and substrate conditions.

- D. Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.
- E. Leveling Compound: As recommended by flooring manufacturer.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Make a thorough examination of surfaces to receive resilient flooring. If surfaces are defective and will not permit a proper finished installation, immediately notify the Architect in writing, or assume responsibility for and rectify any resulting unsatisfactory condition.
- B. Inspect floor for holes, cracks and smoothness. Test for dryness. Do not proceed with laying until subfloors are dry and smooth, holes and cracks filled.

3.02 PROJECT CONDITIONS

- A. Substrate Conditions: The installer shall verify in writing to the Owner, a minimum of 30 days prior to scheduled resilient flooring installation, the following substrate conditions:
 - 1. Moisture: Initial emission rate, as tested with a calcium chloride test kit.
 - 2. Alkalinity: pH range of 6-8. Must not exceed pH of 10.
- B. After application (by others) of the concrete sealer, the installer shall perform a second calcium chloride test. These second test results will be compared with the previous results. Final results shall not exceed resilient flooring manufacturer's allowable emission rate.
- C. Maintain minimum temperature of 68°F (20°C) in spaces to receive resilient flooring for at least 72 hours prior to installation, during installation and for not less than 48 hours after installation. Subsequently, maintain minimum temperature of 68°F in areas where work is completed.
- D. Install resilient flooring and accessories after they have the same temperature as the space and after other finishing operations, including painting, have been completed. Moisture content and alkalinity level of concrete slabs, as well as environmental conditions, must be within limits recommended by manufacturer of products being installed.

3.03 PREPARATION

- A. Broom clean or vacuum surfaces to be covered, and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work.
- B. Use leveling compound as recommended by flooring manufacturer for filling small cracks, holes and depressions in subfloor.

- C. Perform moisture tests on concrete slabs to determine that concrete surfaces are sufficiently cured dry as well as to ascertain presence of curing compounds, and ready to receive flooring.
- D. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

3.04 INSTALLATION

- A. Place flooring with adhesive cement in strict compliance with manufacturer's recommendations. Butt tightly to vertical surfaces, thresholds, nosings, and edgings. Scribe around obstructions to produce neat joints, laid tight, even, and straight. Extend flooring into toe spaces, door reveals, and into closet and similar openings.
- B. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other nonpermanent-marking device.
- C. Install flooring on covers for telephone and electrical ducts, and other such items as occur within finished floor areas.
- D. Maintain overall continuity of color and pattern with pieces of flooring installed in these covers. Tightly cement edges to perimeter of floor around covers and to covers.
- E. Tightly cement flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll flooring at perimeter for each covered area to assure adhesion.
- F. Tile Floors
 - 1. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room are of equal width. Adjust as necessary to avoid use of cut widths less than $\frac{1}{2}$ tile at room perimeters.
 - a. Lay tile square to room axis, unless otherwise shown.
 - b. Lay tile in "checkerboard" fashion with grain quarter-turned in adjacent tiles unless recommended otherwise by manufacturer.
 - c. Follow Floor Tile Patterns as indicated on Drawings where required.
 - 2. Match tile for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped or deformed tiles are not acceptable.
 - 3. Adhere tile flooring to substrates using full spread of adhesive applied in accordance with flooring manufacturer's recommendations.

- G. Accessories: Apply resilient base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with preformed corner units or fabricated from base materials with mitered or coped inside corners. Tightly bond base to backing throughout length of each piece, with continuous contact at horizontal and vertical surfaces.
1. On masonry surfaces or other similar irregular surfaces, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
 2. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

305 CLEANING AND PROTECTION

- A. Immediately upon completion of the resilient flooring remove any excess adhesive or other surface blemishes, using neutral type cleaners as recommended by flooring manufacturer.
1. Do not wash or machine scrub linoleum for at least 3-5 days after installation.
 2. Do not strip factory finish from linoleum sheet flooring per Manufacturer recommendations.
- B. Protect installed flooring with heavy Kraft paper or other covering.
- C. Finishing: After completion of project and just prior to final inspection of work, thoroughly clean all floors and accessories.
1. Apply waxes to vinyl composition tile flooring, where applicable, as recommended by the Manufacturer (2 coats minimum) and buff prior to Owner's occupancy and/or final completion of the project.

306 EXTRA STOCK

- A. Provide the Owner with the following: one (1) unopened carton of each tile selection specified on this project.

End of Section

SECTION 09681 - MODULAR CARPET

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Carpet Tile as specified on the drawings.
 - 1. Moldings, adhesives cements for glued-down installation.
- B. Specified in Other Sections:
 - 1. Wall Base.
 - 2. Transition edges

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's complete technical product data for each type of edge trim, tack strip, cement and adhesive types and other related materials necessary to complete the installation.
- B. Submit carpet samples for verification of color and patterns:

1.03 QUALITY ASSURANCE

- A. Products and methods of installation specified herein are compatible with and approved by carpet manufacturer.
- B. General Terminology/Information Standard: Carpet and Rug Institute's "Carpet Specifier's Handbook".
- C. Flame/Smoke Resistance Standards: Provide materials meeting the following test rating standards as required Building Code Requirements.
 - 1. Pill Test: ASTM D 2859, or DOC FF-1-70.
 - 2. Floor Radiant Panel Test: ASTM E 648, with minimum average radiant flux ratings not less than 0.22 watts/sq. cm.
 - 3. Smoke Density Test: ASTM E 662 or NFPA No. 258 rating within limit required by governing regulation.

1.04 PRODUCT HANDLING

- A. Contractor is responsible for receiving and handling, on-site, all carpet materials furnished by Owner.
 - 1. For each material delivery, the Contractor shall fill out receiving reports furnished by Owner. Each delivery shall be inspected for damage. All damage shall be noted on the carrier's delivery slips and shall be forwarded to the Construction Manager immediately upon receipt of delivery. If damaged material is not reported when

discovered, the Contractor assumes full responsibility.

- B. Storage areas shall be secure and dry with temperatures maintained above 65°F at all times.

1.05 PROJECT CONDITIONS

- A. Coordination: Coordinate this Work with the Work of other Sections to avoid any delay or interference with other Work.
- B. Maintain 70°F. during and 24 hours before and after installation. Maintain temperature of 55°F and a relative humidity range of 35% to 50% in completed areas.
- C. Notify Construction Manager of any defects, mismarking or evidence of damage to carpet materials or appearance of moisture, mildew or fungus.

1.06 WARRANTY

- A. Warrant carpet installation for one year from opening date of facility from becoming unserviceable or causing an objectionable appearance resulting from defects such as:
 - 1. Release from the substrate.
 - 2. Bunching and rippling.
 - 3. Opening of seams.

1.07 MAINTENANCE MATERIALS

- A. Deliver 20 carpet squares of each carpet type to Owner at completion of installation for his reserve supply. In addition, save squares over 1/2 square in size for the Owner's reserve.

PART 2 - PRODUCTS

2.01 ACCEPTABLE PRODUCTS

- A. Carpet Tile: See Architectural drawings Finish Schedule for materials to be provided.

2.02 CARPET ACCESSORIES

- A. Adhesive:
 - 1. Water resistant, non-staining type meeting flammability requirements for installed carpet.
 - 2. Acceptable Products: Adhesive as recommended by Manufacturer of modular carpet tiles.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Repair minor holes, cracks, depressions and rough areas using material recommended by carpet and adhesive manufacturer. Remove contaminants and dirt. Prepare floor as recommended by carpet manufacturer. Leave floor clean and dry.

3.02 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for joint locations and carpet direction. Maintain uniformity of carpet direction and lay of pile. Center joints at door openings.
- B. Extend carpet under open-bottomed obstructions and under removable flanges and furnishings, and into alcoves and offsets of each space.
 - 1. Install edge guard with epoxy where carpet ends against other materials. Center edge guard under doors in door openings.
- C. Provide cutouts where required. Install edge guards where edge of carpet is exposed.

3.03 GLUE-DOWN INSTALLATION

- A. Test substrate to demonstrate effectiveness of adhesive. Remove sample demonstrating procedure to minimize damage to carpet. Apply primer to entire substrate as necessary for adequate bond of carpet.
- B. Layout carpet tile prior to adhering. Maintain straight joints, true with lines of building. Except where patterns are indicated, install carpet squares centered in space in both directions. However, no edge tiles shall be cut to less than 1/2 of their width. Carpet tiles shall be laid with 5 adhesive spots per tile. Unless otherwise indicated, install tiles with the nap all running in the same direction.
- C. Securing base of pile at cut edges with seaming cement without evidence on carpet face.
- D. Apply adhesive to substrate in accordance with manufacturer's instructions. Butt carpet edges tightly together to form joints without gaps. Roll lightly to eliminate air pockets and ensure uniform total-area bond of carpet to substrate. Remove adhesive (if any appears) promptly from face of installed carpet.

3.04 SUBSEQUENT OPERATIONS

- A. Remove and dispose of debris and all cut squares less than 1/2 square in size.
- B. Vacuum carpet using commercial machine with face-beater element. Remove spots and replace carpet where spots cannot be removed. Remove protruding face yarn.

END OF SECTION

SECTION 09900 - PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Extent of painting work is shown on drawings and schedules, and as herein specified.
- B. The work includes painting and finishing of interior and exterior exposed items and surfaces throughout Project, except as otherwise indicated.
 - 1. Surface preparation, priming, and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of work.
- C. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate, or finish coats.
- D. Surfaces to be Painted: Except where natural finish of material is specifically noted as a surface not to be painted, paint exposed surfaces whether or not colors as designated in "schedules". Where items or surfaces are not specifically mentioned, paint the same as similar adjacent materials or areas. If color or finish is not designated, Architect will select these from standard colors or finishes available.
- E. Do not paint over any code-required labels such as Underwriters Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

1.2 QUALITY ASSURANCE

- A. Single Source Responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer on published product data pages, and use only within recommended limits.
- B. Coordination of Work: Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information or characteristics of finish materials provided for use, to ensure compatible prime coats are used. Test existing surfaces scheduled to receive new paint or epoxy coating to insure compatibility of new primer and paint system.
- C. Employ only experienced and competent mechanics.
- D. Field Quality Control: Prepare and finish a sample area or room as directed. Finish in accordance with specification requirements for Architect's approval of materials, color and workmanship. Approved area or room shall serve as Project Standard.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical information including paint label analysis and application instructions for each material proposed for use.
- B. Provide Owner at completion of job, one gallon of paint of each color selected. Provide original unopened labeled containers with color sample and list of room numbers where used.

1.4 DELIVERY AND STORAGE

- A. Deliver materials to job site in original, new, and unopened packages and containers bearing manufacturer's name and label, and following information:
 - 1. Name or title of material.
 - 2. Federal Specification number, if applicable.
 - 3. Manufacturer's stock number and date of manufacturer.
 - 4. Manufacturer's name.
 - 5. Contents by volume, for major pigment and vehicle constituents.
 - 6. Thinning instructions.
 - 7. Application instructions.
 - 8. Color name and number.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage of paint in a clean condition, free of foreign materials and residue.
 - 1. Protect from freezing where necessary. Keep storage area neat and orderly. Remove oily rags and waste daily. Take all precautions to ensure that workmen and work areas are adequately protected from fire hazards and health hazards resulting from handling, mixing, and application of paints.

1.5 JOB CONDITIONS

- A. Coordinate with other trades to insure adequate ventilation and dust-free environment during application and drying of paint.
- B. Maintain temperature and humidity within Manufacturer's recommended tolerances.
- C. Do not apply paint in snow, rain, fog, or mist; or when humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by paint manufacturer's printed instructions.
 - 1. Painting may be continued during inclement weather if areas and surfaces to be painted are enclosed and heated within temperature limits specified by paint manufacturer during application and drying periods.
- D. Painting Contractor shall provide stand mounted, high intensity, portable lighting for their use during painting to provide adequate illumination.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide paint products of one of the following:
 - 1. The Sherwin-Williams Company
 - 2. PPG
 - 3. Benjamin Moore
 - 4. Porter Paints
 - 5. Calhoun Farrell

2.2 MATERIALS

- A. Material Quality: Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable.
 - 1. Proprietary names used to designate colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other manufacturers.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Applicator must examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Applicator.
- B. Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.
- C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

3.2 SURFACE PREPARATION

- A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.
 - 1. Provide barrier coats over incompatible primers or remove and re-prime as required. Notify Architect in writing of any anticipated problems in using the specified coating systems with substrates primed by others.
 - 2. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items.

3. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease in accordance with SSPC SP-1, prior to mechanical cleaning. Program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly-painted surfaces.
- B. Cementitious Materials: Prepare cementitious surfaces of concrete, concrete block, to be painted by removing efflorescence, chalk, dust, dirt, grease, oils in accordance with ASTM D 4258/D 4259/D 4261 (CMV).
1. Determine alkalinity and moisture content of surfaces to be painted by performing ASTM D 4262. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct this condition before application of paint. Do not paint over surfaces where moisture content exceeds that permitted in manufacturer's printed directions.
- C. Wood: Clean wood surfaces to be painted of dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.
1. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, paneling.
 2. When transparent finish is required, use spar varnish for back-priming.
 3. Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.
- D. Ferrous Metals: Clean ferrous surfaces which are not galvanized or shop-coated of oil, grease, dirt, loose mill scale, and other foreign substances by solvent or mechanical cleaning in accordance with SSPC SP-1.
1. Touch up shop-applied prime coats wherever damaged or bare, where required by other sections of these specifications.
 - a. Clean and touch-up with same type shop primer.
- E. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum based solvent such as Great Lakes Laboratories "Clean N' Etch".

3.3 MATERIALS PREPARATION

- A. Mix and prepare painting materials in accordance with manufacturer's directions.
- B. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.

- C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

3.4 APPLICATION

- A. General: Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.
 - 1. Paint colors, surface treatments, and finishes are indicated in "Schedules" of the Contract Documents.
 - 2. Provide finish coats which are compatible with prime paints used.
 - 3. Apply additional coats when undercoats, stains, or other conditions show through final coat of paint, until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces. Dry film thickness will be measured according to SSPC PA-2.
 - 4. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.
 - 5. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat non-specular black paint such as Sherwin-Williams: PM 400 Black, B30 or B400.
 - 6. Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.
 - 7. Finish exterior doors on tops, bottoms, and side edges same as exterior faces unless otherwise indicated.
 - 8. Sand lightly between each succeeding enamel or varnish coat.
 - 9. Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted unless otherwise indicated.
- B. Scheduling Painting: Apply first-coat material to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
 - 1. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

- C. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer. Dry film thickness will be measured according to SSPC PA-2.
- D. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to those items exposed in mechanical equipment rooms and in occupied spaces, and exposed exterior work that is not factory finish painted.
- E. Prime Coats: Apply prime coat of material which is required to be painted or finished, and which has not been prime coated by others.
 - 1. Re-coat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.
- F. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- G. Transparent (Clear) Finishes: Use multiple coats to produce glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.
 - 1. Provide satin finish for final coats unless otherwise indicated.
- H. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

3.5 CLEAN-UP AND PROTECTION

- A. Clean-Up: During progress of work, remove from site discarded paint materials, rubbish, cans, and rags at end of each work day.
 - 1. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.
- B. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.
 - 1. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.

2. At the completion of work of other trades, touch up and restore all damaged or defaced painted surfaces.

3.6 ADJUST AND CLEAN

- A. Clean surfaces of spills, splatters, drips and stains from painting application.
- B. Replace and adjust finish hardware, accessories, fixtures and similar items removed from work.
- C. Touch-up damaged paint surface prior to acceptance of building by the Owner. Mix or thin touch-up paint as recommended by the Manufacturer and blend into existing paint.

3.7 PAINT SYSTEMS

- A. Paints listed are those of Sherwin-Williams unless noted otherwise.
Painting subcontractor wishing to use other products must submit their “or equal” for review during the bidding process. Please note that *colors have been selected*.
- B. Exterior Coating Systems:
 1. Ferrous Metals
Primer: Sherwin-Williams Industrial Enamel, B66W310 @ 2-2.5 mils dft
1st Coat: Sherwin-Williams Industrial Enamel, B66W310 @ 2-2.5 mils dft
2nd Coat: Sherwin-Williams Industrial Enamel B54W00101 @ 2.0-2.5 mils dft per coat
3rd Coat: Sherwin-Williams Industrial Enamel B54W00101 @ 2.0-2.5 mils dft per coat
 - a. Typical Applications: Overhead doors and frames, steel doors and frames, piping, pipe railing, miscellaneous metals.
 2. Zinc Coated Metals
Primer: Sherwin-Williams Pro Industrial ProCryl Universal Primer B66W310 @ 2.0-2.5 mils dft
1st Coat: Sherwin-Williams Pro Industrial ProCryl Universal Primer B54W00101 @ 2.0-2.5 mils dft
2nd Coat: Sherwin-Williams Pro Industrial ProCryl Universal Primer B54W00101 @ 2.0-2.5 mils dft
 3. Concrete Block
Provide clean and dulled surface for application of new paint as recommended by paint manufacturer.
1st Coat: Sherwin-Williams Heavy Duty Block filler B42W46 @ 7.0-14.5 mils dft
2nd Coat: Sherwin-Williams Pro Industrial Multi-Surface Acrylic EgShel, B66W01561 @ 1.5-2.0 mils dft
3rd Coat: Sherwin-Williams Pro Industrial Multi-Surface Acrylic EgShel, B66W01561 @ 1.5-2.0 mils dft

C. Interior Coating Systems:

1. Interior Ferrous Metal: Door Frames, Miscellaneous Metals: 2 coats of an all purpose industrial enamel, over a fast drying, rust inhibitive alkyd enamel.

1st Coat: Sherwin-Williams Pro Industrial ProCryl Universal Primer, B66W310 @ 2.0-2.5 mils dft

2nd Coat: Sherwin-Williams Industrial Enamel B54W00101 @ 2.0-2.5 mils dft per coat

3rd Coat: Sherwin-Williams Industrial Enamel B54W00101 @ 2.0-2.5 mils dft per coat

2. Interior Gypsum Drywall (semi-gloss): 2 coats of an interior waterborne acrylic semi-gloss, durable and non-yellowing, over an interior vinyl acrylic latex wall primer.

1st Coat: Sherwin-Williams Quick Dry Interior Exterior Stain Blocking Primer @ 1.2-1.5 mils dft

2nd Coat: Sherwin-Williams ProMar 200 Zero VOC Semi-Gloss B31W02651 @ 1.5 mils dft

3rd Coat: Sherwin-Williams ProMar 200 Zero VOC Semi-Gloss B31W02651 @ 1.5 mils dft

3. Interior Gypsum Drywall (flat): 2 coats of an interior latex flat, durable and non-yellowing, over an interior latex wall primer.

Primer: Sherwin-Williams Quick Dry Interior Exterior Stain Blocking Primer, B51W08670 @ 1.2-1.5 mils dft

1st Coat: Sherwin-Williams ProMar 200 Zero VOC Flat, B30W02651 @ 1.4-2.0 mils dft

2nd Coat: Sherwin-Williams ProMar 200 Zero VOC Flat, B30W02651 @ 1.4-2.0 mils dft

4. Interior Gypsum Drywall (eggshell): 2 coats of an interior latex eggshell, durable and non-yellowing, over an interior latex wall primer.

Primer: Sherwin-Williams Quick Dry Interior Exterior Stain Blocking Primer, B51W08670 @ 1.2-1.5 mils dft

1st Coat: Sherwin-Williams ProMar 200 Zero VOC EgShel, B20W02651 @ 1.5 mils dft

2nd Coat: Sherwin-Williams ProMar 200 Zero VOC EgShel, B20W02651 @ 1.5 mils dft

5. Galvanized Metal: 2 coats of an interior waterborne acrylic semi-gloss, durable and non yellowing

1st Coat: Sherwin-Williams DTM Primer/Finish, B66W0001 @ 2.2-3.5 mils dft

2nd Coat: Sherwin-Williams Pro Industrial Acrylic, B66W00651 @ 1.5-4.0 mils dft

6. Aluminum: 2 coats of an interior waterborne acrylic semi-gloss, durable and non yellowing.

1st Coat: Sherwin-Williams Pro Industrial Acrylic, B66W00651 @ 1.5-4.0 mils dft

2nd Coat: Sherwin-Williams Pro Industrial Acrylic, B66W00651 @ 1.5-4.0 mils dft

7. Wood-Closed Grain: Stained: 2 coats of a satin waterborne polyurethane over an interior oil based stain.

1st Coat: S-W WoodClassics Interior Oil Stain, A49N00202

2nd Coat: S-W WoodClassics Waterborne Polyurethane Varnish, A68V0091

3rd Coat: S-W WoodClassics Waterborne Polyurethane Varnish, A68V0091

8. Concrete Floors (Unpolished)

1 application of Prosoco "Consolideck LS/CS" @ 300 - 800 sq.ft./gallon, using low pressure spray-on method as directed by manufacturer.

Note: New concrete must cure long enough to walk on before application. Do not use concrete curing compound where product is specified. Blanket-cure ONLY.

9. Exposed Structural Steel: 2 coats of a semi-gloss waterborne dryfall

1st Coat: S-W Pro Industrial DTM Primer-Finish, B66W0001 @ 2.2-3.5 mils dft

2nd Coat: S-W Pro Industrial Waterborne Dryfall, B42W00083 @ 2.3-3.5 mils dft

3rd Coat: S-W Pro Industrial Waterborne Dryfall, B42W00083 @ 2.3-3.5 mils dft

END OF SECTION

Division X Specialties

SECTION 10155 - TOILET COMPARTMENTS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Metal partitions for toilets.
- B. Urinal Screens
- C. Attachment hardware.

1.02 RELATED WORK

- A. Section 10800 - Toilet and Bath Accessories: Toilet accessories.

1.03 REFERENCES

- A. ASTM A424 - Steel Sheets for Porcelain Enameling.
- B. FS RR-P-1352 - Partitions, Metal Toilet, Complete.
- C. ASTM A526 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality.
- D. ASTM A167 - Stainless and Heat Resisting Chromium-Nickel Steel, Plate, Sheet and Strip.

1.04 SUBMITTALS

- A. Submit shop drawings and product data, along with manufacturer's descriptive literature, installation instructions and appropriate color selection charts.
- B. Clearly indicate partition layouts, swing of doors, elevations, anchorage and mounting details, panel construction, components hardware, finishes and all relevant dimensions.

PART 2 - PRODUCTS

2.01 METAL TOILET COMPARTMENTS

- A. Acceptable Manufacturers
 - 1. Flush-Metal Partition Corp.
 - 2. Metpar
 - 3. Sanymetal
 - 4. Approved Equal
- B. Type
 - 1. Provide floor-mounted, overhead-braced toilet partitions with anti-grip headrail.

2. Provide pilaster-type floor-supported urinal screens.
3. Provide end stalls to meet ADA requirements.

C. Materials

1. 1" thick, of two sheets galvanized steel, honeycomb core, welded edges and corners.
2. Finish: Baked enamel. Color to be selected by Architect.
3. Attachments, Screws and Bolts: Stainless steel, tamper-proof type, heavy duty extruded aluminum brackets.
4. Hardware: Chrome-plated non-ferrous cast pivot hinges, gravity type, adjustable for door closing positioning; nylon bearings; concealed, thumb-turn door latch; door strike and keeper with rubber bumper; chrome plated coat hook and bumper.

D. Fabrication

1. Fabricate partitions in accordance with FS RR-P-1352
2. Doors and Panels: 1" or 1-1/4" x 58" high, 24" wide doors at standard stalls, 34" wide doors at handicap stalls.
3. Provide internal reinforcement where necessary for attachment of hardware and fittings. Mark locations of reinforcement for partition-mounted washroom accessories.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Examine site conditions to which work is to be applied. Report discrepancies to Architect/ Engineer in writing.
- B. Take site dimensions affecting this work.
- C. Ensure correct spacing of plumbing fixtures.
- D. Ensure correct location or built-in framing, anchorage, and bracing, where required.

3.02 INSTALLATION

- A. Install partitions secure, plumb, level, and square.
- B. Leave 1/2 inch space between wall and panels and between wall and end plasters.
- C. Attach panel brackets securely to walls using anchor devices as required by manufacturer.
- D. Attach panels and pilasters to bracket with through sleeve tamperproof bolts and nuts.

- E. Anchor urinal screen panels to walls with two panel brackets and vertical upright to floor.
- F. Provide for adjustment of floor variations.
- G. Equip each door with hinges, one door latch, and one coat hook and bumper.
- H. Install door strike keeper and door bumper on each pilaster in alignment with door latch.
- I. Adjust and align hardware to uniform clearance at vertical edges of doors not exceeding 1/4".
- J. Adjust hinges to locate doors in partial open position when unlatched, except that out-swing doors shall return to closed position.

3.03 CLEANING

- A. Damaged, scratched or marred defective materials will be rejected, and shall be replaced with new materials.
- B. Remove protective maskings. Clean surfaces free of oil and imperfections.

End of Section

SECTION 10426 - IDENTIFYING DEVICES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish and install all signage and identifying devices and handicap parking signs were shown or scheduled on the Drawings and specified herein.
- B. This section includes the installation of such devices in locations as indicated on plans, or where not shown, as required to meet requirements of the Americans with Disability Act of 1990 (ADA).

1.02 SUBMITTALS

- B. Manufacturer's Data: Submit manufacturer's descriptive literature and specifications, including color samples of material for selection, as applicable for approval.
- B. Submit shop drawings listing sign styles, lettering and locations, and overall dimensions of each sign.

1.03 REFERENCES

- A. American National Standards Institute (ANSI): A117.1 - 1992 Accessible Signage Standards (4.28 Signage)
- B. American Society for Testing and Materials (ASTM).
- C. Americans with Disabilities Act Accessibility Guideline (ADAAG): 4.30 Signage
- D. California Title 24 Accessible Signage Standards (3105)

1.04 DELIVERY, STORAGE & HANDLING

- A. Deliver components correctly packaged to prevent damage.
- B. Store in secure areas, out of weather and protected from work of other trades.

1.05 WARRANTY

- A. Provide Manufacturer's standard one-year limited warranty covering manufacturing defects.

PART 2 - PRODUCTS

2.01 TACTILE SIGNAGE

- A. Tactile signage stating "EXIT" and complying with ICC/ANSI A117.1, shall be installed adjacent to the latch side of the door, 48" minimum/60" maximum above the finished floor to center of sign.

Sign shall be 4"x4" unless space is restricted, then 2"x8" sign shall be used.

Locate at doors #01, 03, 04, 06, 07, 10, 12, 13, 14, 16, 17, 27, 34,35,38,40,43 & 44.



2.03 INTERIOR ROOM SIGNAGE

- A. Style: Signs shall be single-faced, Lettering Specialists, Inc. - Tactile Signage, Inc., or an approved equal, radiused corners, beveled edge with decorative reveal around the perimeter; Optima semi-bold style, color as selected by Architect. Schedule shall be as furnished by the Architect/Owner. Composition shall be a design similar to manufacturers standards and meeting all requirements of Americans with Disabilities Act (ADA). Signs shall be mounted with double-faced tape as furnished by the manufacturer.
- B. Pictograms: Pictograms (where required) shall be accompanied by the equivalent verbal description placed directly below the pictogram. The border dimensions of the pictogram shall be 6 inches minimum in height. Pictograms, like non-permanent text, may be recessed.
- C. Mounting Location and Height: Signs shall be installed on the wall adjacent to the latch side of the door. Where there is no wall space to the latch side of the door, including at double leaf doors, signs shall be placed on the nearest adjacent wall. Mounting height shall be 60 inches above the finished floor to the centerline of the sign.
- D. SCHEDULE:

<u>Room No.</u>	<u>Description</u>	<u>Qty.</u>	<u>Sign Type</u>
108	Unisex w/ ADA symbol	1	A
109	Unisex w/ ADA symbol	1	A
129	Men w/ ADA symbol	1	B
128	Women w/ ADA symbol	1	C



A



B



C

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Before installing signs, verify that mounting surfaces are completely finished and ready for installation. Inspect surface to be sure it is clean and free from contaminants that may adversely affect mounting system adhesion.
- B. Do not install signs until surfaces are acceptable. Notify Architect if there are any questions as to suitability of installation surfaces or installation locations.

3.02 INSTALLATION

- A. Install signs in accordance with manufacturer's instructions and in accordance with ADA guidelines for location and as indicated in schedules.
- B. Install after doors are installed and after doors and walls are finished.
- C. Assure signs are installed level.
- D. Mounting Location and Height: Signs shall be installed on the wall adjacent to the latch side of the door. Where there is no wall space to the latch side of the door, including at double leaf doors, signs shall be placed on the nearest adjacent wall. Mounting height shall be 60 inches above the finished floor to the centerline of the sign.

3.03 CLEANING AND PROTECTION

- A. At completion of the installation, clean soiled sign surfaces in accordance with the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION

SECTION 10522 - FIRE EXTINGUISHERS AND ACCESSORIES

PART 1 - GENERAL

1.01 Work Included

- A. Fire extinguishers
- B. Cabinets and wall mounting brackets

1.02 References

- A. NFPA 10 Portable Fire Extinguishers.

1.03 Quality Assurance

- A. Conform to NFPA 10 requirements for extinguishers.

1.04 Submittals

- A. Submit product data.
- B. Submit manufacturer's installation instruction.

1.05 Operation and Maintenance Data

- A. Submit manufacturer's operation and maintenance data.
- B. Include test, refill or recharge schedules, procedures, and re-certification requirements.

1.06 Environmental Requirements

- A. Do not install extinguishers when ambient temperatures may cause freezing.

PART 2 - PRODUCTS

2.01 Acceptable Manufacturers or an approved equal.

- A. Larsen
- B. J.L. Industries
- C. Modern Metal Products.
- D. Substitutions: Reviewed equal.

2.02 Extinguishers

- A. Fire Extinguishers #1-#13 shall be Larsen Model MP10, 10 lbs., U.L. Rating 4A-60B:C, J.L. Industries, or an approved equal.
- B. For location of extinguishers, see Floor Plan.

2.03 Cabinets/Accessories

- A. Fire Extinguishers #1, #2, #5, #7, #9 and #10 shall be mounted in a semi-recessed cabinet, Larsen Model 2409-6R, non fire-rated cabinet, clear anodized aluminum with Vertical Duo, partial glass door and 2½" rolled edge.
- B. Fire Extinguishers #3, #4, #6, #8 and #11 shall be wall-mounted with manufacturer's standard bracket.

PART 3 - EXECUTION

3.01 Installation

- A. Install fire extinguishers 36" a.f.f. or as required by NFPA 10. Top of cabinet mounted at 60" a.f.f.
- B. Secure rigidly in place in accordance with manufacturer's instructions.

End of Section

SECTION 10800 - TOILET ROOM ACCESSORIES

PART 1 - GENERAL

1.01 Work Included

- A. Toilet room accessories.

1.02 Related Work

- A. Wall blocking required to secure accessories
- B. Glazing/caulking
- C. Toilet compartments
- D. Gypsum wallboard systems
- E. Plumbing fixtures
- F. Countertops

1.03 References (including but not limited to)

- A. ANSI A117 - 1986 Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
- B. UBC - Chapters 5 and 33 Requirements for Handicapped.
- C. Title 24, California Code of Regulations, Parts 2, 3, and 5.
- D. ADA, Accessibility Guidelines for Buildings and Facilities, Federal Register Volume 56, Number 144, Rules and Regulations.
- E. Fair Housing Amendments Act of 1988, Accessibility Guidelines, Federal Register Volume 56, Number 44.

1.04 Quality Assurance

A. Manufacturer

1. Model numbers for toilet room accessories manufactured by Bradley Corp. Washroom accessories are listed to establish a standard of quality for design, function, materials, workmanship and appearance. Other manufacturers may be submitted for evaluation by the architect by following the conditions of the substitutions clause. Unless approval is obtained 10 days prior to the bid date, all bids shall be based on the standard of quality. The architect shall be the sole judge as to the acceptability of all products submitted for substitutions.
2. Accessories shall be the products of a single manufacturer. Accessories with tumbler locks shall be keyed alike.

B. Regulatory requirements

1. Operation of accessories shall comply with guidelines set forth by the American Disabilities Act, Title III. Documentation and samples to be provided to the architect upon request.

1.05 Submittals

A. Comply with requirements of Section regarding submittals.

B. Manufacturer's Data

1. Provide required number copies of:
 - a. Product data sheets.
 - b. Installation instructions.
 - c. Service and parts manual.

1.06 Product Delivery, Storage, and Handling

- A. Deliver items in manufacturer's original unopened protective packaging.
- B. Store materials in original protective packaging to prevent physical damage, or wetting.
- C. Handle so as to prevent damage to accessories.

1.07 Warranty

- A. Furnish one year guarantee against defects in material and workmanship on all accessories. In addition, welded stainless steel framed mirrors shall have a fifteen year guarantee against silver spoilage.

PART 2 - PRODUCTS

2.01 Toilet Room Accessories Schedule:

- A. Grab Bars of sizes as shown on plans, #812-001, heavy-duty stainless steel with sanitary safety grip finish, concealed mounting kits to be included.
- B. Mirror 20" x 42", #7802-20 x 42, angle framed mirror, 1/4" tempered glass.
- C. Mirror 30" x 42", #7802-30 x 42, angle framed mirror, 1/4" tempered glass.
- D. Paper Towel Dispenser #2494 Electronic Sensor Roll Towel Dispenser, ABS Plastic, Surface-mounted

- E. Soap Dispenser, Model #6562, wall-mounted, vertical valve liquid soap dispenser, brushed stainless steel finish.
- F. Soap Dispenser, Model #6326-68, deck-mounted, 6" stainless steel spout pump soap dispense with, 32 oz. plastic liquid soap container.
- G. Toilet Tissue Dispenser, Model #5425, jumbo dual-roll, surface-mounted, satin finish stainless steel.
- H. Napkin Disposal, Model #4722-15, surface-mounted, stainless steel, with (1) box of 500 waxed paper waste/napkin disposal liners #P11-022.

2.02 Materials (if applicable to items in contract)

- A. All cabinets shall be constructed of 18-8, type 304 stainless steel.
- B. All waste receptacle shall be constructed of 18-8, type 304 stainless steel or rigid molded leak-proof plastic.
- C. All tumbler locks to be fastened to accessories with lock nuts. Fastening locks to units with spring clip is not acceptable.

PART 3 - EXECUTION

3.01 Inspection

- A. Check wall opening for dimensions, plumbness of blocking or frames that would affect installation of recessed accessories. For surface mounted accessories check condition of wall and confirm installation of backing within wall.
- B. Verify spacing of plumbing fixtures and toilet compartments that affect installation of toilet room accessories.

End of Section

Division XIII
Special Construction

SECTION 13120 - STEEL BUILDING SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Pre-engineered building and components including the following:
 - 1. Structural steel frame.
 - 2. Roof covering system including exterior roof panels, panel attachments, sealants, mastics, trim and flashings.
 - 3. Exterior wall system including wall panels, panel attachments, sealants, mastics, trim and flashings.

- B. Wall accessories including the following:
 - 1. Louvers, see mechanical for size.

1.02 RELATED SECTIONS

- A. Section - Cast-in-Place Concrete: Foundations and anchor bolts.

- B. Section 09900 - Paints and Coatings: Finish painting of structural members, doors, roof curbs, and factory prime painted miscellaneous items.

1.03 REFERENCES

- A. AWS D1.1 - Structural Welding Code; American Welding Society.

- B. Factory Mutual (FM): Wind classification rating system.

- C. IAS AC472 International Accreditation Services.

- D. NAIMA 202 - Standard for Flexible Fiber Glass Insulation Used in Metal Buildings; North American Insulation Manufacturers Association.

- E. UL 580 - Tests for Wind Uplift Resistance of Roof Assemblies; Underwriters Laboratories Inc.

- F. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Underwriters Laboratories Inc.

- G. Canadian Welding Bureau: A660 Certification.

1.04 DEFINITIONS

- A. Building Width: Measured from outside to outside of sidewall girts. Typically edge to edge of concrete.
- B. Building Length: Measured from outside to outside of end wall girts. Typically edge to edge of concrete
- C. Building Line: Outside face of steel/girt.
- D. Building Eave Height: Measured from the top of the eave member at the outside of the sidewall girt line to the bottom of the sidewall column base plate or to finished floor if columns are on grout or recessed below finished floor.
- E. Bay Spacing: Measured from centerline to centerline of primary frames for interior bays and from centerline of the first interior frame to outside of end wall girts for end bays.
- F. Roof Pitch: The ratio of the vertical rise to the horizontal run (i.e. 1:12 = 1 inch of rise for every foot of horizontal dimension).

1.05 SYSTEM DESCRIPTION

- A. General:
 - 1. Provide metal building frame, metal wall panels, metal roof panels, accessories and miscellaneous materials for a complete enclosure including supports for building components specified in other sections.
 - 2. Design structural systems according to professionally recognized methods and standards and legally adopted building codes.
 - 3. Design under supervision of professional engineer licensed in the jurisdiction of the Project.
 - B. Design Requirements:
 - 1. Bay size: see drawings.
 - 2. Roof pitch: see drawings.
 - 3. Building location zip code: 42642
 - 4. See structural notes.
11. Panel Requirements:
- a. SSR Roof System tested and certified to meet Underwriters Laboratories UL 90 wind uplift rating.

1. Panels tested in accordance with U.S. Corp of Engineers ASTM E 1592.
 2. Panel fastening meeting uplift requirements based on tested fastener values with appropriate Safety Factors.
 3. Purlin strength with SSR roof panel determined and tested in accordance with AISI procedures.
- b. Panel Rib panels are accepted for use by the Dade County Building Commission and are UL-60 and UL-90 certified.
 - c. All load and code information must be obtained directly from the Authority Having Jurisdiction.

C. Performance Requirements:

1. System to withstand gravity and lateral loads in compliance with contract documents.
2. Refer to contract drawings for additional concentrated loads to pre-engineered building hanger beams and support jacks.
3. Allowable Deflections: Deflection/drift criteria shall follow recommendations outlined in AISC Design Guide 3 and MBMA Serviceability recommendations.
4. Metal wall panels (interior and exterior) shall not to be used as shear elements. Specify if metal wall and girt assembly require specific deflection constraints
5. Construct assembly to permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature range of 100 degrees F (37 degrees C) in a 24 hour period.
6. Design and fabricate wall and roof systems free of distortion or defects detrimental to appearance or performance. Some oil canning in rolled panels especially in the flats of the panel is normal and is not cause for rejection.

- D. Serviceability Criteria: Deflection limits for major components based on Manufacturers standards unless otherwise noted. Deflection requirements on hangars with sliding or fabric doors need to be included for the door support frames both from dead load deflection in inches and uplift deflection in inches. This may differ from the building due to the specific door requirements and should be supplied to eliminate future deflection issues.

1.06 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Design Data: Provide detailed design criteria and calculations prepared by a licensed structural engineer.
- C. Certification: Manufacturer certification that the building conforms to the contract documents and manufacturer's standard design procedures.

- D. Shop Drawings: Show building layout, primary and secondary framing member sizes and locations, cross-sections, and product and connection details.
 - 1. Anchor Bolt Installation Drawings.
- E. Information on manufactured products to be incorporated into the project.
- F. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- G. Verification Samples: For each finish product specified, two samples, minimum size 6 inches square, representing actual product, color, and patterns.
- H. Certificates: Welder certifications

1.07 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Not less than 5 years experience in the actual production of specified products.
 - 1. Member of the Metal Building Manufacturer's Association (MBMA).
 - 2. Primary manufacturer of frames, secondary steel, roof and wall sheeting, and trim.
- B. Installer Qualifications - Firm experienced in application or installation of systems similar in complexity to those required for this project, plus the following:
 - 1. Acceptable to or licensed by manufacturer.
 - 2. 3 years experience with systems.
 - 3. Successfully completed not less than 5 comparable scale projects using this system.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.09 PROJECT CONDITIONS

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

1.10 WARRANTY

- A. Manufacturer shall warranty installed system for the periods described herein, starting from Date of Substantial Completion or ninety days from delivery, whichever comes first, against all the conditions indicated below. When notified in writing from Owner, manufacturer/installer shall, promptly and without inconvenience and cost to Owner, correct said deficiencies.
 - 1. Materials and Workmanship Warranty:
 - a. Warranty Period: 3 years, standard.
 - 2. SSR/SLR Standard Weathertight Endorsement:
 - a. Warranty Period: 20 years.
 - 3. Finish Warranty:
 - a. Finish coating shall not peel, blister, chip, crack or check in finish, and shall not chalk in excess of 8 numerical ratings when measured in accordance with ASTM D 4214.
 - b. Finish coating shall not change color or fade in excess of 5 NBS units as determined by ASTM D 2244.
 - 1. Panel finish: 25 years.
 - 4. Performance Warranty: Furnish written warranty, stating sheet metal roofing system and flashing (flashing under premium warranty only) under this Section will be maintained in watertight condition and defects resulting from the following items will be corrected without cost to Owner for a period of 20 years.
 - a. Faulty workmanship.
 - b. Defective materials including sealants and fasteners.
 - c. Water infiltration.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers: Nationally recognized, MBMA recognized companies.
- B. Substitutions: Reviewed equal.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.02 STRUCTURAL STEEL FRAMING

- A. Primary Framing: Rigid Frame solid web framing consisting of tapered or uniform depth rafters rigidly connected to tapered or uniform depth columns. Provide a clear span that supports the loads at bay spacing indicated.
- B. Primary Framing: Continuous Beam (CB Series) solid web framing utilizing tapered or uniform depth beams or girders supported on tapered or uniform depth columns.

Locate interior columns where indicated and designed to support loads at bay spacing indicated.

NOTE: Coordinate location and loading for Roof top units (RTU's) shown on M-1 sheet on Roof, and provide opening and opening support framing and structure. RTU sizes and weights are indicated in schedule on M-2 sheet.

- C. End Wall Framing: Corner posts, end posts and rake beams.
- D. End Wall Framing: Half-loaded full frames.
- E. Steel Surface Preparation: SSPC-SP 2.

2.03 SECONDARY FRAMING

- A. Purlins: Zee-shaped; depth as required; with minimum yield strength of 60,000 psi (410 MPa); simple span or continuous span as required for design. G-30 galvanized standard material. Welded members are manufacturer's standard primer.
 - 1. As required.
- B. Girts: Zee- or Cee-shaped; depth as required, with minimum yield strength of 60,000 psi (410 MPa); simple span or continuous span as required for design. G-30 galvanized standard material. Welded members are manufacturer's standard primer.
 - 1. As required.
- C. Wind Bracing: Portal, torsional, diagonal bracing or diaphragm in accordance with manufacturer's standard design practices; utilizing rods, angles, and other members, with minimum yield strengths as required for design but in most cases, 50 ksi.
- D. Primary Frame Flange Bracing: Attached from purlins or girts to the primary framing, minimum yield strength as required for design but in most cases 60 ksi.

2.04 MISCELLANEOUS FRAMING

- A. Base Angles: 2 inch by 3 inch by 0.060 inch galvanized steel angles, with minimum yield strength of 55 ksi (380 MPa), anchored to the floor slab or grade beam with power driven fasteners or equivalent at a maximum spacing of 4 feet on center and not more than 6 inches from the end of any angle member. Anchors are not provided by the metal building manufacturer.
- B. Door Headers and Jambs: Zee- or Cee-shaped; depth as required; with minimum yield strength of 60 ksi (410 MPa).

2.05 ROOF COVERING SYSTEM

- A. Roof Panels: SSR Standing Seam Roof Panels; 16-18” inches wide net coverage, with 3 inches high major ribs formed at the panel side laps, formed for field seaming using electrically operated seaming machine.
1. Side joints: Factory applied sealant for field seaming.
 2. Material: Galvalume steel.
 3. Thickness: 24 gauge.
 4. See drawings for roof slopes.
 5. Side laps: Two factory-formed interlocking ribs, with one weather sealed joint, field-seamed into place to form a double-fold 360 degree seam.
 6. Length: Continuous from eave to ridge up to 52 feet in length.
 7. End laps, where required: 4 inches wide, located at a support member.
 8. Panel-to-roof purlin structural attachments: SSR clips with movable tabs which interlock with seamed SSR panel ribs and provide for 1-5/8 inches of panel movement in either direction from center of clip to compensate for thermal effects.
 9. Ridge assembly for high end of slopes: SSR Ridge; draw-formed aluminum seam caps factory-attached to SSR ridge panels that are seamed together along the center of the ridge, utilizing only one weather sealed joint and providing a true expansion joint for panel movement.
 10. Rake edge of roof shall be attached to the building structure in a manner which will allow thermal expansion of the SSR roof panels along the gables and will provide the uplift resistance required by code.
 11. The KXL paint system is a PVDF finish applied to the galvalume surface to give a long life color that resists fading and chalking. KXL is a 1 mil nom. PVDF finish with 70 percent Kynar 500 or Hylar 5000 standard.
 12. Exposed fasteners are stainless steel capped painted to match the selected color from the Manufacturer’s color chart or special ordered if a special color roof is provided.

2.06 WALL COVERING SYSTEM

- A. Wall Panels: Panel Rib; 36 inch wide net coverage, with 1-3/16 inch high major ribs at 12 inches on center with minor ribs spaced between the major ribs.
1. Material: Galvanized steel, with G90/Z275 coating.
 2. Thickness: 26 gauge; all buildings.
 3. Side laps: Two fully overlapping major ribs secured together with 1/4 inch diameter color-matched carbon steel fasteners.
 4. Length: Continuous from sill to eave up to 43 feet in length.
 5. End laps, where required: 4 inches wide, located at a support member.
 6. Crimp panels at the base to achieve no gaps against the foundation greater than 1/16 inch and notch to match roof panel configuration at the eave.
 7. Cut panels square at each end.
 8. Cut panels square at each end; provide base trim at sill and closure plugs.
 9. The KXL paint system is a PVDF finish applied to the zinc or zinc aluminum coated steel to give a long life color that resists fading and chalking. KXL is a 1 mil nom. PVDF finish with 70 percent Kynar 500 or Hylar 5000 standard.

10. Certification includes IAS Miami-Dade County Florida product approval.

2.07 INSULATION

A. Schedule:

1. Roof insulation: Nominal values:
 - a. Building R-value: 30 – see wall sections.
2. Wall Insulation: Nominal values:
 - a. R-value: 19 - see wall sections.

B. Thermal Blocks required High density, expanded polystyrene, for installation over the purlin.

2.08 WALL ACCESSORIES

A. Wall Openings: Cold-formed sheet metal framing concealed with manufacturer's standard colored trim.

2.09 ROOF ACCESSORIES

A. Eave Gutters: Roll-formed 26 gage steel sheet, with gutter straps, fasteners and joint sealant; manufacturer's standard color.

1. Downspouts: 29 gauge 4 inches by 5 inches in 10 foot lengths, with downspout elbows and downspout straps; same color as wall panels unless specified otherwise.

B. Roof Openings: Cold-formed sheet metal framing concealed with manufacturer's standard colored trim.

2.10 MATERIALS

A. Structural Steel Plate, Bar, Sheet, and Strip for Use in Bolted and Welded Constructions: ASTM A 572/A 572M, A 529/A 529M, A 1011 or A 36/A 36M Modified 50, with minimum yield strength of 55,000 psi (380 MPa).

B. Galvanized Structural Steel Material for Use in Roll Formed or Press Broken Secondary Structural Members: ASTM A 563, with minimum yield strength of 60,000 psi (410 MPa).

C. Galvanized Steel Sheet for Roll Formed or Press Broken Roof and Wall Coverings, Trim and Flashing: ASTM A 653/A 653M, with minimum yield strength of 50,000 psi (345 MPa).

D. Galvalume Steel Sheet Used in Roll Formed or Press Broken Roof Covering: Aluminum-zinc alloy-coated steel sheet, ASTM A 792/A 792M, with minimum yield strength of 50,000 psi (345 MPa); nominal coating weight of 0.5 oz per sq ft (152 kg/sq m) both sides, equivalent to an approximate coating thickness of 0.0018 inch both sides.

- E. Hot Rolled Steel Shapes: W, M and S shapes, angles, rods, channels and other shapes; ASTM A 500, ASTM A 572/A 572M or ASTM A 36/A 36M as applicable; with minimum yield strengths required for the design.
- F. Structural Bolts and Nuts Used with Primary Framing: High strength, ASTM A 325 bolts and ASTM A563 Grade C nuts.
- G. Bolts and Nuts Used with Secondary Framing Members: High Strength ASTM A 325 Bolts and ASTM A 563 Grade C nuts.
- H. Panel Fasteners:
 - 1. For Galvalume and KXL finished roof panels: Stainless steel-capped carbon steel fasteners with integral sealing washer.
 - 2. For wall panels: Coated carbon steel.
 - 3. Color of exposed fastener heads to match the wall panel finish.
 - 4. Concealed Fasteners: Self-drilling type, of size as required.
 - 5. Provide fasteners in quantities and location as required by the manufacturer.
- I. Flashing and Trim: Match material, finish, and color of adjacent components. Provide trim at rakes, including peak and corner assemblies, high and low eaves, corners, bases, framed openings and as required or specified to provide weathertightness and a finished appearance.
- J. Plastic Parts: Glass fiber reinforced resin or thermoformed ABS (Acrylonitrile-Butadiene-Styrene).
 - 1. ABS: Minimum 1/8 inch thick.
 - 2. Color: Manufacturer's standard color.
- K. Sealants, Mastics and Closures: Manufacturer's standard type.
 - 1. Provide at roof panel end laps, side laps, rake, eave, transitions and accessories as required to provide a weather resistant roof system; use tape mastic or gun grade sealant at side laps and end laps.
 - 2. Provide at wall panel rakes, eaves, transitions and accessories.
 - 3. Closures: Formed to match panel profiles; closed cell elastic material, manufacturer's standard color.
 - 4. Tape mastic: Pre-formed butyl rubber-based, non-hardening, non-corrosive to metal; white or light gray.
 - 5. Gun grade sealant: Non-skinning synthetic Elastomeric based material; gray or bronze.

2.11 FABRICATION

- A. Fabrication: Fabricate according to manufacturer's standard practice.
 - 1. Fabricate structural members made of welded plate sections by jointing the flanges and webs by continuous automatic submerged arc welding process.

2. Welding operators and processes: Qualified in accordance with AWS D1.1.
 3. Field connections: Prepare members for bolted field connection by making punched, drilled, or reamed holes in the shop.
- B. Component Identification: Mark all fabricated parts, either individually or by lot or group, using an identification marking corresponding to the marking shown on the shop drawings, using a method that remains visible after shop painting.

2.12 FINISH

- A. Schedule of Finishes:
See Architectural Plan Sheets.
- B. Shop Coat: Manufacturer's standard rust inhibitive primer paint; manufacturer's gray primer.
1. Finish all structural steel members using one coat of manufacturer's standard shop coat, after cleaning of oil, dirt, loose scale and foreign matter.
- C. KXL Pre-Painted Finish (or equivalent): 1 mil 70 percent Kynar 500, Hylar 5000 coating on exterior surface.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper and or timely completion.
1. Verify foundations are properly installed, to correct dimensions and within acceptable tolerances.
 2. Verify location of covered or built-in work.
 3. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Framing Erection: Erect framing in compliance with AIS Specification and the latest edition of the MBMA metal building systems manual.
- B. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation of permanent bracing. Locate braced bays as required by manufacturer.

3.03 ERECTION OF FRAME

- A. Install in accordance with manufacturer's instructions.
- B. Do not erect frames without complete installation of tie beams and anchorages.

- C. Set column base plates with non-shrink grout to full plate bearing.
- D. Do not field cut or alter structural members without written approval.
- E. After erection, prime bolts, welds, abrasions, and surfaces not primed with primer used in shop painting.

3.04 INSTALLATION OF WALL AND ROOF SYSTEM

- A. Install in compliance with manufacturer's instructions.
- B. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.
- C. Fasten cladding system to structural supports, aligned level and plumb.
- D. Locate end laps over supports. End lap panels according to manufacturer's recommendations. Place sidelaps over adjacent panel and mechanically seam or stitch fastener per erection guidelines.
- E. Provide expansion joints where indicated.
- F. Use concealed fasteners.
- G. Install sealant and gaskets to prevent weather penetration.
- H. Install system free of rattles, noise due to thermal movement, and wind whistles.
- I. Install door frames, service doors, overhead doors, window and glass, and gutter system in compliance with manufacturer's instructions.
- J. Seal wall and roof accessories watertight and weathertight with sealant in compliance with building manufacturer's standard procedures.
- K. Rigidly support and secure gutters and downspouts. Joint lengths with formed seams sealed watertight. Flash and seal gutters to downspouts.
- L. Tolerances:
 - 1. Framing Members: 1/4 inch from level; 1/8 inch from plumb.
 - 2. Racking: 1/8 inch from true position. Provide shoring to maintain position prior to cladding installation.

3.05 FIELD QUALITY CONTROL

- A. Testing by Contractor:

1. Roof installation inspection by roof manufacturer's representative; as required as part of warranty provision.

B. Testing by Special Inspection:

1. High Strength Bolted Connections: Specification for Structural Joints Using ASTM A 325 or A 490 Bolts, with minimum testing of bolted connections per the arbitration inspection procedure.
2. Welded Connections: AWS. Visual inspection of 100 percent of welds. Ultrasonic inspection of 50 percent of full and partial penetration welds. A rejection rate greater than 5 percent will increase the inspection to 100 percent.
3. General Testing: For materials and installed tolerances.

END OF SECTION

Division 15

Mechanical

SECTION 15050 - BASIC MECHANICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following basic mechanical materials and methods to complement other Division 15 Sections.
 - 1. Piping materials and installation instructions common to most piping systems.
 - 2. Escutcheons.
 - 3. Flexible connectors.
 - 4. Equipment nameplate data requirements.
 - 5. Labeling and identifying mechanical systems and equipment.
 - 6. Field-fabricated metal and wood equipment supports.
 - 7. Installation requirements common to equipment specification sections.
 - 8. Mechanical demolition.
 - 9. Cutting and patching.
 - 10. Touchup painting and finishing.
 - 11. Demolition.
 - 12. Access Doors.
- B. Pipe and pipe fitting materials are specified in Division 15 piping system Sections.

1.3 DEFINITIONS

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors, or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.
- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants, but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- F. The following are industry abbreviations for plastic materials:
 - 1. ABS: Acrylonitrile-butadiene-styrene plastic.
 - 2. CPVC: Chlorinated polyvinyl chloride plastic.
 - 3. NP: Nylon plastic.

4. PE: Polyethylene plastic.
5. PVC: Polyvinyl chloride plastic.
6. PEX

G. The following are industry abbreviations for rubber materials:

1. CR: Chlorosulfonated polyethylene synthetic rubber.
2. EPDM: Ethylene propylene diene terpolymer rubber.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and prevent entrance of dirt, debris, and moisture.
- B. Protect stored pipes and tubes from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor, if stored inside.
- C. Protect flanges, fittings, and piping specialties from moisture and dirt.
- D. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.5 SEQUENCING AND SCHEDULING

- A. Coordinate mechanical equipment installation with other building components.
- B. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction to allow for mechanical installations.
- C. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components, as they are constructed.
- D. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Coordinate installation of large equipment requiring positioning before closing in building.
- E. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies.
- F. Coordinate requirements for access panels and doors if mechanical items requiring access are concealed behind finished surfaces. Access panels and doors are specified in Division 8 Section "Access Doors."
- G. Coordinate installation of identifying devices after completing covering and painting, if devices are applied to surfaces. Install identifying devices before installing acoustical ceilings and similar concealment.

1.6 PERMITS, CODES, INSPECTIONS AND APPROVALS

- A. Permits

1. All permits necessary for the complete heating, air conditioning, ventilating, sprinkler, and plumbing systems shall be obtained by the Contractor from the authorities governing such work. The cost of all permits shall be borne by the Contractor.

B. Mechanical Work

1. Heating and ventilating and air conditioning work shall be performed in accordance with the rules and regulations of the Kentucky Building Code, National Fire Protection Association, the latest standards recognized by the American Society of Heating and Air Conditioning Engineers and IMC-International Mechanical Code as adopted by the Commonwealth of Ky. Installation of boilers and piping shall comply with the Commonwealth of Ky. Boiler and Pressure Vessel and Pressure Piping Law and Rules and Regulations and an Inspection Certificate provided to the Owner per this Code. All HVAC work shall be performed by a Licensed Kentucky Master HVAC Contractor.
2. Where the scope of mechanical work includes electrical work, all provisions included in the electrical sections of the work shall apply.

C. Inspection Requirements

1. The inspection work shall be scheduled for rough as well as the finished work. The rough inspection shall be divided into as many inspections as may become necessary to cover all roughing-in. A punch list inspection shall be scheduled with the Architect or his representative present.
2. The Architect shall be notified twenty-four (24) hours in advance when any tests or inspections are to be made and before any work is insulated or concealed. Failing to do so, the Contractor shall uncover and retest lines as directed by the Architect. The Contractor shall notify the Architect when he is ready for final inspection.

1.7 MECHANICAL DRAWINGS AND SPECIFICATIONS

- A. The drawings and specifications are intended to cover all work enumerated under the respective headings. The drawings are diagrammatic only as far as final location of pipes, relative size, is concerned. Any item of work not clearly included, specified and/or shown, any errors or conflict between plans (Mechanical, Architectural, Structural or Electrical), specifications, codes and field conditions, shall be clarified by a written request to the Architect by the Bidder before bidding; otherwise the bidder shall, at his own expense, supply the proper labor and materials to make good any damages or defects in his work caused by such error, omission or conflict.
- B. Piping schematics, risers and details shown on the drawings are for the equipment specified hereinafter. All revisions, modifications or changes in piping, accessories, etc. due to using equipment of a different manufacturer than specified hereinafter, shall be the responsibility of the Bidder and shall be made at no additional cost to the Owner. All modifications or changes shall be submitted to the Architect in writing and meet with his approval before the equipment is released for shipment.
- C. This Contractor shall be responsible for all revisions, modifications or changes necessary in the structural or architectural or electrical systems to accommodate the equipment to be furnished under this Section of the Specifications. This shall be made at no additional cost to the Owner.
- D. The contractor in all areas where his work and/or expense is involved shall verify scale of Drawings and/or details. This may involve all contract drawings: Architectural, Structural,

Mechanical, Electrical, etc. due to the advent of computers, copiers, and faxes, which change drawing scales so easily, this is very important. If drawings are scaled to determine quantities of materials, labor, etc., no allowances will be due the contractor due to inaccurate scales shown on any of the contract drawings or reproductions thereof.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Metal, Flexible Connectors:
 - a. ANAMET Industrial, Inc.
 - b. Central Sprinkler, Inc.
 - c. Flexicraft Industries.
 - d. Flex-Weld, Inc.
 - e. Grinnell Corp.; Grinnell Supply Sales Co.
 - f. Hyspan Precision Products, Inc.
 - g. McWane, Inc.; Tyler Pipe; Gustin-Bacon Div.
 - h. Mercer Rubber Co.
 - i. Metraflex Co.
 - j. Proco Products, Inc.
 - k. Uniflex, Inc.
 - 2. Rubber, Flexible Connectors:
 - a. General Rubber Corp.
 - b. Mercer Rubber Co.
 - c. Metraflex Co.
 - d. Proco Products, Inc.
 - e. Red Valve Co., Inc.
 - f. Uniflex, Inc.

2.2 PIPE AND PIPE FITTINGS

- A. Refer to individual Division 15 piping Sections for pipe and fitting materials and joining methods.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.3 JOINING MATERIALS

- A. Refer to individual Division 15 piping Sections for special joining materials not listed below.
- B. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- C. Solder Filler Metals: ASTM B 32.
 - 1. Alloy Sn95 or Alloy Sn94: Approximately 95 percent tin and 5 percent silver, with 0.10 percent lead content.

2. Alloy E: Approximately 95 percent tin and 5 percent copper, with 0.10 percent maximum lead content.
 3. Alloy HA: Tin-antimony-silver-copper zinc, with 0.10 percent maximum lead content.
 4. Alloy HB: Tin-antimony-silver-copper nickel, with 0.10 percent maximum lead content.
 5. Alloy Sb5: 95 percent tin and 5 percent antimony, with 0.20 percent maximum lead content.
- D. Brazing Filler Metals: AWS A5.8.
1. BCuP Series: Copper-phosphorus alloys.
 2. BAg1: Silver alloy.
- E. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- F. Solvent Cements: Manufacturer's standard solvent cements for the following:
1. ABS Piping: ASTM D 2235.
 2. CPVC Piping: ASTM F 493.
 3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
 4. PVC to ABS Piping Transition: ASTM D 3138.
- G. Plastic Pipe Seals: ASTM F 477, Elastomeric gasket.
- H. Flanged, Ductile-Iron Pipe Gasket, Bolts, and Nuts: AWWA C110, rubber gasket, carbon-steel bolts and nuts.
- I. Couplings: Iron-body sleeve assembly, fabricated to match OD of plain-end, pressure pipes.
1. Sleeve: ASTM A 126, Class B, gray iron.
 2. Followers: ASTM A 47 malleable iron or ASTM A 536 ductile iron.
 3. Gaskets: Rubber.
 4. Bolts and Nuts: AWWA C111.
 5. Finish: Enamel paint.

2.4 PIPING SPECIALTIES

- A. Sleeves: The following materials are for wall, floor, slab, and roof penetrations:
1. Steel Sheet Metal: 0.0239-inch minimum thickness, galvanized, round tube closed with welded longitudinal joint.
 2. Steel Pipe: ASTM A 53, Type E, Grade A, Schedule 40, galvanized, plain ends.
 3. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
 4. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
 - a. Underdeck Clamp: Clamping ring with set screws.
 5. PVC: Manufactured, permanent, with nailing flange for attaching to wooden forms.
 6. PVC Pipe: ASTM D 1785, Schedule 40.
 7. PE: Manufactured, reusable, tapered, cup shaped, smooth outer surface, with nailing flange for attaching to wooden forms.
- B. Escutcheons: Manufactured wall, ceiling, and floor plates; deep-pattern type if required to conceal protruding fittings and sleeves.

1. ID: Closely fit around pipe, tube, and insulation of insulated piping.
2. OD: Completely cover opening.
3. Cast Brass: One piece, with set screw.
 - a. Finish: Rough brass.
 - b. Finish: Polished chrome-plate.
4. Cast Brass: Split casting, with concealed hinge and set screw.
 - a. Finish: Rough brass.
 - b. Finish: Polished chrome-plate.

PART 3 - EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. General: Install piping as described below, unless piping Sections specify otherwise. Individual Division 15 piping Sections specify unique piping installation requirements.
- B. General Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated, unless deviations to layout are approved on Coordination Drawings.
- C. Install piping at indicated slope.
- D. Install components with pressure rating equal to or greater than system operating pressure.
- E. Install piping in concealed interior and exterior locations, except in equipment rooms and service areas.
- F. Install piping free of sags and bends.
- G. Install exposed interior and exterior piping at right angles or parallel to building walls. Diagonal runs are prohibited, unless otherwise indicated.
- H. Install piping tight to slabs, beams, joists, columns, walls, and other building elements. Allow sufficient space above removable ceiling panels to allow for ceiling panel removal.
- I. Install piping to allow application of insulation plus 1-inch clearance around insulation.
- J. Locate groups of pipes parallel to each other, spaced to permit valve servicing.
- K. Install fittings for changes in direction and branch connections.
- L. Install couplings according to manufacturers written instructions.
- M. Install pipe escutcheons for pipe penetrations of concrete and masonry walls, wallboard partitions, and suspended ceilings according to the following:
 1. Chrome-Plated Piping: Cast brass, one piece, with set screw, and polished chrome-plated finish. Use split-casting escutcheons if required, for existing piping.
 2. Uninsulated Piping Wall Escutcheons: Cast brass or stamped steel, with setscrew.

3. Uninsulated Piping Floor Plates in Utility Areas: Cast-iron floor plates.
 4. Insulated Piping: Cast brass or stamped steel; with concealed hinge, spring clips, and chrome-plated finish.
 5. Piping in Utility Areas: Cast brass or stamped steel, with setscrew or spring clips.
- N. Sleeves are not required for core-drilled holes.
- O. Install sleeves for pipes passing through concrete and masonry walls, and concrete floor and roof slabs.
- P. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
1. Cut sleeves to length for mounting flush with both surfaces.
 - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
 2. Build sleeves into new walls and slabs as work progresses.
 3. Install sleeves large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
 - a. Steel Pipe Sleeves: For pipes smaller than 6-inch NPS.
 - b. PVC Pipe Sleeves: For pipes smaller than 6-inch NPS.
 - c. Steel, Sheet-Metal Sleeves: For pipes 6-inch NPS and larger, penetrating gypsum board partitions.
 - d. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level. Refer to Division 7 Section "Sheet Metal Flashing and Trim" for flashing.
 - 1) Seal space outside of sleeve fittings with nonshrink, nonmetallic grout.
 4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using elastomeric joint sealants. Refer to Division 7 Section "Joint Sealants" for materials.
 5. Use Type S, Grade NS, Class 25, Use O, neutral-curing silicone sealant, unless otherwise indicated.
- Q. Aboveground, Exterior-Wall, Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeve for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
1. Install steel pipe for sleeves smaller than 6 inches in diameter.
 2. Install cast-iron "wall pipes" for sleeves 6 inches in diameter and larger.
 3. Assemble and install mechanical sleeve seals according to manufacturer's written instructions. Tighten bolts that cause rubber-sealing elements to expand and make watertight seal.
- R. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with Firestopping materials. Refer to Division 7 Section "Firestopping" for materials.
- S. Verify final equipment locations for roughing-in.
- T. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

- U. Piping Joint Construction: Join pipe and fittings as follows and as specifically required in individual piping specification Sections:
 - 1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
 - 2. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
 - 3. Soldered Joints: Construct joints according to AWS's "Soldering Manual," Chapter "The Soldering of Pipe and Tube"; or CDA's "Copper Tube Handbook."
 - 4. Soldered Joints: Construct joints according to AWS's "Soldering Manual," Chapter "The Soldering of Pipe and Tube."
 - 5. Soldered Joints: Construct joints according to CDA's "Copper Tube Handbook."
 - 6. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."
 - 7. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join pipe and fittings according to the following:
 - a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - b. ABS Piping: ASTM D 2235 and ASTM D 2661.
 - c. CPVC Piping: ASTM D 2846 and ASTM F 493.
 - d. PVC Pressure Piping: ASTM D 2672.
 - e. PVC Nonpressure Piping: ASTM D 2855.
 - f. PVC to ABS Nonpressure Transition Fittings: Procedure and solvent cement according to ASTM D 3138.
 - 8. Plastic Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657 procedures and manufacturer's written instructions.
 - a. Plain-End Pipe and Fittings: Use butt fusion.
 - b. Plain-End Pipe and Socket Fittings: Use socket fusion.

3.2 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment to provide maximum possible headroom, if mounting heights are not indicated.
- B. Install equipment according to approved submittal data. Portions of the Work are shown only in diagrammatic form. Refer conflicts to Architect.
- C. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- D. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- E. Install equipment giving right of way to piping installed at required slope.
- F. Install flexible connectors on equipment side of shutoff valves, horizontally and parallel to equipment shafts if possible.

3.3 LABELING AND IDENTIFYING

- A. Equipment: Install engraved plastic-laminate sign or equipment marker on or near each major item of mechanical equipment.
 - 1. Lettering Size: Minimum 1/4-inch- high lettering for name of unit if viewing distance is less than 24 inches, 1/2-inch- high lettering for distances up to 72 inches, and proportionately larger lettering for greater distances. Provide secondary lettering two-thirds to three-fourths of size of principal lettering.
 - 2. Text of Signs: Provide name of identified unit. Include text to distinguish between multiple units, inform user of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.
- B. Adjusting: Relocate identifying devices as necessary for unobstructed view in finished construction.

3.4 PAINTING AND FINISHING

- A. Refer to Division 9 Section "Painting" for paint materials, surface preparation, and application of paint.
- B. Do not paint piping specialties with factory-applied finish.
- C. Cleaning and Painting
 - 1. The Contractor shall remove all temporary stickers, tags, etc. from all items installed under this Contract and shall thoroughly clean all equipment or materials installed under this Contract. Scratched and damaged paint and/or other finishes shall be touched up and/or repainted as required. All equipment shall be cleaned and made ready for painting by the General Contractor.
 - 2. Upon completion of the work, the Contractor shall thoroughly clean and lubricate all equipment; clean and flush all piping as often as necessary to satisfy the Architect that the system is clear of oil, dirt, scale or other foreign matter; clean all strainers after flushing operation and prior to acceptance. Clean ductwork to insure system is clear of dirt or other foreign matter.
 - 3. Surplus material, rubbish and equipment resulting from the Contractor's work shall be removed from the building and premises by the Contractor upon completion of the work in accordance with the Architectural Specifications.
 - 4. All permanent nameplates on equipment shall be kept clean and exposed for easy reading. If field conditions warrant (in the opinion of the Architect), the Contractor may be requested to vacuum clean all equipment and installation materials which are unduly filled or covered with dust, debris, etc.

3.5 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit. Follow supported equipment manufacturer's setting templates for anchor bolt and tie locations. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Division 3 Section "Cast-in-Place Concrete."

3.6 ERECTION OF METAL SUPPORTS AND ANCHORAGE

- A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment.

- B. Field Welding: Comply with AWS D1.1, "Structural Welding Code--Steel."

3.7 ERECTION OF WOOD SUPPORTS AND ANCHORAGE

- A. Cut, fit, and place wood grounds, nailers, blocking, and anchorage to support and anchor mechanical materials and equipment.
- B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.
- C. Attach to substrates as required to support applied loads.

3.8 DEMOLITION

- A. Not Included.

3.9 CUTTING AND PATCHING

- A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for mechanical installations. Perform cutting by skilled mechanics of trades involved.
- B. Repair cut surfaces to match adjacent surfaces.

3.10 FOUNDATIONS AND ANCHOR BOLTS

- A. The Contractor shall be responsible for the location of all concrete pads required for all equipment installed under this Contract. All pads required will be poured at the expense of the Contractor.
- B. The Contractor shall furnish anchor bolts for all equipment installed on concrete slabs and/or bases. Bolts shall be placed in exact positions prior to pouring concrete. Sizes and location of bolts shall be determined by the manufacturer's recommendations for the equipment served.

3.11 PROTECTION

- A. All work, equipment and material shall be protected at all times. All pipe openings shall be closed with caps or plugs during construction. All equipment and accessories shall be tightly covered and protected against dirt, water or other injury during period of construction.
- B. No plumbing or heating piping shall be installed in any part of the building where danger of freezing may exist without adequate protection being given by the Contractor installing the pipe, whether or not insulation is specified for the particular piping. All damages resulting from leaking pipes shall be borne by the Contractor whose work is at fault.
- C. It shall be the responsibility of the Contractor to install and maintain pipe and equipment which is clean and free of rust, dirt, scale, etc. Where roughed-in only, the Contractor shall provide temporary airtight covers at all conduit, duct and equipment openings.

3.12 CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS

- A. The Architectural, Structural, Electrical, Plumbing and Heating and Ventilating Drawings and Specifications are complementary to one another. Respective Contractors shall rough-in for and furnish all labor and materials necessary to make final connections to all equipment furnished by the Owner or any other Contractor or Sub-Contractor which requires mechanical or electrical connections.
- B. The Contractor making the required connections shall be responsible for making proper connections and shall be responsible for any damages caused by erroneously connected equipment.

3.13 LINTELS

- A. In general, others will provide all lintels. However, the Contractor shall refer to the Architectural Drawings and Specifications and ascertain whether or not lintels are included in the general construction.
- B. If lintels are NOT included in the general construction, then the Contractor is responsible for all lintels where ductwork, louvers and/or equipment furnished by him is installed under this contract.
- C. All lintels shall be subject to the approval of the Architect or his representative.

3.14 ACCESS DOORS

- A. The Contractor shall refer to the Architectural Drawings to ascertain which rooms have removable ceilings. Where removable ceilings are specified, access to equipment may be obtained by removing the ceiling pieces. Where non-removable ceilings are specified, the Contractor shall furnish all required access doors for servicing valves, equipment, etc.
- B. Access doors shall be L.M. Walsh Company "Way-Loctor", Milcor, Miami or approved equal. No. 3 shall be used for concrete block or tile walls having no plaster finish and No. 20 shall be used for plastered walls and ceilings or for acoustical tile ceilings. All doors shall be prime coated and key operated and keys shall be the same for plumbing and heating work.
- C. Installation of doors will be done by the General Contractor. However, the Contractor shall be responsible for the correct location of them for servicing equipment. These access doors shall be sized large enough to service the equipment with a minimum size of 20"x20".

3.15 ELIMINATION OF NOISE AND VIBRATION (CONSTRUCTION EQUIPMENT)

- A. During construction of this project, if any system or piece of equipment produces noise or vibration which is, in the opinion of the Architect, objectionable to the Owner, the Contractor shall, at his own expense, make changes in equipment and do all work necessary to eliminate the objectionable noise or vibration.

END OF SECTION

SECTION 15100 - PIPING & VALVES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Pipe, pipe fittings, valves, and connections for piping systems.
 - 1. Sanitary Sewer.
 - 2. Domestic Water.
 - 3. Condensate Removal.
 - 4. Refrigeration Piping.
 - 5. Natural Gas Piping.

1.2 RELATED SECTIONS

- A. Division 15 - Mechanical Insulation.
- B. Division 16 - Equipment Wiring Systems: Electrical characteristics and wiring connections.

1.3 REFERENCES

- A. ASME B31.9 - Building Service Piping.
- B. Kentucky Building Code.
- C. Kentucky Plumbing Code.
- D. IMC, International Mechanical Code.

1.4 SUBMITTALS FOR REVIEW

- A. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

1.5 SUBMITTALS AT PROJECT CLOSEOUT

- A. Project Record Documents: Record actual locations of valves and piping. Provide maintenance data for all valves, which can be rebuilt.

1.6 QUALITY ASSURANCE

- A. Valves: Manufacturer's name and pressure rating marked on valve body.
- B. Welding Materials and Procedures: Conform to ASME SEC IX and applicable state labor regulations.
- C. Welder's Certification: In accordance with Kentucky standards for trade involved.
- D. Identify pipe with marking including size, ASTM material classification, ASTM specification, water pressure rating.

- E. Pipe is to be stored covered, off the ground, with end caps in place. Pipe installed that is dirty or rusted shall be cleaned and painted.

1.7 REGULATORY REQUIREMENTS

- A. Perform Work in accordance with Codes listed in Paragraph 1.3 references.

1.8 DELIVERY, STORAGE, AND PROTECTION

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Do not install underground piping when bedding is wet or frozen.

PART 2 - PRODUCTS

2.1 PIPING SCHEDULE

- A. Furnish and install piping of sizes and locations shown on the drawings. Piping and fitting material shall be as shown in the accompanying table.
- B. Table of Piping Fittings (Interior)

Service	Sizes	Pipe	Fittings
Domestic Water	All Sizes	Type L Hard Copper PEX	Wrought Copper or Cast Brass Solder Joint PEX
Condensate Drain	All Sizes	DWV PVC	PVC
Refrigerant	All Sizes	ACR Hard Copper	Long Radius Wrought Copper
Gas	2" and Smaller	Sch. 40 Black Steel	125 lb. Malleable Iron Screwed

- C. Pipe And Fittings - Exterior (Does Not Include Soil, Waste And Vent Piping).
 - 1. Be responsible for contacting the local utility companies and include in the base bid all costs incurred with tap-on fees, service taps, piping to property line, meters, meter pits and pressure reducing equipment as required by the local utility companies.
 - 2. Furnish and install sewer piping from the building to points shown on the Drawings. Piping shall be polyvinyl chloride SDR of 35. Piping shall be suitable for forced main service.
 - 3. Furnish and install a new water service from the building to the point shown on the Drawings. Piping shall be Type K copper with wrought copper solder joint fittings or Class 200 PVC pressure piping with an S.D.R. of 21.
 - 4. Furnish and install all water main piping from the building to the points shown on the Drawings. Piping shall be cement lined, Class 250 cast iron pipe with Tyton joints or Johns-Manville "Blue-Brute", PVC water main with ring-tite joints, Class 150 made to cast iron pipe outside diameter and meeting the requirements of SDR 17 with fitting the same as cast iron pipe.
 - 5. Furnish and install other piping as indicated on the drawings.

- D. Soil, Waste And Vent Piping.
 - 1. Pipe and Fittings (Above Slab)
 - a. All soil, waste and vent piping 3" and larger shall be standard weight cast iron and shall conform to the latest ASTM Standard Specifications for standard weight fittings. All joints shall be neoprene joints. All plumbing "trees" and piping made with neoprene joints shall be supported in a "plumb" and properly graded manner.
 - b. Waste and vent piping 2½" and smaller shall be DWV hard copper, hubless cast iron or galvanized piping. Fittings for copper vent piping shall be wrought copper and for copper waste piping shall be cast brass drainage type. If cast iron piping is installed, all joints may be leaded or neoprene.
 - c. Where allowed by building and plumbing code polyvinyl chloride piping (PVC) or ABS may be used. PVC or ABS is not allowed in return plenums unless fire protected.
 - 2. Pipe and Fittings (Below Slab or Grade)
 - a. All sanitary waste and vent piping below slab shall be standard weight cast iron pipe with neoprene joints, polyvinyl chloride or ABS.

2.2 FLANGES, UNIONS, AND COUPLINGS

- A. Pipe Size 3 inches and Under:
 - 1. Ferrous pipe: Class 150 malleable iron threaded unions.
 - 2. Copper tube and pipe: Class 150 bronze unions with soldered joints.

- B. Pipe Size Over 1 inch:
 - 1. Ferrous pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
 - 2. Copper tube and pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.

- C. Grooved and Shouldered Pipe End Couplings:
 - 1. Housing: Malleable iron clamps to engage and lock, designed to permit some angular deflection, contraction, and expansion; steel bolts, nuts, and washers; galvanized for galvanized pipe.
 - 2. Sealing gasket: "C" shape composition-sealing gasket.

- D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.3 GATE VALVES

- A. Sizes 2" and smaller shall be Nibco Bronze No. T-134, Crane Brass, No. 431UB, Milwaukee 1151 or approved equal, screwed, solid wedge disc, tapered seat, rising brass stem, union bonnet working pressure 150 PSI steam.

2.4 CHECK VALVES (HORIZONTAL)

- A. Sizes 2" and smaller shall be Nibco Bronze, No. T-433-B, Crane Brass No. 137, Milwaukee 510 or approved equal, screwed with screwed cap, swing check, renewable bronze disc, working pressure 150 PSI steam.

2.5 RELIEF VALVES

- A. Refer to individual articles on heaters or boilers.

2.6 BALL VALVES (WATER)

- A. Milwaukee Model BA-100 Apollo, Nibco or equal bronze body and bonnet, chrome plated brass ball, glass-reinforced teflon seat, blowout proof stem, 600 PSI WOG, 150 PSI WSP, screwed, lever operated with extended neck to match insulation thickness, CV of 24 for ¾" size, 34 for 1" size.

2.7 UNIONS

- A. Unions shall be installed at all locations shown on the Drawings and as required for the isolation of all screwed valves and connections to screwed equipment.
- B. Unions in steel piping 2" and smaller shall be ground joint, malleable iron, screwed; 250 PSI working pressure for high pressure steam and return lines and chilled water lines, and 125 PSI working pressure for all other applications.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain maximum headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- H. Provide access doors where valves and fittings are not exposed.
- I. Establish elevations of buried piping outside the building to ensure not less than 3 feet of cover.
- J. Install vent piping penetrating roofed areas to maintain integrity of roof assembly.
- K. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
- L. Provide support for utility meters in accordance with requirements of utility companies.
- M. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting.
- N. Install bell and spigot pipe with bell end upstream.
- O. Install valves with stems upright or horizontal, not inverted.
- P. Pipe vents from gas pressure reducing valves to outdoors and terminate in weatherproof hood.
- Q. Sleeve pipes passing through partitions, walls and floors.

3.4 INSTALLATION PROCEDURES

- A. All piping furnished and installed under this Contract and shown on the Drawings shall be new and conform to the applicable specifications of ASA, as applied to the class, weight and type of piping installed.
- B. All underground piping shall be installed at the elevations given on the Drawings or on details pertaining to the installation in question. All piping shall be installed with an even grade between elevations given and in accordance with articles in these Specifications, which apply to this work.

- C. All piping located in pipe chases, furred walls, and ceilings shall be tested for leaks before being concealed or covered in any manner.
- D. All waste and vent piping and condensate drain piping, shall pitch minimum of 1/8" per foot.
- E. Where construction does not permit pitching, all piping other than waste, vent and roof leader piping may be installed dead level. Provide drain valves at low point.
- F. No pressure piping shall be installed in or under concrete floor slab. No "Bull Head" Tees will be allowed.
- H. Use dielectric insulating unions wherever adjoining materials being connected are of dissimilar material such as connections between copper and steel piping.

3.5 PIPE LAYING AND BEDDING

- A. Provide firm bed for each pipe so that pipe is supported uniformly along barrel and does not rest on bell or joint when brought to grade. Set each length to grade and line before making joint.
- B. Thoroughly inspect and fit pipes before lowering into trenches. Clean interior of joints before joint material is placed.
- C. Lay to uniform grade between elevations shown or to pitch indicated. Use Engineer's level and transit along with adequately spaced and supported batter boards to establish horizontal and vertical control. Lay bell and spigot pipe with bells upstream.
- D. For each pipe which passes under a footing or grade beam, provide steel pipe sleeve, with at least two (2) inches clearance around pipe and extending eighteen (18) inches beyond each side of footing or grade beam. Before backfilling, pack space between pipe and sleeve for a depth of two (2) inches at each end of sleeve with oakum or yarn to prevent the entrance of dirt. If pipe is installed before footing or grade is constructed, place compacted backfill around sleeve. If pipe is installed after building work is constructed, backfill with concrete to a thickness of at least six (6) inches around sleeve and up to the footing or grade beam.
- E. Close open ends of piping during construction to prevent earth entering lines. Close ends of lines and unused openings in fittings.
- F. Provide concrete thrust blocks for water piping as indicated or required to resist any thrust that may be encountered.

3.6 APPLICATION

- A. Use grooved mechanical couplings and fasteners only in accessible locations.
- B. Install unions downstream of valves and at equipment or apparatus connections.
- C. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- D. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

- E. Provide plug valves in natural gas systems for shut-off service.

3.7 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Prior to starting work, verify system is complete, flushed and clean.
- B. Ensure Ph of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- C. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residuals.
- D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- E. Maintain disinfectant in system for 24 hours.
- F. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
- G. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.
- H. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

3.8 SERVICE CONNECTIONS

- A. Provide sanitary and service as indicated. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.
- B. Connect to existing water service.

END OF SECTION

SECTION 15140 - SUPPORTS AND ANCHORS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Pipe and equipment hangers and supports.
- B. Equipment bases and supports.
- C. Sleeves and seals.
- D. Flashing and sealing equipment and pipe stacks.

1.2 RELATED SECTIONS

- A. Division 3 - Cast-In-Place Concrete: Equipment bases.
- B. Division 7 - Firestopping: Joint seals for piping and duct penetration of fire rated assemblies.
- C. Division 9 - Painting.
- D. Division 15 - Piping & Valves.
- E. Division 15 - Vibration Isolation.
- F. Division 15 - Mechanical Insulation.
- G. Division 15 - Sprinkler Piping.
- H. Division 15 - Sprinkler Systems.
- I. Division 15 - Refrigerant Piping and Specialties.

1.3 REFERENCES

- A. ASME B31.5 - Refrigeration Piping
- B. ASME B31.9 - Building Services Piping
- C. ASTM F708 - Design and Installation of Rigid Pipe Hangers.
- D. MSS SP58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
- E. MSS SP69 - Pipe Hangers and Supports - Selection and Application.
- F. MSS SP89 - Pipe Hangers and Supports - Fabrication and Installation Practices.
- G. UL 203 - Pipe Hanger Equipment for Fire Protection Service

1.4 SUBMITTALS

- A. Shop Drawings: Indicate system layout with location and detail of trapeze hangers.
- B. Product Data: Provide manufacturers catalog data including load capacity.
- C. Design Data: Indicate load carrying capacity of trapeze, multiple pipe, and riser support hangers.
- D. Manufacturer's Installation Instructions: Indicate special procedures and assembly of components.

1.5 REGULATORY REQUIREMENTS

- A. Supports for Sprinkler Piping: In conformance with NFPA 13.

PART 2 - PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

- A. Manufacturers:
 1. Grinnell.
 2. Elcen.
 3. B-Line.
- B. Plumbing Piping - DWV:
 1. Hangers for Pipe Sizes 1/2 inch to 1-1/2 inch: Malleable iron or Carbon steel, adjustable swivel, split ring.
 2. Hangers for Pipe Sizes 2 inches and Over: Carbon steel, adjustable, clevis.
 3. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 4. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.
 5. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.
 6. Vertical Support: Steel riser clamp.
 7. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 8. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- C. Plumbing Piping (Water) Piping:
 1. Hangers for Pipe Sizes 1/2 inch to 1-1/2 inch: Malleable iron or Carbon steel], adjustable swivel, split ring.
 2. Hangers for Cold Pipe Sizes 2 inches and Over: Carbon steel, adjustable, clevis.
 3. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.
 4. Vertical Support: Steel riser clamp.
 5. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- D. Refrigerant Piping:
 1. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron or Carbon steel, adjustable swivel, split ring.
 2. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 3. Vertical Support: Steel riser clamp.

4. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
5. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

2.2 ACCESSORIES

- A. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.

2.3 FLASHING

- A. Metal Flashing: 26 gage thick galvanized steel.
- B. Metal Counter flashing: 22 gage thick galvanized steel.
- C. Lead Flashing:
 1. Waterproofing: 5 lb/sq ft sheet lead
 2. Soundproofing: 1 lb/sq ft sheet lead.
- D. Flexible Flashing: 47-mil thick sheet compatible with roofing.
- E. Caps: Steel, 22 gage minimum; 16 gage at fire resistant elements.

2.4 SLEEVES

- A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage thick galvanized steel.
- B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
- C. Sleeves for Pipes Through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Prefabricated fire rated sleeves including seals, UL listed, refer to Section on Fire Stopping.
- D. Sleeves for Round Ductwork: Galvanized steel.
- E. Sleeves for Rectangular Ductwork: Galvanized steel or wood.
- F. Firestopping Insulation: Glass fiber type, non-combustible; refer to Section on Fire Stopping.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.2 PIPE HANGERS AND SUPPORTS

- A. Support horizontal piping as scheduled.
- B. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.

- C. Place hangers within 12 inches of each horizontal elbow.
- D. Use hangers with 1-1/2 inch minimum vertical adjustment.
- E. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.
- F. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
- G. Support riser piping independently of connected horizontal piping.
- H. Provide copper plated hangers and supports for copper piping.
- I. Design hangers for pipe movement without disengagement of supported pipe.
- J. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3.3 FLASHING

- A. Provide flexible flashing and metal counter flashing where piping and ductwork penetrate weather or waterproofed walls, floors, and roofs.
- B. Flash vent and soil pipes projecting 12 inches minimum above finished roof surface with lead worked 1-inch minimum into hub, 8 inches minimum clear on sides with 24 x 24 inch sheet size. For pipes through outside walls, turn flanges back into wall and calk, metal counter flash, and seal.

3.4 SLEEVES

- A. Set sleeves in position in formwork. Provide reinforcing around sleeves.
- B. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- C. Extend sleeves through floors 1 inch above finished floor level. Calk sleeves.
- D. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with stuffing (or fire stopping is rated wall) insulation and calk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- E. Install chrome plated steel or stainless steel escutcheons at finished surfaces.

3.7 SCHEDULES

PIPE SIZE	HANGER ROD MAX. HANGER SPACING	DIAMETER
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Inches	Feet	Inches
1/2 to 1-1/4	6.5	3/8
1-1/2 to 2	10	3/8
2-1/2 to 3	10	1/2
4 to 8	10	5/8
Polyethylene PEX and PVC (All sizes)	6	3/8

END OF SECTION

SECTION 15170 - MOTORS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Common requirements for electric motors furnished on equipment specified in other Sections, including single phase and three phase electric motors.

1.2 RELATED SECTIONS

- A. Division 16 - Equipment Wiring Systems: Electrical characteristics and wiring connections.

1.3 REFERENCES

- A. AFBMA 9 - Load Ratings and Fatigue Life for Ball Bearings.
- B. AFBMA 11 - Load Ratings and Fatigue Life for Roller Bearings.
- C. NEMA MG 1 - Motors and Generators.
- D. NFPA 70 - National Electrical Code.
- E. UL 674 - UL Standard for Safety Electric Motors and Generators for Use in Division 1 Hazardous (Classified) Locations.
- F. UL 1836 - UL Standard for Safety for Electric Motors for Use in Class I, Division 2 and Class II, Division 2 Hazardous (Classified) Locations.

1.4 REGULATORY REQUIREMENTS

- A. Conform to UL Component Recognition for appropriate sizes.
- B. Conform to NFPA 70.

1.5 DELIVERY, STORAGE, AND PROTECTION

- A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weatherproof covering. For extended outdoor storage, remove motors from equipment and store separately.

PART 2 - PRODUCTS

2.1 GENERAL CONSTRUCTION AND REQUIREMENTS

- A. Motors Less Than 250 Watts, for Intermittent Service: Equipment manufacturer's standard and need not conform to these specifications.
- B. Single Phase Motors: PSC where available.
- C. Electrical Service:

1. Electric service to building is 120/208 volt, three phase, "Y" connected.
- D. Open drip-proof type except where specifically noted otherwise.
- E. Design for continuous operation in 40 degrees C environment.
- F. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
- G. Explosion-Proof Motors: Not used
- H. Visible Nameplate: Indicating manufacturer's name and model number, motor horsepower, RPM, frame size, voltage, phase, cycles, full load amps, insulation system class, service factor, maximum ambient temperature, temperature rise at rated horsepower, minimum efficiency.
- I. Wiring Terminations:
 1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
 2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.
- J. Motors shall not be rated for 208, 230 or 240 volts. Motors in this voltage range shall accept operating voltages ranging from 190 volts to 250 volts.

2.2 SINGLE PHASE POWER - SPLIT PHASE MOTORS

- A. Starting Torque: Less than 150 percent of full load torque.
- B. Starting Current: Up to seven times full load current.
- C. Breakdown Torque: Approximately 200 percent of full load torque.
- D. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve or ball bearings.
- E. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

2.3 SINGLE PHASE POWER - PERMANENT-SPLIT CAPACITOR MOTORS

- A. Starting Torque: Exceeding one fourth of full load torque.
- B. Starting Current: Up to six times full load current.
- C. Multiple Speed: Through tapped windings.
- D. Open Drip-proof or Enclosed Air Over Enclosure: Class A (50 degrees C temperature rise) insulation, minimum 1.0 Service Factor, prelubricated sleeve or ball bearings, automatic reset overload protector.

2.4 SINGLE PHASE POWER - CAPACITOR START MOTORS

- A. Starting Torque: Three times full load torque.
- B. Starting Current: Less than five times full load current.
- C. Pull-up Torque: Up to 350 percent of full load torque.
- D. Breakdown Torque: Approximately 250 percent of full load torque.
- E. Motors: Capacitor in series with starting winding; provide capacitor-start/capacitor-run motors with two capacitors in parallel with run capacitor remaining in circuit at operating speeds.
- F. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve or ball bearings.
- G. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.
- B. Check line voltage and phase and ensure agreement with nameplate.

END OF SECTION

SECTION 15260 - MECHANICAL INSULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Piping insulation.
- B. Jackets and accessories.
- C. Covering.
- D. Lined ductwork insulation.

1.2 RELATED SECTIONS

- A. Division 07 - Firestopping.
- B. Division 09 - Painting: Painting insulation jacket.
- C. Division 15 - Piping & Valves
- D. Division 15 – Ductwork.

1.3 REFERENCES

- A. ASTM C534 - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.
- B. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
- C. ASTM C592 - Standard Specification for Mineral Fiber Blanket Insulation and Blanket-Type Pipe Insulation (Metal-Mesh Covered) (Industrial Type).
- D. ASTM D1056 - Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.
- E. ASTM D1667 - Standard Specification for Flexible Cellular Materials--Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).
- F. ASTM D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- H. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
- I. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

J. SMACNA - HVAC Duct Construction Standards - Metal and Flexible.

K. IMC – International Mechanical Code.

1.4 SUBMITTALS

A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for equipment scheduled.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with a minimum of three year's experience.

B. Applicator Qualifications: Company specializing in performing the work of this section with a minimum of three years documented experience approved by manufacturer.

1.6 REGULATORY REQUIREMENTS

A. Materials: Flame spread/smoke developed rating of 25/50 in accordance with ASTM E84.

1.7 DELIVERY, STORAGE, AND PROTECTION

A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Maintain ambient conditions required by manufacturers of each product.

1.9 SUBMITTALS FOR REVIEW

A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

B. Samples: Submit one sample of any representative size illustrating each insulation type.

PART 2 - PRODUCTS

2.1 MANUFACTURER:

- A. Armstrong.
- B. Knauf.
- C. Johns Manville.
- D. Owens Corning
- E. Rubatex.

2.2 GLASS FIBER

- A. Insulation: ASTM C547; rigid molded, noncombustible.
 - 1. K value: ASTM C177, 0.24 at 75 degrees F.
 - 2. Maximum service temperature: 850 degrees F.

- 3. Maximum moisture absorption: 0.2 percent by volume.
- B. Vapor Barrier Jacket:
 - 1. ASTM C921, White Kraft paper with glass fiber yarn, bonded to aluminized film.
 - 2. Moisture vapor transmission: ASTM E96; 0.02 perm-inches.
- C. Tie Wire: 0.048-inch stainless steel with twisted ends on maximum 12 inch centers.
- D. Vapor Barrier Lap Adhesive shall be compatible with insulation.
- E. Insulating Cement/Mastic:
 - 1. ASTM C195; hydraulic setting on mineral wool.
- F. Fibrous Glass Fabric:
 - 1. Cloth: Untreated; 9 oz/sq yard weight.
 - 2. Blanket: 1.0 lb/cu foot density.
 - 3. Weave: 10x10.
- G. Outdoor Breather Mastic:
Not USED.
- H. Insulating Cement:
 - 1. ASTM C449/C449M.

2.3 GLASS FIBER, FLEXIBLE

- A. Insulation: ASTM C553; flexible, noncombustible.
 - 1. K Value: ASTM C177 or ASTM C518 0.24 at 75 degrees F.
 - 2. Maximum Service Temperature: 450 degrees F.
 - 3. Maximum Moisture Absorption: 0.2 percent by volume.
 - 4. Density: 1.5 lb/sq ft
- B. Vapor Barrier Jacket:
 - 1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film.
 - 2. Moisture vapor transmission: ASTM E96; 0.04 perm.
 - 3. Secure with self-sealing longitudinal laps and butt strips.
- C. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.
- D. Vapor Barrier Lap Adhesive:
 - 1. Compatible with insulation.
- E. Insulating Cement/Mastic:
 - 1. ASTM C195; hydraulic setting on mineral wool.

2.4 GLASS FIBER, RIGID

- A. Insulation: ASTM C612 [or ASTM C592]; rigid, noncombustible.
 - 1. K Value: ASTM C177 or ASTM C518, 0.024 at 75 degrees F.
 - 2. Maximum Service Temperature: 450 degrees F.
 - 3. Maximum Moisture Absorption: 0.1 percent by volume.
 - 4. Density: 3.0 lb/sq ft.

- B. Vapor Barrier Jacket:
 1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film.
 2. Moisture vapor transmission: ASTM E96; 0.04 perm.
 3. Secure with self-sealing longitudinal laps and butt strips.
- C. Vapor Barrier Lap Adhesive:
 1. Compatible with insulation.
- D. Insulating Cement/Mastic:
 1. ASTM C195; hydraulic setting on mineral wool.

2.5 CELLULAR FOAM

- A. Insulation: ASTM C534; flexible, cellular elastomeric, molded or sheet.
 1. K value: ASTM C177; 0.28 at 75 degrees F.
 2. Minimum service temperature: -40 degrees F.
 3. Maximum service temperature: 220 degrees F.
 4. Maximum moisture absorption: ASTM D1056; 5.0 percent (pipe) by volume, 6.0 percent (sheet) by volume.
 5. Moisture vapor transmission: ASTM E96; 0.20 perm-inches.
 6. Connection: Waterproof vapor barrier adhesive.
- B. Elastomeric Foam Adhesive:
 1. Air dried, contact adhesive, compatible with insulation.

2.6 CELLULAR FOAM SHEET

- A. Insulation: ASTM C534; flexible, cellular elastomeric, molded or sheet.
 1. K Value: ASTM C177; 0.25 at 75 degrees F.
 2. Minimum Service Temperature: -40 degrees F.
 3. Maximum Service Temperature: 220 degrees F.
 4. Maximum Moisture Absorption: ASTM D1056; 1.0 percent by volume.
 5. Moisture Vapor Transmission: ASTM E96; 0.05 perm-inches.
 6. Connection: Waterproof vapor barrier adhesive.
- B. Elastomeric Foam Adhesive:
 1. Air dried, contact adhesive, compatible with insulation.

2.7 JACKETS

- A. PVC Plastic.
 1. Jacket: ASTM D1784, One piece molded type fitting covers and sheet material, off-white color.
 - a. Minimum service temperature: 0 degrees F.
 - b. Maximum service temperature: 150 degrees F.
 - c. Moisture vapor transmission: ASTM E96; 0.002 perm-inches.
 - d. Thickness: 15 mil.
 - e. Connections: Brush on welding adhesive or pressure sensitive color matching vinyl tape.
 2. Covering Adhesive Mastic:

- a. Compatible with insulation.
- B. Canvas Jacket: UL listed.
 - 1. Fabric: ASTM C921, 6 oz/sq yard, plain weave cotton treated with dilute fire retardant lagging adhesive.
 - 2. Lagging Adhesive:
 - a. Compatible with insulation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of existing conditions before starting work.
- B. Verify that piping has been tested before applying insulation materials.
- C. Verify that surfaces are clean and dry, with foreign material removed.

3.2 INSTALLATION

- A. Exposed Piping: Locate insulation and cover seams in least visible locations. Cover exposed piping with Fabric.
- B. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions and flanges.
- C. Glass fiber insulated pipes conveying fluids below ambient temperature:
 - 1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
 - 2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
- D. Glass fiber insulated pipes conveying fluids above ambient temperature:
 - 1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
 - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
- E. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions.

3.3 SCHEDULES

- A. Plumbing Systems:
 - 1. Domestic Hot Water Supply Mains:
 - a) Glass Fiber Insulation:

- 1) Pipe Size Range: All sizes.
 - 2) Thickness: 1 inch.
 - b) Cellular Foam Insulation:
 - 1) Pipe Size Range: All sizes.
 - 2) Thickness: 1/2 inch.
 2. Domestic Hot and Cold Water Branches-All Sizes and cold water mains:
 - a) Glass Fiber Insulation:
Thickness: 1/2 inch.
 - b) Cellular Foam Insulation:
Thickness: 1/2 inch.
- B. Ductwork:
1. Concealed Supply and Outside Air:
 - a) 2" thick 1.5 lb/sq.ft., glass fiber, flexible.
 2. Exposed Supply, Return and Outside Air in a non-conditioned space:
 - a) 2" thick 1.5 lb./sq.ft. glass fiber, rigid with canvas jacket.
 3. Supply air ductwork exposed in a conditioned space:
 - a) Duct shall be lined with 1/2" thick cellular foam.
 4. Return air ductwork exposed in a conditioned space:
 - a) Duct shall be lined with 1/2" thick cellular foam.
 5. Exhaust ductwork from inlet to exterior shall not be insulated.
- C. Refrigerant Piping:
1. Suction, 1" Elastomeric.
 2. If exterior, 2 coats manufacturers enamel, gray.

END OF SECTION

SECTION 15310 - FIRE PROTECTION PIPING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Pipe, fittings, valves, and connections for sprinkler systems.

1.2 RELATED SECTIONS

- A. Division 15 - Mechanical Identification: Piping identification.
- B. Division 15 - Sprinkler Systems: Sprinkler systems design.
- C. Division 16 - Wiring methods.

1.3 REFERENCES

- A. ASME Boiler and Pressure Vessel Code Section IX - Welding and Brazing Qualifications.
- B. ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.
- C. ASME B16.3 - Malleable Iron Threaded Fittings, Class 150 and 300.
- D. ASME B16.4 - Cast Iron Threaded Fittings, Class 125 and 250.
- E. ASME B16.5 - Pipe Flanges and Flanged Fittings.
- F. ASME B16.9 - Factory-made Wrought Steel Butt welding Fittings.
- G. ASME B16.11 - Forged Steel Fittings, Socket-welding and Threaded.
- H. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
- I. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- J. ASME B16.25 - Butt welding Ends.
- K. ASME B36.10 - Welded and Seamless Wrought Steel Pipe.
- L. ASTM A135 - Electric-Resistance-Welded Steel Pipe.
- M. ASTM A47 - Malleable Iron Castings.
- N. ASTM A53 - Pipe, Steel, Black and Hot-Dipped, Zinc-coated Welded and Seamless.
- O. ASTM A234 - Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures.
- P. ASTM A795 - Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use.

- Q. ASTM B32 - Solder Metal.
- R. ASTM B75 - Seamless Copper Tube.
- S. ASTM B88 - Seamless Copper Water Tube.
- T. ASTM B251 - General Requirements for Wrought Seamless Copper and Copper-Alloy Tube.
- U. AWS A5.8 - Brazing Filler Metal.
- V. AWS D10.9 - Specifications for Qualification of Welding Procedures and Welders for Piping and Tubing.
- W. AWWA C110 - Ductile Iron and Gray Iron Fittings.
- X. AWWA C151 - Ductile Iron Pipe, Centrifugally Cast.
- Y. NFPA 13 - Installation of Sprinkler Systems.
- Z. UL - Fire Resistance Directory.

1.4 SUBMITTALS FOR REVIEW

- A. Product Data: Provide manufacturers catalogue information. Indicate valve data and ratings.
- B. Shop Drawings: Indicate pipe materials used, jointing methods, supports, floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.

1.5 SUBMITTALS AT PROJECT CLOSEOUT

- A. Project Record Documents: Record actual locations of components and tag numbering.
- B. Operation and Maintenance Data: Include installation instructions and spare parts lists.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years experience.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum 3 years experience

1.7 REGULATORY REQUIREMENTS

- A. Conform to UL, FM, and/or Warnock Hersey as applicable.
- B. Sprinkler Systems: Conform work to NFPA 13.
- C. Welding Materials and Procedures: Conform to ASME Code.

- D. Valves: Bear UL, FM, or Warnock Hersey as applicable label or marking. Provide manufacturer's name and pressure rating marked on valve body.
- E. Products Requiring Electrical Connection: Listed and classified as suitable for the purpose specified and indicated.

1.8 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver and store valves in shipping containers, with labeling in place.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

PART 2 - PRODUCTS

2.1 ABOVE GROUND PIPING

- A. Steel Pipe: ASTM A53; ASTM A135; ASTM A135 UL listed, threadable, light wall; ASTM A795; or ASME B36.10; Schedule 5, 10, 40 black or galvanized.
 - 1. Steel Fittings: ASME B16.9, wrought steel, butt welded; ASME B16.25, butt weld ends; ASTM A234, wrought carbon steel and alloy steel; ASME B16.5, steel flanges and fittings; ASME B16.11, forged steel socket welded and threaded.
 - 2. Cast Iron Fittings: ASME B16.1, flanges and flanged fittings; ASME B16.4, threaded fittings.
 - 3. Malleable Iron Fittings: ASME B16.3, threaded fittings or ASTM A47.
 - 4. Mechanical Grooved Couplings: Malleable iron housing clamps to engage and lock, "C" shaped elastomeric sealing gasket, steel bolts, nuts, and washers; galvanized for galvanized pipe.
 - 5. Mechanical Formed Fittings: Carbon steel housing with integral pipe stop and O-ring pocked and O-ring, uniformly compressed into permanent mechanical engagement onto pipe.

2.2 PIPE HANGERS AND SUPPORTS

- A. Conform to NFPA 13.
- B. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron or Carbon steel, adjustable swivel, split ring.
- C. Hangers for Pipe Sizes 2 inches and Over: Carbon steel, adjustable, clevis.
- D. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- E. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.
- F. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.

- G. Vertical Support: Steel riser clamp or Angle ring.
- H. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

2.3 GATE VALVES

- A. Up to and including 2 inches:
 - 1. Bronze body, bronze trim, rising stem, handwheel, solid wedge or disc, threaded ends.
- B. Over 2 inches:
 - 1. Iron body, bronze trim, rising stem pre-grooved for mounting tamper switch, handwheel, OS&Y, solid rubber covered bronze or cast iron wedge, flanged or grooved ends.

2.4 GLOBE VALVES

- A. Up to and including 2 inches:
 - 1. Bronze body, bronze trim, rising stem and handwheel, inside screw, renewable rubber disc, threaded ends, with backseating capacity.
- B. Over 2 inches:
 - 1. Iron body, bronze trim, rising stem, handwheel, OS&Y, plug-type disc, flanged ends, renewable seat and disc.

2.5 BALL VALVES

- A. Up to and including 2 inches:
 - 1. Bronze or Stainless steel two piece body, brass, chrome plated bronze, or stainless steel ball, teflon seats and stuffing box ring, lever handle, threaded ends.
- B. Over 2 inches:
 - 1. Cast steel body, chrome plated steel ball, teflon seat and stuffing box seals, lever handle or gear drive handwheel for sizes 10 inches and over, flanged.

2.6 BUTTERFLY VALVES

- A. Bronze Body:
 - 1. Stainless steel disc, resilient replaceable seat, threaded or grooved ends, extended neck, handwheel and gear drive and integral indicating device, and built-in tamper proof switch rated 10 amp at 115 volt AC.
- B. Cast or Ductile Iron Body
 - 1. Cast or ductile iron, chrome or nickel plated ductile iron or aluminum bronze disc, resilient replaceable EPDM seat, wafer, lug, or grooved ends, extended neck, handwheel and gear drive and integral indicating device, and external tamper switch rated 10 amp at 115 volt AC.

2.7 CHECK VALVES

- A. Up to and including 2 inches:
 - 1. Bronze body and swing disc, rubber seat, threaded ends.

- B. Over 2 inches:
 - 1. Iron body, bronze trim, swing check with rubber disc, renewable disc and seat, flanged ends with automatic ball check.
- C. 4 inches and Over:
 - 1. Iron body, bronze disc, stainless steel spring, resilient seal, threaded, wafer, or flanged ends.

2.8 DRAIN VALVES

- A. Compression Stop:
 - 1. Bronze with hose thread nipple and cap.
- B. Ball Valve:
 - 1. Brass with cap and chain, 3/4 inch hose thread.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and foreign material, from inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.2 INSTALLATION

- A. Install piping in accordance with NFPA 13 for sprinkler systems.
- B. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
- C. Install piping to conserve building space, to not interfere with use of space and other work.
- D. Group piping whenever practical at common elevations.
- E. Sleeve pipes passing through partitions, walls, and floors.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- G. Pipe Hangers and Supports:
 - 1. Install in accordance with NFPA 13 and NFPA 14.
 - 2. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
 - 3. Place hangers within 12 inches of each horizontal elbow.
 - 4. Use hangers with 1-1/2" minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.

5. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
 6. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 7. Provide copper plated hangers and supports for copper piping.
 8. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
- H. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.
- I. Prepare pipe, fittings, supports, and accessories for finish painting. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
- J. Do not penetrate building structural members unless indicated.
- K. Provide sleeves when penetrating footings, floors and walls. Seal pipe and sleeve penetrations to achieve fire resistance equivalent to fire separation required.
- L. Die cut threaded joints with full cut standard taper pipe threads with red lead and linseed oil or other non-toxic joint compound applied to male threads only.
- M. Install valves with stems upright or horizontal, not inverted. Remove protective coatings prior to installation.
- N. Provide gate ball or butterfly valves for shut-off or isolating service.
- O. Provide drain valves at main shut-off valves, low points of piping and apparatus.

END OF SECTION

SECTION 15325 - SPRINKLER SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Wet-pipe sprinkler system.
- B. System design, installation, and certification.
- C. Dry pipe sprinkler system.

1.2 RELATED CTIONS

- A. Division 15 - Mechanical Identification.
- B. Division 16 - Equipment Wiring Systems: Electrical characteristics and wiring connections.

1.3 REFERENCES

- A. NFPA 13 - Installation of Sprinkler Systems.
- B. FM - Factory Mutual Approval Guide.
- C. NFPA 70 - National Electrical Code.
- D. UL - Fire Resistance Directory.
- E. Warnock Hersey - Certification Listings.
- F. Kentucky Building Code.

1.4 SYSTEM DESCRIPTION

- A. System to provide NFPA 13 wet and dry systems.
- B. Provide system to NFPA 13 light hazard or ordinary hazard occupancy requirements in offices and other occupancies in the plant as deemed necessary.
- C. Water flow data shown on the drawings shall be verified by the Sprinkler Contractor. Sprinkler Contractor shall submit Sprinkler Criteria sheet to Thh Division of Housing Buildings and Construction.
- D. Interface system with building fire and smoke alarm system.

Coordinate with building alarm contractor and provide method of sprinkler system supervision through an approved proprietary supervision supplier.

1.5 SUBMITTALS FOR REVIEW

- A. Product Data: Provide data on sprinklers, valves, and specialties, including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
- B. Shop Drawings:
 - 1. Submit preliminary layout of finished ceiling areas indicating only sprinkler locations coordinated with ceiling installation.
 - 2. Indicate hydraulic calculations, detailed pipe layout, hangers and supports, sprinklers, components and accessories. Indicate system controls.
 - 3. Submit shop drawings, product data, hydraulic calculations and review fee for review by the Office of Housing, Buildings and Construction. Submit a copy of shop drawings, product data and hydraulic calculations to the engineer of record.

1.6 SUBMITTALS AT PROJECT CLOSEOUT

- A. Project Record Documents: Record actual locations of sprinklers and deviations of piping from drawings. Indicate drain and test locations.
- B. Manufacturer's Certificate: Certify that system has been tested and meets or exceeds specified requirements and code requirements.
- C. Operation and Maintenance Data: Include components of system, servicing requirements, record drawings, inspection data, replacement part numbers and availability, and location and numbers of service depot.
- D. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with NFPA 13
- B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years experience.
- C. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience approved by manufacturer.
- D. Design and install system under direct supervision of a licensed sprinkler contractor and installer.

1.8 DELIVERY, STORAGE, AND PROTECTION

- A. Store products in shipping containers and maintain in place until installation. Provide temporary inlet and outlet caps. Maintain caps in place until installation. Store piping off the ground or floor. Piping installed with dirt and/or rust will be cleaned and painted!

1.9 EXTRA MATERIALS

- A. Provide extra sprinklers under provisions of NFPA 13.
- B. Provide suitable wrenches for each sprinkler type.
- C. Provide metal storage cabinet located adjacent to alarm valve.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Gem.
- B. Star
- C. Viking.
- D. Reliable.

2.2 SPRINKLERS

- A. Suspended Ceiling:
 - 1. Type: Semi-recessed pendant type with matching clamp on escutcheon plate.
 - 2. Finish: Chrome plated or white enamel.
 - 3. Escutcheon Plate Finish: To match head
 - 4. Fusible Link: Fusible solder link type temperature rated for specific area hazard.
- B. Exposed Area Type:
 - 1. Type: Standard upright type with guard in mechanical rooms and gymnasiums.
 - 2. Finish: Brass.
 - 3. Fusible Link: Fusible solder link type temperature rated for specific area hazard.
- C. Sidewall Type:
 - 1. Type: Semi-recessed horizontal sidewall type with matching clamp on escutcheon plate.
 - 2. Finish: Chrome plated.
 - 3. Escutcheon Plate Finish: Chrome plated.
 - 4. Fusible Link: Fusible solder link type temperature rated for specific area hazard.
- D. Guards: Finish to match sprinkler finish.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with NFPA 13.
- B. Install equipment in accordance with manufacturer's instructions.
- C. Place pipe runs to minimize obstruction to other work.
- D. Place piping in concealed spaces above finished ceilings.
- E. Center sprinklers in two directions in ceiling tile and provide piping offsets as required.

- F. Apply masking tape or paper cover to ensure concealed sprinklers, cover plates, and sprinkler escutcheons do not receive field paint finish. Remove after painting. Replace painted sprinklers.
- G. Flush entire piping system of foreign matter.
- H. Install guards on sprinklers where exposed.
- I. Hydrostatically test entire system.

3.2 INTERFACE WITH OTHER PRODUCTS

- A. Ensure required devices are installed and connected as required to fire alarm system.

END OF SECTION

SECTION 15430 - PLUMBING SPECIALTIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Cleanouts.
- B. Outlet boxes.

1.2 RELATED SECTIONS

- A. Division 15 - Piping & Valves.
- B. Division 15 - Plumbing Fixtures.
- C. Division 15 - Plumbing Equipment.
- D. Division 16 - Equipment Wiring Systems: Electrical characteristics and wiring connections.

1.3 SUBMITTALS FOR REVIEW

- A. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.
- B. Shop Drawings: Indicate dimensions, weights, and placement of openings and holes.

1.4 SUBMITTALS FOR INFORMATION

- A. Manufacturer's Instructions: Indicate Manufacturer's Installation Instructions: Indicate assembly and support requirements.

1.5 SUBMITTALS AT PROJECT CLOSEOUT

- A. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.

1.7 DELIVERY, STORAGE, AND PROTECTION

- A. Accept specialties on site in original factory packaging. Inspect for damage.

PART 2 - PRODUCTS

2.1 CLEANOUTS

- A. Cleanouts shall be type and of materials as scheduled manufactured by Josam, Zurn, Mifab, Smith or Watts.

2.2 OUTLET BOXES

- A. Outlet boxes shall be by Guy Gray, Acorn, Oatey, Plastic Oddities or approved equivalent.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.
- C. Encase exterior cleanouts in concrete flush with grade.
- D. Install floor cleanouts at elevation to accommodate finished floor.

END OF SECTION

SECTION 15440 - PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Water Closets.
- B. Lavatories.
- C. Sinks.
- D. Service Sinks.

1.2 RELATED SECTIONS

- A. Division 15 - Supports and Anchors.
- B. Division 15 - Piping & Valves.
- C. Division 15 - Plumbing Specialties.
- D. Division 15 - Plumbing Equipment.
- E. Division 16 - Equipment Wiring Systems: Electrical characteristics and wiring connections

1.3 REFERENCES

- A. ASME A112.6.1 - Supports for Off-the-Floor Plumbing Fixtures for Public Use.
- B. ASME A112.18.1 - Finished and Rough Brass Plumbing Fixture Fittings.
- C. ASME A112.19.2 - Vitreous China Plumbing Fixtures.
- D. ASME A112.19.5 - Trim for Water-Closet Bowls, Tanks, and Urinals.
- E. NFPA 70 - National Electrical Code.

1.4 SUBMITTALS FOR REVIEW

- A. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

1.5 SUBMITTALS AT PROJECT CLOSEOUT

- A. Maintenance Data: Include fixture trim exploded view and replacement parts lists.
- B. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

1.7 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., or a testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.8 DELIVERY, STORAGE, AND PROTECTION

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.9 WARRANTY

- A. Provide five year manufacturer warranty for electric water cooler.

1.10 EXTRA MATERIALS

- A. Supply two sets of faucet washers, flush valve service kits, and toilet seats minimum, and two additional for each five fixtures.

PART 2 - PRODUCTS

- 2.1 See Schedule on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

3.2 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.3 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.
- C. Install components level and plumb.

- D. Install and secure fixtures in place with wall supports and wall carriers as indicated.
- E. Seal fixtures to wall and floor surfaces with sealant, color to match fixture.
- F. Solidly attach water closets to floor with lag screws. Lead flashing is not intended to hold fixture in place.

3.4 INTERFACE WITH OTHER PRODUCTS

- A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

3.5 ADJUSTING

- A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.6 CLEANING

- A. Clean plumbing fixtures and equipment.

3.7 PROTECTION OF FINISHED WORK

- A. Do not permit use of fixtures until acceptance of project.

3.8 SCHEDULES

- A. Fixture Rough-In

	Hot	Cold	Waste	Vent
Water Closet (Flush Valve)	1 1/4 inch	3 inch	See plans	See plans
Lavatory:	1/2 inch	1/2 inch	See plans	See plans
Sink:	1/2 inch	1/2 inch	See plans	See plans
Service Sink:	1/2 inch	1/2 inch	3 inch	See plans

See plans for other fixtures.

Waste and vent size may vary. See diagrams on drawings.

END OF SECTION

SECTION 15485 - ELECTRIC WATER HEATERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following electric water heaters:
 1. Household, storage electric water heaters.
 2. Compression tanks.
 3. Water heater accessories.

1.3 SUBMITTALS

- A. Product Data: For each type and size of water heater indicated. Include rated capacities, operating characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Diagram power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and Maintenance Data: For electric water heaters to include in emergency, operation, and maintenance manuals.
- E. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain same type of electric water heaters through one source from a single manufacturer.
- B. Product Options: Drawings indicate size, profiles, and dimensional requirements of electric water heaters and are based on the specific system indicated.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- D. Comply with NSF 61, "Drinking Water System Components - Health Effects; Sections 1 through 9," for all components that will be in contact with potable water.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of electric water heaters that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including storage tank and supports.
 - b. Faulty operation of controls.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal use.
 - 2. Warranty Period(s): From date of Substantial Completion:
 - a. Household Electric Water Heaters:
 - 1) Storage Tank: Five years.
 - 2) Controls and Other Components: Two years.
 - b. Compression Tanks: Five years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

2.2 HOUSEHOLD ELECTRIC WATER HEATERS

- A. Household, Standard, Storage Electric Water Heaters: Comply with UL 174.
 - 1. Available Manufacturers:
 - a. American Water Heater Company.
 - b. Bradford White Corporation.
 - c. HESco Industries, Inc.
 - d. Lochinvar Corporation.
 - e. Rheem Water Heater Div.; Rheem Manufacturing Company.
 - f. Ruud Water Heater Div.; Rheem Manufacturing Company.
 - g. Smith, A. O. Water Products Company.
 - h. State Industries, Inc.
 - 2. Storage-Tank Construction: Steel.
 - a. Tappings: ASME B1.20.1 pipe thread.
 - b. Pressure Rating: 150 psig.
 - c. Interior Finish: Comply with NSF 61 barrier materials for potable-water tank linings, including extending lining material into tappings.

2.3 COMPRESSION TANKS

- A. Description: Steel pressure-rated tank constructed with welded joints and factory-installed butyl-rubber diaphragm. Include air precharge to minimum system-operating pressure at tank.
 - 1. Available Manufacturers:
 - a. AMTROL Inc.
 - b. Armstrong Pumps, Inc.
 - c. Flexcon Industries.
 - d. Honeywell Sparco.
 - e. Myers, F. E.; Pentair Pump Group (The).
 - f. Smith, A. O.; Aqua-Air Div.
 - g. State Industries, Inc.
 - h. Taco, Inc.
 - i. Watts Regulator Co.
 - j. Wessels Co.
 - 2. Construction:
 - a. Tappings: Factory-fabricated steel, welded to tank before testing and labeling. Include ASME B1.20.1, pipe thread.
 - b. Interior Finish: Comply with NSF 61 barrier materials for potable-water tank linings, including extending finish into and through tank fittings and outlets.
 - c. Air-Charging Valve: Factory installed.

2.4 WATER HEATER ACCESSORIES

- A. Combination Temperature and Pressure Relief Valves: ASME rated and stamped and complying with ASME PTC 25.3. Include relieving capacity at least as great as heat input, and include pressure setting less than water heater working-pressure rating. Select relief valves with sensing element that extends into storage tank.
- B. Water Heater Mounting Brackets: Water heater manufacturer's factory-fabricated steel bracket for wall mounting and capable of supporting water heater and water.
- C. Shock Absorbers: ASSE 1010 or PDI WH 201, Size A water hammer arrester.

PART 3 - EXECUTION

3.1 WATER HEATER INSTALLATION

- A. Install water heaters level and plumb, according to layout drawings, original design, and referenced standards. Maintain manufacturer's recommended clearances. Arrange units so controls and devices needing service are accessible.
- B. Install water-heater drain piping as indirect waste to spill by positive air gap into open drains or over floor drains. Install hose-end drain valves at low points in water piping for water heaters

that do not have tank drains. Refer to Division 15 Section "Plumbing Specialties" for hose-end drain valves.

- C. Install thermometer on outlet piping of water heaters.
- D. Fill water heaters with water.

3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to water heaters to allow service and maintenance. Arrange piping for easy removal of water heaters.
- C. Ground equipment according to Division 16 Section "Grounding and Bonding."
- D. Connect wiring according to Division 16 Section "Conductors and Cables."

3.3 FIELD QUALITY CONTROL

- 1. Operational Test: After electrical circuitry has been energized, confirm proper operation.
 - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Remove and replace water heaters that do not pass tests and inspections and retest as specified above.

END OF SECTION 15485

SECTION 15550 - FUEL-FIRED HEATERS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Gas fired unit heaters.
- B. Related Sections:
 - 1. Section 15140 - Hangers and Supports for HVAC Piping and Equipment: Product requirements for hangers for placement by this section.
 - 2. Section 15100 - Piping: Product requirements for natural gas piping connected to gas-fired heaters.
 - 3. Section 15905 - HVAC Instrumentation: Product requirements for thermostats and time clocks for placement by this section.
 - 4. Section 16140 - Wiring Connections: Execution requirements for electrical connections specified by this section.

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI Z83.8 - Gas Unit Heaters.
- B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:
 - 1. ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- C. National Fire Protection Association:
 - 1. NFPA 54 - National Fuel Gas Code.
 - 2. NFPA 90B - Standard for the Installation of Warm Air Heating and Air Conditioning Systems.

1.3 SUBMITTALS

- A. Section 01300 - Submittal Procedures: Submittals procedures.
- B. Shop Drawings: Indicate assembly, required clearances, and locations and sizes of field connections.
- C. Product Data: Submit manufacturer's literature and data indicating rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
- D. Manufacturer's Installation Instructions: Submit Indicate rigging and assembly.
- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01700 - Execution Requirements: Closeout procedures.
- B. Project Record Documents: Record actual locations of thermostats or other products not mounted on unit.
- C. Operation and Maintenance Data: Submit manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts listing.

1.5 QUALITY ASSURANCE

- A. Gas-Fired Unit Heater Performance Requirements: Conform to minimum efficiency prescribed by ASHRAE 90.1 when tested in accordance with ANSI Z83.8.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Product storage and handling requirements.
- B. Accept heaters and controls on site in factory packaging. Inspect for damage.

1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.9 WARRANTY

- A. Section 01700 - Execution Requirements: Product warranties and product bonds.
- B. Furnish ten year manufacturer warranty for heat exchanger.
- C. This Contractor shall furnish as part of his bid, an unlimited one year parts and labor warranty on equipment provided in this section. The two year warranty period shall begin at the Date of Substantial Completion.

PART 2 PRODUCTS

2.1 CONDENSING GAS FIRED UNIT HEATERS

- A. Manufacturers:

1. Sterling.
 2. Reznor.
 3. The Trane Company
 4. Modine.
- B. Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, heat exchanger, burner, controls, and accessories:
1. Heating fuel: Natural gas fired.
 2. Discharge Louvers: Individually adjustable horizontal louvers to match cabinet finish.
 3. Downturn Nozzle: 30 or 60 degree nozzle (as indicated in the schedule) to match outlet and cabinet finish.
 4. Gas Control: Single stage.
 5. Ignition System: Electric ignition-pilot to main burner.
 6. Control Voltage: 24 volt, 60 hertz.
 7. Location: Suspended overhead.
- C. Cabinet: Galvanized steel, easily removed and secured access panels, insulated or double panel construction.
- D. Supply Fan: Centrifugal forward curved type with belt drive, variable pitch motor pulley.
- E. Heat Exchanger: Aluminized steel welded construction.
- F. Gas Burner: Atmospheric type.
- G. Gas Burner Safety Controls:
1. Thermocouple sensor: Prevents opening of gas valve until pilot flame is proven and stops gas flow on ignition failure.
 2. Flame rollout switch: Installed on burner box and prevents operation.
 3. Vent safety shutoff sensor: Temperature sensor installed on draft hood and prevents operation, manual reset.
 4. Limit Control: Fixed stop at maximum permissible setting, de-energizes burner on excessive bonnet temperature, automatic reset.
- H. Controls:
1. Room Thermostat: Adjustable, low voltage, to control burner operation and supply fan to maintain temperature setting.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Verify space is ready for installation of units and openings are as indicated on shop drawings.

3.2 INSTALLATION

- A. Install units in accordance with NFPA 54.
- B. Installation - Natural Gas Piping:
 - 1. Connect natural gas piping in accordance with NFPA 54.
 - 2. Connect natural gas piping to unit, full size of unit gas train inlet. Arrange piping with clearances for burner service.
 - 3. Install the following piping accessories on natural gas piping connections. Refer to Section 15100.
 - a. Shutoff valve.
 - b. Pressure reducing valve.
 - c. Gas regulator. Vent regulator to exterior.
- C. Provide hangers and supports for suspended units. Refer to Section 15140.
- D. Provide connection to electrical power systems. Refer to Section 16150.

END OF SECTION

SECTION 15810 – HVAC DUCTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Duct Materials.
 - 2. Insulated flexible ducts.
 - 3. Single wall spiral round ducts.
 - 4. Transverse duct connection system.
 - 5. Ductwork fabrication.

- B. Related Sections:
 - 1. Division 09 - Paints and Coatings: Execution requirements for Weld priming, weather resistant, paint or coating specified by this section.
 - 2. Division 15 - Hangers and Supports for HVAC Piping and Equipment: Product requirements for hangers, supports and sleeves for placement by this section.
 - 3. Division 15 - Duct Accessories: Product requirements for duct accessories for placement by this section.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
 - 2. ASTM A90/A90M - Standard Test Method for Weight Mass of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
 - 3. ASTM A568/A568M - Standard Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
 - 4. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 5. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 - 6. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 - 7. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

- B. Sheet Metal and Air Conditioning Contractors:
 - 1. SMACNA - HVAC Air Duct Leakage Test Manual.
 - 2. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

- C. Underwriters Laboratories Inc.:
 - 1. UL 181 - Factory-Made Air Ducts and Connectors.

1.3 PERFORMANCE REQUIREMENTS

- A. Variation of duct configuration or sizes other than those of equivalent or lower loss coefficient is not permitted except by written permission. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts.

1.4 SUBMITTALS

- A. Product Data: Submit data for duct materials.
- B. Test Reports: Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate, following SMACNA HVAC Air Duct Leakage Test Manual.

1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with SMACNA - HVAC Duct Construction Standards - Metal and flexible.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Do not install duct sealant when temperatures are less than those recommended by sealant manufacturers.
- B. Maintain temperatures during and after installation of duct sealant.

1.9 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.1 DUCT MATERIALS

- A. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality, having G60] zinc coating of in conformance with ASTM A90/A90M.
- B. Aluminum Ducts: ASTM B209; aluminum sheet, alloy 3003-H14. Aluminum Connectors and Bar Stock: Alloy 6061-T6 or of equivalent strength.
- C. Fasteners: Rivets, bolts, or sheet metal screws.
- D. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.2 INSULATED FLEXIBLE DUCTS

- A. Product Description: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helical wound spring steel wire; fiberglass insulation; aluminized vapor barrier film.
 - 1. Pressure Rating: 10 inches wg positive and 1.0 inches wg negative.
 - 2. Maximum Velocity: 4000 fpm.
 - 3. Temperature Range: -20 degrees F to 210 degrees F.
 - 4. Thermal Resistance: 4.2 square feet-hour-degree F per BTU.
 - 5. Furnish each flexible duct section with integral clamping devices for connection to round or oval fittings.
 - 6. Join each flexible duct section to main trunk duct through sheet metal fittings. Construct fittings of galvanized steel and equip with factory installed volume damper having positive locking regulator. Provide fittings installed in lined ductwork with insulation guard.

2.3 SINGLE WALL SPIRAL ROUND DUCTS

- A. Manufacturers:
 - 1. McGill AirFlow Corporation.
 - 2. Semco Incorporated.
 - 3. Tangent Air Corp.
 - 4. Spiral Mfg. Co.
 - 5. Lindab.
- B. Product Description: UL 181, Class 1, round spiral lockseam duct constructed of galvanized steel.
- C. Construct duct with the following minimum gages:

Diameter	Gauge
3 inches to 14 inches	26
15 inches to 26 inches	24

D. Construct fittings with the following minimum gages:

Diameter	Gauge
3 inches to 14 inches	24
15 inches to 26 inches	22
28 inches to 36 inches	20

2.4 DUCTWORK FABRICATION

- A. Fabricate and support rectangular ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- B. Fabricate and support round ducts with longitudinal seams in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible (Round Duct Construction Standards). Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- C. Construct T's, bends, and elbows with minimum radius 1-1/2 times centerline duct width. Where not possible and where rectangular elbows are used, provide turning vanes. Where acoustical lining is indicated, furnish turning vanes of perforated metal with glass fiber insulation.
- D. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- E. Fabricate continuously welded round and oval duct fittings two gages heavier than duct gages indicated in SMACNA Standard. Minimum 4 inch cemented slip joint, brazed or electric welded. Prime coat welded joints.
- F. Provide standard 45-degree lateral wye takeoffs. When space does not allow 45-degree lateral wye takeoff, use 90-degree conical tee connections.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify sizes of equipment connections before fabricating transitions.

3.2 INSTALLATION

- A. Install and seal ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

- B. During construction, install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- C. Use crimp joints with or without bead or beaded sleeve couplings for joining round duct sizes 8 inch and smaller.
- D. Install duct hangers and supports in accordance with Division 15.
- E. Use double nuts and lock washers on threaded rod supports.

3.3 INTERFACE WITH OTHER PRODUCTS

- A. Install openings in ductwork where required to accommodate thermometers and controllers. Install pitot tube openings for testing of systems. Install pitot tube complete with metal can with spring device or screw to prevent air leakage. Where openings are provided in insulated ductwork, install insulation material inside metal ring.
- B. Connect diffusers boots to low pressure ducts with 5 feet maximum length of flexible duct held in place with strap or clamp.
- C. Connect air terminal units and air outlets and inlets to supply ducts with five foot maximum length of flexible duct. Do not use flexible duct to change direction.

3.4 SCHEDULES

- A. Ductwork Material Schedule:

AIR SYSTEM	MATERIAL
Supply (Heating Systems)	Steel
Supply (System with Cooling Coils)	Steel
Not used	
Return and Relief	Steel, Aluminum
General Exhaust	Steel, Aluminum
Outside Air Intake	Steel
Intake and Exhaust	Steel

END OF SECTION

SECTION 15820 - DUCT ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Duct access doors.
 - 2. Volume control dampers.
 - 3. Flexible duct connections.
 - 4. Duct test holes.
 - 5. Static pressure gages.
- B. Related Sections:
 - 1. Division 15 - Ducts: Requirements for duct construction and pressure classifications.

1.2 REFERENCES

- A. Air Movement and Control Association International, Inc.:
 - 1. AMCA 500 - Test Methods for Louvers, Dampers, and Shutters.
- B. National Fire Protection Association:
 - 1. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.
- C. Sheet Metal and Air Conditioning Contractors:
 - 1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

1.3 SUBMITTALS

- A. Product Data: Submit for the following. Include where applicable electrical characteristics and connection requirements.
 - 1. Backdraft dampers.
 - 2. Flexible duct connections.
 - 3. Volume control dampers.
 - 4. Duct access doors.
 - 5. Duct test holes.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect dampers from damage to operating linkages and blades.
- B. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer and material.
- C. Storage: Store materials in a dry area indoor, protected from damage.
- D. Handling: Handle and lift dampers in accordance with manufacturer's instructions. Protect materials and finishes during handling and installation to prevent damage.

1.6 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.7 COORDINATION

- A. Coordinate Work where appropriate with building control Work.

PART 2 PRODUCTS

2.1 DUCT ACCESS DOORS

- A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
- B. Fabrication: Rigid and close fitting of galvanized steel with sealing gaskets and quick fastening locking devices. For insulated ductwork, furnish minimum 1 inch thick insulation with sheet metal cover.
 - 1. Less than 12 inches square, secure with sash locks.
 - 2. Up to 18 inches Square: Furnish two hinges and two sash locks.
 - 3. Up to 24 x 48 inches: Three hinges and two compression latches [with outside and inside handles].
 - 4. Larger Sizes: Furnish additional hinge.
 - 5. Access panels with sheet metal screw fasteners are not acceptable.

2.2 VOLUME CONTROL DAMPERS

- A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated on Drawings.
- B. Multi-Blade Damper: Fabricate of opposed blade pattern with maximum blade sizes 8 x 72 inch. Assemble center and edge crimped blades in prime coated or galvanized frame channel with suitable hardware.

- C. End Bearings: Except in round ductwork 12 inches and smaller, furnish end bearings. On multiple blade dampers, furnish oil-impregnated nylon or sintered bronze bearings. Furnish closed end bearings on ducts having pressure classification over 2 inches wg.
- D. Quadrants:
 - 1. Furnish locking, indicating quadrant regulators on single and multi-blade dampers.
 - 2. On insulated ducts mount quadrant regulators on standoff mounting brackets, bases, or adapters.
 - 3. Where rod lengths exceed 30 inches furnish regulator at both ends.

2.3 FLEXIBLE DUCT CONNECTIONS

- A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated on Drawings.
- B. Connector: Fabric crimped into metal edging strip.
 - 1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric conforming to NFPA 90A, minimum density 30 oz per sq yd.
 - 2. Net Fabric Width: Approximately 6 inches wide.
 - 3. Metal: 3 inch galvanized steel.

2.4 DUCT TEST HOLES

- A. Permanent Test Holes: Factory fabricated, air tight flanged fittings with screw cap. Furnish extended neck fittings to clear insulation.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify rated walls are ready for fire damper installation.
- B. Verify ducts and equipment installation are ready for accessories.
- C. Check location of air outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

3.2 INSTALLATION.

- A. Install in accordance with International Mechanical Code, SMACNA HVAC Duct Construction Standards - Metal and Flexible
- B. Access Doors: Install access doors at the following locations and as indicated on Drawings:
 - 1. Spaced every 50 feet of straight duct.
 - 2. Upstream of each elbow.

3. Before and after each automatic control damper.
- C. Access Door Sizes: Install minimum 8 x 8 inch size for hand access, and 18 x 18 inch size for shoulder access. Review locations prior to fabrication.
 - D. Install temporary duct test holes where required for testing and balancing purposes. Cut or drill in ducts. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.

END OF SECTION

SECTION 15850 - AIR OUTLETS AND INLETS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Diffusers.
 - 2. Registers
 - 3. Grilles.
- B. Related Sections:
 - 1. Division 15 - Duct Accessories: Volume dampers for inlets and outlets.

1.2 REFERENCES

- A. American Society of Heating, Refrigerating and Air-Conditioning Engineers:
 - 1. ASHRAE 70 - Method of Testing for Rating the Performance of Air Outlets and Inlets.
- B. Sheet Metal and Air Conditioning Contractors:
 - 1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

1.3 SUBMITTALS

- A. Product Data: Submit sizes, finish, and type of mounting. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.
- B. Test Reports: Rating of air outlet and inlet performance.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of air outlets and inlets.

1.5 QUALITY ASSURANCE

- A. Test and rate diffuser, register, and grille performance in accordance with ASHRAE 70.

PART 2 PRODUCTS

2.1 DIFFUSERS REGISTERS GRILLES

- A. Manufacturers:
 - 1. Anemostat Air Products.
 - 2. E. H Price Company.

3. Krueger.
4. Nailor Industries, Inc.
5. Titus.
6. Tuttle and Bailey.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify inlet and outlet locations.
- B. Verify ceiling and wall systems are ready for installation.

3.2 INSTALLATION

- A. Install diffusers to ductwork with airtight connection.
- B. Install balancing dampers on duct take-off to diffusers, grilles, and registers, whether or not dampers are furnished as part of diffuser, grille, and register assembly.

3.3 SCHEDULES

- A. See drawings for schedules.

3.4 INTERFACE WITH OTHER PRODUCTS

- A. Check location of outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

END OF SECTION

SECTION 15950 - TESTING, ADJUSTING, AND BALANCING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Testing adjusting, and balancing of air systems.
 - 2. Measurement of final operating condition of HVAC systems.

- B. Related Sections:
 - 1. Division 15 - Sequence of Operation: Sequences of operation for HVAC equipment.
 - 2. Division 15 – HVAC Commissioning.

1.2 REFERENCES

- A. Associated Air Balance Council:
 - 1. AABC MN-1 - National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems.

- B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:
 - 1. ASHRAE 111 - Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning and Refrigeration Systems.

- C. Natural Environmental Balancing Bureau:
 - 1. NEBB - Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems.

1.3 SUBMITTALS

- A. Prior to commencing Work, submit proof of latest calibration date of each instrument.

- B. Test Reports: Indicate data on AABC MN-1 National Standards for Total System Balance forms, forms prepared following ASHRAE 111 and NEBB Report forms.

- C. Field Reports: Indicate deficiencies preventing proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.

- D. Prior to commencing Work, submit report forms or outlines indicating adjusting, balancing, and equipment data required. Include detailed procedures, agenda, sample report forms and copy of AABC National Project Performance Guaranty or and Copy of NEBB Certificate of Conformance Certification.

- E. Submit draft copies of report for review prior to final acceptance of Project.

- F. Furnish reports in soft cover, letter size, 3-ring binder manuals, complete with table of contents page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of flow measuring stations balancing valves and rough setting.
- B. Operation and Maintenance Data: Furnish final copy of testing, adjusting, and balancing report inclusion in operating and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with AABC MN-1 National Standards for Field Measurement and Instrumentation, Total System Balance, ASHRAE 111 or NEBB Procedural Standards for Testing, Balancing and Adjusting of Environmental Systems.
- B. Prior to commencing Work, calibrate each instrument to be used.

1.6 QUALIFICATIONS

- A. Agency: Company specializing in testing, adjusting, and balancing of systems specified in this section with minimum three years experience [certified by AABC or Certified by NEBB].
- B. Perform Work under supervision of AABC Certified Test and Balance Engineer, NEBB Certified Testing, Balancing and Adjusting Supervisor.

1.7 SEQUENCING

- A. Sequence balancing between completion of systems tested and Date of Substantial Completion.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify systems are complete and operable before commencing work. Verify the following:
 1. Systems are started and operating in safe and normal condition.
 2. Temperature control systems are installed complete and operable.

3. Proper thermal overload protection is in place for electrical equipment.
4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
5. Duct systems are clean of debris.
6. Fans are rotating correctly.
7. Air coil fins are cleaned and combed.
8. Access doors are closed and duct end caps are in place.
9. Air outlets are installed and connected.
10. Duct system leakage is minimized.

3.2 PREPARATION

- A. Furnish instruments required for testing, adjusting, and balancing operations.
- B. Make instruments available to Architect/Engineer to facilitate spot checks during testing.

3.3 INSTALLATION TOLERANCES

- A. Air Handling Systems: Adjust to within plus or minus 10 percent of design.
- B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

3.4 ADJUSTING

- A. Verify recorded data represents actual measured or observed conditions.
- B. Permanently mark settings of dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- C. After adjustment, take measurements to verify balance has not been disrupted. If disrupted, verify correcting adjustments have been made.
- D. Report defects and deficiencies noted during performance of services, preventing system balance.
- E. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.
- F. At final inspection, recheck random selections of data recorded in report. Recheck points or areas as selected and witnessed by Owner.
- G. Check and adjust systems approximately six months after final acceptance and submit report.

3.5 AIR SYSTEM PROCEDURE

- A. Adjust air handling and distribution systems to obtain required or design supply, return, and exhaust air quantities at site altitude.
- B. Make air quantity measurements in main ducts by Pitot tube traverse of entire cross sectional area of duct.
- C. Measure air quantities at air inlets and outlets.
- D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts.
- E. Use volume control devices to regulate air quantities only to extent adjustments do not create objectionable air motion or sound levels. Effect volume control by using volume dampers located in ducts.
- F. Vary total system air quantities by adjustment of fan speeds. Provide sheave drive changes to vary fan speed. Vary branch air quantities by damper regulation.
- G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.
- H. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across fan. Make allowances for 50 percent loading of filters.
- I. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.
- J. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.

3.6 SCHEDULES

- A. Equipment Requiring Testing, Adjusting, and Balancing:
 - 1. Fans.
 - 2. Air Inlets and Outlets.
 - 3. Packaged roof top Heat Pump units.
 - 4. Heat Pump Outdoor Units.
 - 5. Gas Unit Heaters.
- B. Report Forms
 - 1. Title Page:
 - a. Name of Testing, Adjusting, and Balancing Agency
 - b. Address of Testing, Adjusting, and Balancing Agency
 - c. Telephone and facsimile numbers of Testing, Adjusting, and Balancing Agency

- d. Project name
- e. Project location
- f. Project Architect
- g. Project Engineer
- h. Project Contractor
- i. Project altitude
- j. Report date
- 2. Summary Comments:
 - a. Design versus final performance
 - b. Notable characteristics of system
 - c. Description of systems operation sequence
 - d. Summary of outdoor and exhaust flows to indicate building pressurization
 - e. Nomenclature used throughout report
 - f. Test conditions
- 3. Instrument List:
 - a. Instrument
 - b. Manufacturer
 - c. Model number
 - d. Serial number
 - e. Range
 - f. Calibration date
- 4. Electric Motors:
 - a. Manufacturer
 - b. Model/Frame
 - c. HP/BHP and kW
 - d. Phase, voltage, amperage; nameplate, actual, no load
 - e. RPM
 - f. Service factor
 - g. Starter size, rating, heater elements
 - h. Sheave Make/Size/Bore
- 5. Return Air/Outside Air Data:
 - a. Identification/location
 - b. Design air flow
 - c. Actual air flow
 - d. Design return air flow
 - e. Actual return air flow
 - f. Design outside air flow
 - g. Actual outside air flow
 - h. Return air temperature
 - i. Outside air temperature
 - j. Required mixed air temperature
 - k. Actual mixed air temperature
 - l. Design outside/return air ratio
 - m. Actual outside/return air ratio
- 6. Exhaust Fan Data:
 - a. Location
 - b. Manufacturer

- c. Model number
 - d. Serial number
 - e. Air flow, specified and actual
 - f. Total static pressure (total external), specified and actual
 - g. Inlet pressure
 - h. Discharge pressure
 - i. Sheave Make/Size/Bore
 - j. Number of Belts/Make/Size
 - k. Fan RPM
7. Duct Traverse:
- a. System zone/branch
 - b. Duct size
 - c. Area
 - d. Design velocity
 - e. Design air flow
 - f. Test velocity
 - g. Test air flow
 - h. Duct static pressure
 - i. Air temperature
 - j. Air correction factor

END OF SECTION

SECTION 15992 - HVAC COMMISSIONING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. HVAC commissioning description.
 - 2. HVAC commissioning responsibilities.

1.2 COMMISSIONING DESCRIPTION

- A. HVAC commissioning process includes the following tasks:
 - 1. Coordination of testing and startup of HVAC equipment and systems.
 - 2. Equipment and system verification checks.
 - 3. Assistance in functional performance testing to verify testing and balancing, and equipment and system performance.
 - 4. Provide qualified personnel to assist in commissioning tests, including seasonal testing.
 - 5. Complete and endorse functional performance test checklists provided by Commissioning Authority to assure equipment and systems are fully operational and ready for functional performance testing.
 - 6. Provide equipment, materials, and labor necessary to correct deficiencies found during commissioning process to fulfill contract and warranty requirements.
 - 7. Provide operation and maintenance information and record drawings to Commissioning Authority for review verification and organization, prior to distribution.
 - 8. Provide assistance to Commissioning Authority to develop, edit, and document system operation descriptions.
 - 9. Provide training for systems specified in this Section with coordination by Commissioning Authority.
- B. Equipment and stems to Be Commissioned:
 - 1. Piping systems (New Construction).
 - 2. Ductwork (New Construction).
 - 3. Gas unit heaters.
 - 4. Exhaust Fans.
 - 5. Temperature control system.
 - 6. Testing, Adjusting and Balancing work.

1.3 COMMISSIONING SUBMITTALS

- A. Draft Forms: Submit draft of system verification form and functional performance test checklist].
- B. Test Reports: Indicate data on system verification form for each piece of equipment and system as specified. Use AABC forms as guidelines.

- C. Field Reports: Indicate deficiencies preventing completion of equipment or system verification checks equipment or system to achieve specified performance.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record revisions to equipment and system documentation necessitated by commissioning.
- B. Operation and Maintenance Data: Submit revisions to operation and maintenance manuals when necessary revisions are discovered during commissioning.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with AABC or NEBB.

1.6 COMMISSIONING RESPONSIBILITIES

- A. Equipment or System Installer Commissioning Responsibilities:
 1. Schedule and attend commissioning meetings.
 2. Ensure temperature controls installer performs assigned commissioning responsibilities as specified below.
 3. Ensure testing, adjusting, and balancing agency performs assigned commissioning responsibilities as specified.
 4. Provide instructions and demonstrations for Owner's personnel.
 5. Ensure subcontractors perform assigned commissioning responsibilities.
 6. Ensure participation of equipment manufacturers in appropriate startup, testing, and training activities when required by individual equipment specifications.
 7. Develop startup and initial checkout plan using manufacturer's startup procedures and functional performance checklists for equipment and systems to be commissioned.
 8. During verification check and startup process, execute HVAC related portions of checklists for equipment and systems to be commissioned.
 9. Perform and document completed startup and system operational checkout procedures, providing copy to Commissioning Authority.
 10. Provide manufacturer's representatives to execute starting of equipment. Ensure representatives are available and present during agreed upon schedules and are in attendance for duration to complete tests, adjustments and problem-solving.
 11. Coordinate with equipment manufacturers to determine specific requirements to maintain validity of warranties.
 12. Provide personnel to assist Commissioning Authority during equipment or system verification checks and functional performance tests.
 13. Prior to functional performance tests, review test procedures to ensure feasibility, safety and equipment protection and provide necessary written alarm limits to be used during tests.
 14. Prior to startup, inspect, check, and verify correct and complete installation of equipment and system components for verification checks included in commissioning plan. When deficient or incomplete work is discovered, ensure corrective action is taken and re-check until equipment or system is ready for startup.

15. Provide factory supervised startup services for HVAC equipment and systems specified in Division 15. Coordinate work with manufacturer and Commissioning Authority.
 16. Perform verification checks and startup on equipment and systems as specified.
 17. Assist Commissioning Authority in performing functional performance tests on equipment and systems as specified.
 18. Perform operation and maintenance training sessions scheduled by Commissioning Authority.
 19. Conduct HVAC system orientation and inspection.
- B. Temperature Controls Installer Commissioning Responsibilities:
1. Attend commissioning meetings.
 2. Review design for ability of systems to be controlled including the following:
 - a. Confirm proper hardware requirements exists to perform functional performance testing.
 - b. Confirm proper safeties and interlocks are included in design.
 - c. Confirm proper sizing of system control dampers and actuators and damper operation will result in proper damper positioning.
 - d. Confirm sensors selected are within device ranges.
 - e. Review sequences of operation and obtain clarification from Architect/Engineer.
 - f. Provide written sequences of operation for packaged controlled equipment. Equipment manufacturers' stock sequences may be included, when accompanied by additional narrative to reflect Project conditions.
 3. Inspect, check, and confirm proper operation and performance of control hardware and software provided in other HVAC sections.
 4. Submit proposed procedures for performing automatic temperature control system point-to-point checks to Commissioning Authority and Architect/Engineer.
 5. Inspect check and confirm correct installation and operation of automatic temperature control system input and output device operation through point-to-point checks.
 6. Perform training sessions to instruct Owner's personnel in hardware operation, software operation, programming, and application in accordance with commissioning plan and requirements of Division 15.
 7. Demonstrate system performance and operation to Commissioning Authority during functional performance tests including each mode of operation.
 8. Provide control system technician to assist during Commissioning Authority verification check and functional performance testing.
 9. Provide control system technician to assist testing, adjusting, and balancing agency during performance of testing, adjusting, and balancing work.
 10. Assist in performing operation and maintenance training sessions scheduled by Commissioning Authority.
- C. Testing, Adjusting, and Balancing Agency Commissioning Responsibilities:
1. Attend commissioning meetings.
 2. Participate in verification of testing, adjusting, and balancing report for verification or diagnostic purposes. Repeat sample of 10 percent of

measurements contained in testing, adjusting, and balancing report as indicated in commissioning plan or as selected by Commissioning Authority.

3. Assist in performing operation and maintenance training sessions scheduled by Commissioning Authority.

1.7 COMMISSIONING MEETINGS

- A. Attend initial commissioning meeting and progress commissioning meetings as required by Commissioning Authority.

1.8 SCHEDULING

- A. Prepare schedule indicating anticipated start dates for the following
 1. Equipment and system startups.
 2. Testing, adjusting, and balancing.
 3. HVAC system orientation and inspections.
 4. Operation and maintenance manual submittals.
 5. Training sessions.
- B. Schedule occupancy sensitive tests of equipment and systems during conditions of both minimum and maximum occupancy or use.

1.9 COORDINATION

- A. Notify Commissioning Authority minimum of four weeks in advance of the following:
 1. Scheduled equipment and system startups.
 2. Scheduled automatic temperature control system checkout.
 3. Scheduled start of testing, adjusting, and balancing work.
- B. Coordinate programming of automatic temperature control system with construction and commissioning schedules.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install additional balancing dampers, balancing valves, access doors, test ports, and pressure and temperature taps required by Commissioning Authority.
- B. Place HVAC systems and equipment into full operation and continue operation during each working day of commissioning.

- C. Install test holes in ductwork and plenums as requested by Commissioning Authority for taking air measurements.
- D. Prior to start of functional performance test, install replacement filters in equipment.

3.2 COMMISSIONING

- A. Seasonal Sensitive Functional Performance Tests:
 - 1. Test heating equipment at winter design temperatures.
 - 2. Test cooling equipment at summer design temperatures with fully occupied building.
 - 3. Participate in testing delayed beyond Final Completion to test performance at peak seasonal conditions.
- B. Be responsible to participate in initial and alternate peak season test of systems required to demonstrate performance.

END OF SECTION

Division 16
Electrical

SECTION 16000 - GENERAL PROVISIONS AND REQUIREMENTS

PART 1 – PERMITS, CODES, INSPECTIONS, APPROVALS, ETC.

- a) The Contractor shall obtain all permits necessary and shall bear all costs involved. The Contractor shall bear all costs associated with the electrical utility work and inspections for any ditch openings and inspections.
- b) All electrical work shall be performed in accordance with the requirements of the latest revision of the National Electrical Code (NFPA 70), National Electrical Safety Code (NFPA 70E), and International Building Code and all similar codes that govern local codes. Similarly, all electrical equipment, where applicable, shall conform to all other NFPA Pamphlets, NEMA, ANSI, IPCBA and U.L. requirements. Whenever and wherever the design or State and local regulations require higher standards than the current National Electrical Code, then these shall be followed. All Project documents apply to the electrical portion of work.
- c) The Engineer shall be notified twenty-four (48) hours in advance when any tests are to be made and before any work is concealed. The Contractor shall notify the Engineer when he is ready for final inspection.
- d) The fronts of all electrical panels shall be removed for final punch list inspection.
- e) All electrical items on this project shall bear the Underwriters Laboratories (UL) label and/or FM (Factory Mutual).
- f) Provide electrical inspection by a licensed and recognized Electrical Inspector. Notify Electrical Inspector in writing, immediately upon start of work with a copy of notice to Engineer. Schedule inspection for rough-in as well as finished work. Approval from Electrical Inspector will not be allowed as reason for deviation from Contract Documents. All costs incidental to Electrical Inspection shall be borne by Contractor. Prior to final acceptance of work and release of final payment, deliver to Engineer the certificate of final inspection.
- g) The Contractor shall install the fire alarm system, per the state approved drawings. The Contractor is responsible for all fire alarm plan submissions and fees to the state.

PART 2 - CLEANING AND PAINTING

- a) The Contractor shall remove all temporary stickers, tags, etc. from all items installed under this Contract and shall thoroughly clean all equipment or materials installed under this Contract. Scratched and damaged paint and/or other finishes shall be touched up and/or repainted as required. All equipment shall be cleaned and made ready for painting by others.
- b) Upon completion of the work, the Contractor shall thoroughly clean and lubricate all equipment.
- c) Surplus material, rubbish and equipment resulting from the electrical work shall be removed from the building and premises by the Contractor.

- d) All permanent nameplates on equipment shall be kept clean and exposed for easy reading. If field conditions warrant (in the opinion of the Engineer) the Contractor shall vacuum clean all equipment and installed materials.

PART 3 – IDENTIFICATION OF ELECTRICAL EQUIPMENT

- a) The equipment services, feeder and branch circuits shall be marked in accordance with the National Electrical Code. Mark with moisture and fungus resistant wire markers and nameplates. All conductors that are not color-coded shall be marked with colored tapes to denote phases.
- b) Identification of main entrance switchboard and branch circuit panelboards shall be labeled with a machine cut lamacoid plate with ¼" high letters, indicating the panel designation, voltage and phase (i.e.: Panelboard "A" - 120/208V., 3-Phase, 4W). Branch panelboards in finished areas shall have plate installed inside of door.
- c) All switches or breakers in main switchboard shall be labeled to indicate equipment served with ½" wide machine cut lamacoid plate with 1/8" high letters.
- d) All remote disconnects, safety switches, motor starters, etc. shall have the name of the motor/equipment which it is controlling engraved on lamacoid plate, ½" wide with 1/8" high letters. Exact name of system or motor shall be coordinated with Engineer prior to manufacture.
- e) Identify circuits contained in each box on exterior cover w/permanent marker.
- f) Mark all conduit housing currents with greater than 300 volts phase to phase every 20'. ½" high letters to be used.
- g) All lighting and power panels shall have each breaker (including spares and spaces) identified with typed directory cards covered in plastic. Indicate type and location of load based on actual room numbers (verify final room number designation with Owner and Engineer).

PART 4 – SLEEVES, ESCUTCHEONS AND INSERTS

- a) Sleeves shall be installed through masonry and concrete walls and floors for the passage of electrical raceways, cables, etc. Sleeves shall be placed and sized to permit installation and removal of the assembly. All electrical raceways larger than 1" shall be sleeved. Sleeves are not required where raceway bends into wall.
- b) Cast iron sleeves shall be installed through all walls where conduit enters the building below grade. All other sleeves shall be standard weight steel. Sleeves shall be flush with each face of the wall. Sleeves for conduit through outside walls shall be packed with oakum for weatherproofing.
- c) All sleeves through floors shall extend ¾" above finished floors. All sleeves shall be ½" larger than the outside diameter of the duct or conduit. All sleeves shall be equal to Schedule 20 pipe or heavier.

- d) Escutcheon shall be installed around all openings in exposed finished area. This includes all raceways whether they are sleeved or not. Escutcheon shall be equal to Benton & Caldwell, No. 40 or equal.
- e) Inserts shall be installed as required, with location coordinated with other Contractors.

PART 5 - CIRCUIT NUMBERS AND CIRCUITRY

- a) Circuit numbers, and breaker numbers shall be coordinated on panel identification card as shown on the Drawings.
- b) The exact routing of circuits as shown on the drawings from receptacle to receptacle, light to light, etc. is schematic only. If the Contractor desires to change the routing of any circuits, he may do so within the scope of good engineering practice, and with the permission of the Engineer. All outlets shall be on the same circuit number as shown on the Drawings. Any change in routing shall be shown on the "Record" Drawings.
- c) Circuits shall NOT share the same neutral. All circuits shall be provided with a separate dedicated neutral. Circuits on the construction drawings are shown individually. If the contractor chooses to combine circuits in the same raceway the circuits shall be sized and derated per NEC. It is the responsibility of the Contractor for derating if circuits are shared.

PART 6 - SPARE CIRCUITS/CONDUIT

- a) All spare breakers or switches shown in the Panelboard Schedule shall have conduits stubbed above ceiling and/or down below slab as described hereinafter.
 - 1) Recessed Panels - All spare conduit shall be stubbed above ceiling. If area has no ceiling, spare conduit shall ell out 2" below slab above.
 - 2) Surface Panels - Spare circuits shall have knockouts only in top of tub available for spare circuits.
- b) Contractor shall provide three-3/4" conduit to accessible ceiling space. Cap all spare conduits for all recessed panelboards.

PART 7 - PROTECTION

- a) All work, equipment and material shall be protected at all times. All conduit openings shall be closed with caps or plugs during construction. All equipment and accessories shall be tightly covered and protected against dirt, water or other injury during period of construction.
- b) The Contractor shall cover all installed receptacles, switches, etc. with a plastic or equal cover prior to the painting of the areas. No device plate shall be installed prior to the finish painting. Any receptacle, switch, device plate, etc. with paint on it shall be removed and replaced by the Contractor. It shall be the Contractor's responsibility to coordinate with the Painting Contractor with regard to the scheduling of the installation of switches, outlets, device plates, etc.

PART 8 – TESTING AND ADJUSTING

- a) When the work included is complete, the Contractor shall start up and adjust all parts of his system. All equipment items of the various systems shall be adjusted for proper operation within the framework of design intent, and the operating characteristics as published by the equipment manufacturer.
- b) No equipment shall be operated for any purpose until properly lubricated and brought into service condition.
- c) The Contractor shall provide all equipment, materials and labor required to make the necessary tests.
- d) The Engineer reserves the right to require the services of an authorized representative of the manufacturer in the event the Contractor is unable to so adjust any piece of equipment. The Contractor shall arrange for such services and bear all incurred costs thereof. After completion of adjustments, the Contractor shall advise the Engineer that the work is ready for the final acceptance test.
- e) Upon completion of the installation, the Contractor, at his expense, shall conduct complete performance tests in the presence of the Engineer and Owner to fully demonstrate the capacity and all other characteristics of the systems. The test shall be run for a length of time sufficient to demonstrate the ability of each system to perform as required by design drawings and specifications.
- f) The Contractor shall perform the following tests:
 - 1) All branch circuits of No. 8 wire and larger and main feeders shall be megged for ground and insulation resistance before connecting to equipment. (Megger to be 500 volts).
 - 2) All motors larger than ½ HP shall be megged before conductors are connected thereto and again after they have gained running temperature.
 - 3) A record of all megging shall be delivered to the Engineer before final acceptance. The Engineer shall be notified in advance so that he may witness the test.
- g) Refer to respective equipment sections for special tests such as Fire Alarm, Building Control systems, Door security systems, etc.

PART 9 - CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS

- a) The Architectural, Structural, Electrical, Plumbing, Heating, Ventilating and Air Conditioning Drawings and Specifications are complementary to one another.

The Contractor shall rough-in for and furnish all labor and materials necessary to make final connections to all equipment furnished by the Owner or any other

Contractor or Sub-Contractor which requires electrical connections, including heating controls and all control and interlock wiring.

- b) The Contractor making the required connections shall be responsible for any damages caused by erroneously connected equipment.

PART 10 – MOTORS AND APPARATUS BY OTHER TRADES

- a) The Contractor shall obtain from the other trades all necessary information regarding motors, and wiring connections of apparatus furnished by these trades.
- b) Furnish and install all necessary wiring and raceways required for satisfactory testing and operation of all controllers, starters, motors, control boards, alarm boards and related equipment, etc. The other trades supplying apparatus on which there are motors will supply and deliver to the Contractor at the sidewalk or building receiving quarters all control equipment specified under their section of the specifications for erection and connection of all such equipment in their designated places under this section of the specifications. (The equipment furnished by others is shown on the Motor Schedule).
- c) The Contractor shall carefully examine the Architectural, Structural, Plumbing, Heating, Ventilating and Air Conditioning Drawings and Specifications to determine the extent, type and locations of all wiring required and shall obtain from the respective Contractors the wiring diagrams and other necessary information to properly install his part of the work.
- d) Motor sizes shown on the Drawings are nominal sizes with some variation anticipated in the final installations. Under this section of the specifications, the Contractor is to coordinate the work with all other trades by obtaining all final data from each supplier and install wiring, circuit and motor protection and equipment in accordance with the actual equipment nameplate data regardless of sizes, etc. shown on the drawings. Undersized wiring, conduit, disconnects, etc. connected to equipment shall be the responsibility of the Contractor. Coordinate with the Engineer on any differences found between drawings and actual load data.

PART 11 – ELIMINATION OF NOISE AND VIBRATION

During the construction of this project, if any system or piece of equipment produces noise or vibration, which, in the opinion of the Engineer is objectionable to the Owner, the Contractor shall, at his own expense, make changes in equipment and do all work necessary to eliminate the objectionable noise or vibration.

PART 12 – GROUNDING OF SYSTEM

- a) All metallic conduit, supports, cabinets and equipment shall be grounded in accordance with the latest issue of the National Electrical Code and as shown on the Drawings.
- b) The size of the grounding conductor for service equipment shall not be less than that given in Article 250-94 and 250-95 of the National Electrical Code or as shown on the Drawings.

- c) Ground bus and non-current carrying metallic parts of all equipment and conduit shall be securely grounded by connection to common ground bus insofar as possible or as shown. Jumper all noise or vibration isolators to insure ground potential.
- d) The above ground bus shall not be less than #350 MCM copper or as per code with all connections made with pressure connectors.
- e) No ground wires smaller than No. 12 solid copper shall be used; all wires larger than No. 8 shall be bare copper, stranded cable. All flexible conduit shall have a green insulated jumper bonded at each end.
- f) The main ground electrode shall be a bare #350 MCM (or as shown on the drawings) copper conductor laid in bottom of footer trench. This electrode shall be as shown, but no less than 100' long and shall be thermal welded to building steel at each column it passes with both ends tied back to ground terminal in main gear. Ground resistance shall not exceed 5 ohm. (If ground electrode cannot be installed in bottom of footer trench, then the Contractor shall provide ground rods necessary, (minimum of six (6)), no less than 15' (center to center) to meet the ohmic value mentioned above).
- g) The main water pipe shall be bonded to the service equipment enclosure, the grounded conductor at the service and the grounding electrode conductor in footer trench.
- h) All connections to main ground conductors shall be thermal welded.
- i) All raceways with ground lug bushings shall be grounded to their respective boxes with an approved jumper wire.
- j) All EMT runs to receptacles, light fixtures, power outlets or any equipment shall have a code size insulated green ground wire connected to respective receptacle, light fixture outlet or equipment. All PVC (if allowed) shall have code sized ground wire.

PART 13 - SAMPLES

Provide samples as required by the Engineer under this section of the specifications if a substitution is questioned. Any samples, if approved, submitted may be subsequently installed on the project providing it is approved.

PART 14 – SHOP DRAWINGS

Submit Shop Drawings in bound sets on all items furnished under this Contract in sufficient number to satisfy the Engineer's requirements. Shop Drawings should be submitted within 30 days after the work order to proceed. All shop drawings submitted for review shall bear an "approved stamp" and signed by the Contractor. All shop drawings not bearing the Contractor's "approved" stamp will be returned without comment.

PART 15 – CUTTING AND PATCHING

- a) Any cutting and patching in the building required to install the equipment, etc. shown on Drawings shall be accomplished by the Contractor. He shall meet all requirements of the project's requirements at his expense.

b) The Contractor shall be responsible for all openings and chases he may require in floors, walls or ceilings of any type construction (whether under construction or existing). All work necessary as a result of failure on the part of the Contractor to provide the required openings and chases and to set sleeves and inserts shall be performed at his own expense. When shown, these openings and/or chases will be formed or provided for in the work of the General Contractor. However, the Contractor shall be responsible for cooperation with the General Contractor in locating and sizing such openings. Openings required and not shown on Drawings shall be brought to the attention of the General Contractor promptly and the Engineer for approval.

PART 16 – ACCESS DOOR

a) The Contractor shall refer to the Architectural Drawings to ascertain which rooms have removable ceilings. Where removable ceilings are specified, access to equipment may be obtained by removing the ceiling pieces. Where non-removable ceilings are specified, the Contractor shall furnish all required access doors for servicing disconnect switches, etc.

b) Access doors shall be equal to L.M. Walsh Company "Way-Loctor". No. 3 shall be used for concrete block or tile walls having no plaster finish and No. 2 shall be used for plastered walls and ceilings for acoustical tile ceilings. All doors shall be prime coated and key operated and keys shall be the same for plumbing and heating work. Doors by Miami or Milcor or equal quality will be acceptable.

c) Installation of doors will be done by the General Contractor. However, the Contractor shall be responsible for the correct location of them for servicing equipment. These access doors shall be sized large enough to service the equipment with a minimum size of 20"x20".

PART 17 – COORDINATION OF WALL OUTLETS

The Contractor shall plan his work in such a manner that wall outlets that are adjacent to each other or within a given area shall be installed at the same height, and with a symmetrical appearance.

PART 18 – EXCAVATION AND BACKFILLING

a) General

1) Refer to Special Conditions in the project documents and bid the rock and earth excavation in accordance with the requirements listed.

b) Excavation

1) Rock excavation shall be made to a depth of 4" below conduit or ducts or as shown on the drawings. All conduit and/or ducts shall have 4" of dense graded aggregate installed above and below. The Contractor shall be responsible for locating in the field the lines shown on the drawings. The Contractor shall use reference points as shown on the drawings for locating control points on the lines.

Trench bottom shall follow uniform grades insofar as possible and shall be relatively flat from side to side.

2) Minimum depth of bury for all lines outside the building shall be 24" to top of pipe or as shown on the Drawings. The width of the trench above that level shall be as wide as necessary for sheathing and bracketing. All conduit under slab shall be deep enough to allow vertical code bends.

c) Dewatering And Shoring

Trenching and other excavation shall be maintained adequately free of water and shall be adequately shored, where necessary to protect workmen, materials, equipment, and adjacent structures. Discharge from pumps, drains or bailing shall be placed in ditches, storm drains or natural drainage ways. No extra will be paid for this work.

d) Backfilling

1) Under all backfill conditions with exceptions as listed below, earth shall be hand-placed to a height of at least 6" above the top of the dense graded aggregate. After backfilling and tamping with earth to a depth of 6" above the top of the dense grade aggregate, the backfilling operation may be continued by a machine in 12" layers, compacted with approved mechanical tampers. Any trenches improperly backfilled, or where settlement occurs, shall be re-opened to the depth required and compacted with the surface restored to the required grade and compacted and smoothed off. All trenches which run under sidewalks, roadway, etc. shall be filled to sub-grade with dense graded aggregate.

2) Dense graded aggregate shall be crushed limestone blended into a homogeneous mixture and graded in conformance with Article 208.2.0 of the latest edition of the Standard Specifications of the Kentucky Department of Highways.

e) Surplus Materials

All surplus material, particularly rock, resulting from this operation shall be removed from the grounds. Disposal from the site of such materials is the responsibility of this Contractor. Earth shall be disposed of only after rock has been removed from the site.

f) Blasting

All blasting on this project shall be done as set forth in the project documents.

PART 19 – FOUNDATIONS AND ANCHOR BOLTS

a) The Contractor shall be responsible for the location of all concrete pads required for all equipment installed under this Contract. All pads required will be poured at the expense of the Contractor.

- b) The Contractor shall furnish anchor bolts for all equipment installed on concrete slabs and/or bases. Bolts shall be placed in exact positions prior to pouring concrete. Sizes of bolts shall be determined by the manufacturer's recommendations for the equipment served.

PART 20 - OPERATING AND MAINTENANCE INSTRUCTIONS

Deliver to the Engineer three (3) copies of shop drawings and all Operating and Maintenance Instructions for all equipment furnished and installed under this Contract, including parts lists for all new major equipment items. Each set shall be provided in a hardback binder with table of contents and divider for each section.

PART 21 - FIRESTOPPING

All openings required for conduit in walls, floors, ceilings, partitions, etc., where such construction is required for fire protection, shall be firestopped to preserve the fire rating of the construction. Firestopping shall be mineral wool or other non-combustible insulating material tightly placed and filling the space around such conduit. All materials used shall be approved for use as fire stop equal to 3M Fire Barrier. (Caulk CP-25, putty 303 and 7904 Barriers), or equal by Hilti (Caulk CS240, putty CB 120 Foam, CS2420 barrier material). Firestopping shall be installed after the installation of all wiring and cabling, etc.

PART 22 – SUSPENDED CEILINGS

- a) The General Contractor shall insure that framing members of suspended ceiling systems used to support fixtures shall be securely fastened to each other and shall be securely attached to the building structure at necessary intervals (NEC).
- b) If the above items are not covered, the Contractor shall immediately alert the superintendent. Fixtures shall not be installed until all questions concerning the above are answered.
- c) All recessed light fixtures shall be clipped to ceiling structure. All 2x4 light fixtures shall be independently suspended from the ceiling grid at a minimum of opposite corners.

PART 23 – ELECTRICAL DRAWINGS AND SPECIFICATIONS

- a) The drawings and specifications are intended to cover all work enumerated under the respective headings. The drawings are diagrammatic only as far as final location of raceways, equipment, etc. is concerned. Any item of work not clearly included, specified and/or shown, any errors or conflict between plans (Mechanical, Electrical, Architectural or Structural) specifications, codes and field conditions, shall be clarified by a written request to the Engineer by the Bidder before bidding; otherwise, the bidder shall, at his own expense, supply the proper labor and materials to make good any damages or defects in his work caused by such error, omission or conflict.
- b) Schematics, risers and details shown on the drawings are for the equipment specified. All revisions, modifications or changes in circuitry, accessories, etc. due to using equipment of a different manufacturer than specified hereinafter, shall be the responsibility of the Bidder and shall be made at no additional cost to the Owner. All

modifications or changes shall be submitted to the Engineer in writing and meet his approval before the equipment is released for shipment.

- d) The Contractor shall be responsible for all revisions, modifications or changes necessary in the Structural, Architectural or Mechanical/Electrical systems to accommodate the equipment to be furnished under this section of the specifications. This shall be made at no additional cost to the Owner.
- e) Contractor shall provide arc flash study and breaker coordination study/arc fault study.

PART 24 – APPLICATION FOR PAYMENT

- a) Line items and description of electrical work shall be as follows:

<u>Item No.</u>	<u>Description of Work</u>
1	Bond & Permits
2	Mobilization
3	Distribution Equipment Material
4	Distribution Equipment Labor
5	Lighting Material
6	Lighting Labor
7	Wiring Devices
8	Wiring Labor
9	Fire Alarm Material
10	Fire Alarm Labor
11	Door Security Material
12	Door Security Labor
13	Emergency Generator and Transfer Switch Material
14	Emergency Generator and Transfer Switch Labor
15	Conduit & Boxes
16	Excavation & B.F.
17	Electrical Inspection
18	Arc Flash Study

PART 25 – PERFORMANCE AND PAYMENT BOND

- a) The Contractor for this project shall furnish and include cost of same in his bid, a surety bond in the amount equal to one hundred percent (100%) of his contract amount to the benefit of the Prime Contractor.
- b) This bond shall assure performance and payment of labor, materials, and unemployment contributions.
- c) This bond requirement does not void the full performance and payment bond required by the Contractor.
- d) A copy of the bond shall be furnished to the Project Manager before first payment request. No payment will be approved or made to the Contractor until a copy of the bond is furnished.

END OF SECTION

SECTION 16025 – SCOPE OF WORK

PART 1 - GENERAL

Except as otherwise hereinafter specified, the work under this Contract consists of furnishing all labor, materials, tools, elevating apparatus, transportation permits, certificates and equipment and performing all operations relevant to the installation of the Electrical Systems complete and working (unless otherwise noted) in strict accordance with this Specification and the applicable drawings, and all applicable codes, and subject to the terms and conditions of the Contracts. All systems shall be turned over to the Owner in a workable and usable condition.

PART 2 – WORK INCLUDED

Without restricting the generality of the foregoing, the work to be performed under this Contract shall consist of furnishing, installing and connecting the following items:

- a) Power and lighting distribution.
- b) Conduit, fittings, pull boxes, junction boxes, terminal boxes.
- c) Safety switches as required by code.
- d) Wire and cable installations and terminations.
- e) Installation of wiring of starters, switches, other electrical equipment and kitchen equipment furnished under other sections of these Specifications or Owner.
- f) Receptacles and lighting outlets.
- g) Lighting fixtures and lamps.
- h) Motor controls.
- i) Grounding
- j) Megger testing of all wiring.
- k) Connection to equipment furnished by others.
- l) Voice/Data System is rough-in only.
- m) Fire Alarm panel and system
- n) Door and Security system.
- o) Contractor shall provide arc flash study and breaker coordination study.

END OF SECTION

SECTION 16050 - BASIC MATERIALS AND METHODS

PART 1 – RACEWAYS (CONDUIT, ETC.)

a) Rigid

Rigid, threaded steel conduit shall be used in concrete, underground in hazardous locations or where called for on the Drawings. All wiring above 600V. shall be rigid, unless otherwise noted.

b) Electric Metallic Tubing (EMT)

Metallic tubing may be used where permitted by code, except for underground panel feeders or unless otherwise noted as rigid. No raceway smaller than ¾" will be permitted except for vertical drops to switch legs, or receptacles which may be ½".

c) PVC Conduit

Nonmetallic schedule 40 PVC rigid conduit conforming to ANSI, NEMA specifications with each length U.L. labeled may be installed as noted below when the following conditions are adhered to:

- 1) Install rigid steel conduit where under-floor conduits enter the building and penetrate the slab and above floor.
- 2) Install equipment-grounding conductors as required by N.E.C. and size conduits for number of conductors installed.
- 3) P.V.C. conduit may be used for telephone and television service entrance if approved by the local utility company. (Encased in 3" concrete under roadways). Use long radius steel ells.
- 4) P.V.C. conduit may be used for primary service IF approved by the local utility company (from service pole to transformer) (Encased in 3" concrete under roadways). Use long radius steel ells.
- 5) P.V.C. conduit shall not otherwise be allowed unless shown or noted on drawings.

d) All metallic conduit shall be electro-galvanized, sheradized, hot-dipped galvanized or metallized galvanized. Conduit shall be concealed for all new work whether on existing walls or new structure. All (exposed and concealed) runs of conduit shall have supports spaced not more than 8' apart and shall be installed with runs parallel or perpendicular to walls, structural members or intersections of vertical planes and ceilings, with right angle turns consisting of cast metal fittings or symmetrical bends as shown on the Drawings. Expansion fittings or other approved devices shall be used to provide for expansion and contraction where conduit crosses expansion joints. Contractor shall provide jumper for ground continuity in all cases. Conduit shall be installed so as to insure against trouble from collection of trapped condensation.

- f) Flexible conduit for motors shall be liquid tight single strip; neoprene covered, and shall be used from motor terminal boxes to outlet or conduit for vibration purposes. Lengths of this flexible conduit shall not exceed 24" and shall be installed in such a manner so as to isolate vibration from the conduit. Connectors, as manufactured by Efcor, Thomas and Betts, Appleton or approved equal will be acceptable.
- g) All conduit systems, except those otherwise specifically shown to the contrary, shall be concealed in the building construction or run above suspended ceiling. All steel conduit installed below grade or slab shall be coated with an asphaltum tar manufactured for this purpose and approved by the Engineer (conduit under stone fill shall be considered below slab and shall be so painted). This includes all conduit for outside lighting. (Pre-coated conduit may be used).
- h) Runs of conduit shall not have more than the equivalent of three (3) 90-degree bends. Junction boxes shall be installed in conduit runs exceeding 80', whether shown on Drawings or not. Length requirement does not apply to underground circuits to outside lights.
- i) MC Cable will not be allowed on this project except for lighting circuits..

PART 2 – CABINETS, OUTLETS AND JUNCTION BOXES

- a) Cabinets, Junction And Pull Boxes
- 1) Cabinets for lighting and power, telephone, or any other purposes specified or shown on the Drawings shall be constructed of panelboard code gauge, galvanized steel with sides formed and corner seams riveted or welded before galvanizing. Boxes constructed with sheet metal screws or bolts will not be accepted.
 - 2) Pull boxes shall include all boxes used to reduce the run of conduit to the required number of feet or bends for cables, supports, taps, troughs and other similar applications and shall also be constructed as specified above.
 - 3) All cabinets and boxes shall be provided with knockouts as required by the manufacturer, or shall be cut in the field by approved cutting tools, which will provide a clean symmetrically cut opening. Such boxes shall be provided with code gauge fronts, which shall have hinged doors with ¼ turn fasteners.
- b) Outlet Boxes
- 1) Lighting fixture outlet boxes shall be galvanized steel, 4" octagonal, not less than 2-1/8" deep, with lugs or ears to secure covers and those for use with ceiling lighting fixtures shall be fitted with 3/8" fixture studs fastened to the back of the boxes, where applicable.
 - 2) Outlet boxes for switches, receptacles, telephone, etc., installed in walls of glazed tile, brick or other masonry which will not be covered by wood wainscot or paneling shall be 4"x4"x1½" with masonry extension and they shall be completely covered with plates or lighting fixtures. All exposed boxes shall be FS type. No box will be allowed with the ears on the outside. The Contractor shall cooperate

with the brick layers and carpenters to insure that the outlet boxes are installed straight and flush in the walls. Jumbo plates will not be allowed.

- 3) Boxes for more than two devices shall be for number of devices required and shall be one piece. No ganging of single switch boxes will be allowed.
- 4) Outlets for use on this project shall have only the holes necessary to accommodate the conduits at the point of installation and shall be rigidly secured in position.
- 5) The location of fixtures, outlets and/or equipment, as shown on the drawings, shall be considered as approximate only. It shall be incumbent upon the Contractor to study the general building drawings, with relation to spaces surrounding each outlet, in order to coordinate this work with the work of others and in order that when the fixtures, outlets and/or equipment are installed, they will be symmetrically located and will not interfere with any other work or equipment. Any change in fixture layout shall be coordinated with the Engineer before the change is made.
- 6) Refer to separate articles for any special outlet boxes, etc. required for individual equipment.

PART 3 - CONDUCTORS

- a) All conductors on this project shall be copper. All circuits shall be sized as the load requires or as shown on the drawings. No conductor shall be less than #12 AWG. All conductors shall have THHN/THWN insulation. All conductors within fixture or equipment housing shall have temperature rating not less than recommended by fixture or equipment manufacturer.
- b) Conductors No. 10 and smaller sizes of wire shall be solid. Conductors No. 8 and larger sizes of wire shall be stranded. The pulling of all wires and cable on this project shall be performed in strict compliance with Section 300 of the National Electrical Code. No conductor entering or leaving a cabinet or box shall be deflected in such a manner as to cause excess pressure on the conductor insulation. (See NEC).
- c) All wire on this project shall be new, in good condition, and shall be delivered in standard coils. The color of the wire shall be selected to conform with the latest edition of the National Electrical Code with conductors phase color-coded at each termination (red, blue and black). Neutral to be white and ground wire to be green. #12 and #10 wiring shall be supplied with colored insulation.
- d) Refer to separate sections of this specification for any special conductors required.

PART 4 – SUPPORTS AND HANGERS FOR CONDUIT AND FIXTURES

- a) The Contractor shall be responsible for the support of all fixtures specified hereinafter. He shall not relocate them from the locations shown on the Drawings for the purpose of supporting them from existing angles, tee bars, bulb tees, etc.

- b) Recessed fixtures supported from suspended ceiling framing members shall be securely fastened to the ceiling-framing member as per N.E.C.
- c) Raceways shall be run at least 6" from steam pipes, or hot water and refrigeration pipes. Raceways shall be supported each 8' unless special conditions require closer spacing. Individual horizontal runs of raceways shall be supported by Kindorf's C-144, C-147, C-149, C-247, C-248, C-249, HS-100, HS-400, HS-900, or equivalent as approved. Exposed runs shall be installed with runs parallel or perpendicular to walls, structural members, or intersections of vertical planes and ceilings, and have all right angle turns consisting of constant radius bend or threaded fittings. Where two or more conduits run parallel or where specified, a rack shall support them, trapeze or framework constructed of B-900 series channel. Wherever hanger rods are used in conjunction with channel to form a trapeze, B-900 series channel with holes such as B-903, B-905-2A, B-905, B-907 and B-995 shall be used and, in all cases, rigid conduit shall be fastened to the channel with C-105 straps, E.M.T. and C-106 straps, and O.D. tubing with C-107 straps.
- d) Copper or steel wire hangers will not be acceptable to support any item under this Contract.
- e) Strap iron, properly installed, may be used for 1¼" conduit and smaller.
- f) Where pipe supports and inserts have been specified by a particular manufacturer, pipe supports and inserts of equal quality and size, as manufactured by Elcen Metal Products or the Auto-Grip Division of Automatic Sprinkler Corporation will be acceptable.

PART 5 - SPECIALTIES

- a) All EMT terminations at junction boxes, panels, etc. shall be made with locknuts, case hardened, and appropriate fittings as manufactured by Thomas and Betts, Efcor, or ETP. All rigid conduit shall have double locknuts.
- b) All conduit, except main and branch feeders, shall have insulated metallic bushings equal to OZ Type B. All branch and main feeders #6 and larger and all raceways entering a box thru concentric knockouts shall have insulated bushings with grounding lugs equal to Type BL as manufactured by OZ. Jumper ground lugs to box. All rigid conduit fittings shall be threaded metal type, not set screw type.
- c) All EMT terminations shall have insulated throat fittings equal to Thomas and Betts "Insulined" fittings.
- d) All conduit stubbed through floor during construction shall have openings protected with plastic caps approved for this purpose. Connections on both ends of all flexible conduit shall be equal to Efcor.
- e) All EMT fittings shall be compression type, malleable or equal. Pressure cast or die cast fittings will not be acceptable.
- f) Dead spring type pressure connectors will not be acceptable on this project. All connections shall be made with insulated pressure type connectors (live spring) as manufactured by Thomas and Betts, or approved equal, (connectors with rigid body will

not be acceptable). All connections on conductors No. 8 and larger shall be made with Burndy Type KS.

g) Items as manufactured by OZ, Gedney, Thomas and Betts, Midwest, Efcor, or ETP will be considered equal.

PART 6 – BASIC METHODS

- a) Unless indicated otherwise, install all wiring in rigid metallic conduit, electric metallic tubing or flexible metallic conduit specified herein or as indicated on Drawings.
- b) Install recessed fluorescent fixtures with flexible metallic conduit at approximately 6 feet in length to permit relocation flexibility.
- c) Empty conduit systems shall have conduit bushings and pull wire installed.

END OF SECTION

SECTION 16140 – WIRING DEVICES

PART 1 - GENERAL

- a) The work under this section consists of furnishing and installing all materials, equipment and services necessary for the installation of all wiring devices shown on the drawings and herein specified.
- b) All receptacles and switches, insofar as possible, shall be of one (1) manufacturer.
- c) Colors of receptacles and switches shall be per the Project's Architect.
- d) All receptacles shall be grounded type.
- e) All device plates shall be thermoplastic/stainless steel.
- f) All outlets behind water coolers shall be concealed by water cooler when viewed from the front of the cooler. Refer to Shop Drawings furnished by Mechanical Contractor.

PART 2 – DUPLEX RECEPTACLES

- a) Duplex receptacles shall be 20 amp, 120 volts, 2-pole, 3-wire, NEMA 5-20R configuration, unless otherwise shown. Receptacles shall have the following characteristics:
 - 1) "T" Type contacts for phase and neutral female connection.
 - 2) Female ground connection shall be riveted to the bridge.
 - 3) The bridge shall be of hot dipped steel.
 - 4) The receptacle body shall be of heat resistant thermoset material.
 - 5) Rivet connecting the face plate to bridge shall be spun brass.
- b) Duplex receptacles shall be 5352 Series equal to Hubbell, Arrow Hart, Bryant, P&S, or Leviton. Surge suppressed receptacles shall be equal to Hubbell HBL420
- c) Weatherproof receptacles shall be the same as "B" above with Hubbell, #5206-WO lift cover plate.

PART 3 – GROUND FAULT INTERRUPTER RECEPTACLES

- a) Ground fault interrupter receptacle shall be duplex type suitable for mounting in a standard outlet box, rated 20 amps., 125 volts, 2-pole, 3-wire grounding type.
- b) Device shall have a nominal sensitivity to ground leakage current of five milli-amperes and shall function to interrupt the current supply for any value of ground leakage current above five milli-amperes on the load side of the device. Device shall have a minimum nominal tripping time of 1/30th. of a second. All receptacles within 6 foot of a

sink shall be GFI type, as well as other locations shown on the drawings. All kitchen general use receptacles shall be GFI type.

- c) Device shall be equal to Hubbell, #GF-5352 or P&S 2091-S.

PART 4 – SAFETY/TAMPERPROOF RECEPTACLES

- a) Device shall be designed to accept either two or three wire plugs. Receptacle shall have six-inch pigtail leads for wiring, no exposed metal parts for wiring terminations. Shutter type devices will not be accepted.

- b) Receptacles shall be 5-20R, 20A, 125V Hubbell SG62H series.

PART 5 – FLOOR RECEPTACLES

- a) Flush Floor Receptacles

- 1) Floor boxes on or below grade shall be P.V.C. type.

- a) Concrete pours greater than 3" shall be Hubbell B2536 fully adjustable.

- b) Concrete pours 2-3" shall be Hubbell B2537.

- 2) Floor boxes above grade shall be P.V.C. type.

- a) Concrete pours greater than 3" shall be Hubbell B2527 fully adjustable box.

- b) Concrete pours 2-3" shall be Hubbell B2529 box.

- c) Floor depth to be determined by Contractor from Architectural drawings.

- 3) Covers

- a) Where indicated for flush mounting - use S3925 cover and Hubbell 5352 receptacle with proper box for tile floor.

- b) For carpet - use S3925 cover + 5352 Hubbell receptacle with proper box and carpet flange S3182.

- b) Pedestal Type Floor Receptacles

- 1) Use Hubbell cover S2525 with housing SC3098, cover plates SS309-D for duplex with Hubbell 5352, with appropriate box.

- 2) If communication pedestal use SC3098 with SS309-T with appropriate box.

PART 6 - SWITCHES

- a) All switches shall be rated 20 amps. for 120 and 277 volt lighting circuits and shall be specification grade, back and side wired, with automatic ground clip and one piece contact arm. Switches shall be single pole, three or four way, or furnished with pilot where shown on the drawings.
- b) Switches shall be equal to Hubbell 1221 Series, Arrow Hart, 1990 Series, Bryant 4900 Series, P&S Series 20AC or Leviton Series 1220, or GE # 5951 Series.
- c) Mullion Switch - shall be a P&S 20A., 120-277V. single pole (#2241-S) or three-way (#2243-S) with vertical opening plate (301 stainless steel) #SWK-4-IN and #347 bracket.

PART 7 - DEVICE PLATES

- a) All outlet boxes shall have a cover plate.
- b) All device plates shall be thermoplastic except where called out to be stainless steel in the specifications.
- c) All unused outlets shall have a one-hole cover plate.
- d) Mechanical rooms, and janitor closets wall plates shall be metal corrosion resistant 302 stainless steel.

PART 8 – VOICE/DATA OUTLETS

- a) Contractor shall not provide cover plates for the outlets. This work is rough-in only. Contractor shall provide a pull string for each outlet. Each outlet to be a 4"x4" backbox with single gang extension ring.

PART 9 – REQUIRED SUBMITTALS

Submit manufacturer's data on all wiring devices and cover plates.

END OF SECTION

SECTION 16500 - LIGHTING

PART 1 – GENERAL REQUIREMENTS

- a) Lighting fixtures shall be of the types, sizes, etc. as specified in light fixture schedule. The lighting fixtures specified are intended to indicate the general fixture type required. All fixtures shall be U.L. listed. All general requirements shall be required unless otherwise noted in detail specifications for each fixture.
- b) The necessary precautions shall be exercised during the course of construction to protect the fixtures from dirt, dust, and debris. All fixtures shall be cleaned before the project is accepted.
- c) Fixture housing, chassis and/or channel shall not be less than 20 gauge steel of rigid construction and shall be finished with a baked-on white enamel over a zinc phosphate undercoating. Wiring shall be secured by clips or similar means. All doors shall be extruded aluminum with a positive type latch.
- e) Reflectors separate from housings for fluorescent fixtures shall not be less than 22 gauge steel furnished with baked-on white enamel with not less than 0.85 initial reflection factor unless otherwise specified.
- j) All fixtures shall be LED. Color and output as scheduled.
- k) LED lamping – shall be per light fixture specification.
- m) Substitutions
 - 1) Fixture substitutions must be made through the equipment supplier's representative ten (10) days prior to the bid date. The equipment supplier's representative is to furnish the Engineer with original fixture brochures, photometrics and point by point computer printouts for consideration of written prior approval.

PART 3 – GENERAL INSTALLATION REQUIREMENTS

- a) Delivery lighting fixtures individually wrapped in factory-fiberboard type containers.
- b) Install lighting fixtures of types indicated, where indicated, and at indicated heights; in accordance with lighting fixture manufacturer's written instructions and recognized industry practices to ensure that fixtures comply with requirements and serve intended purposes. Comply with NEMA standards, and requirements of NEC pertaining to installation of lighting fixtures.
- c) Set lighting fixtures and equipment plumb, square, and level and secure to structure support members of building. Provide all steel supports necessary for lighting fixtures in addition to those specified under general building construction. Recessed and semi-

recessed fixtures shall be supported independent of suspended ceiling system. Secure fixtures in suspended ceilings to framing members in accordance with NEC by using standard clips made for the purpose. Sheet metal screws are not acceptable.

d) Mounting heights specified as indicated shall be to bottom of fixture. Coordinate exact mounting of lighting fixture with type, style and pattern of ceiling being installed.

e) Clean interior lighting fixtures of dirt and debris upon completion of installation. Protect installed fixtures from damage during remainder of construction period.

f) At date of substantial completion, lighting fixtures which are observed to be inoperable or noticeably dimmed after Contractors use and testing, as judged by Architect/Engineer.

PART 4 – REQUIRED SUBMITTALS

Submit light fixture shop drawings and manufacturer's data booklet form with a separate sheet for each fixture, assembled in luminaire type alphabetical order as shown in the light fixture schedule, with proposed fixture and accessories clearly indicated on each sheet.

END OF SECTION

SECTION 16650 - SURGE SUPPRESSION

PART 1 - GENERAL

a) Summary

- 1) These specifications describe the electrical and mechanical requirements for a hybrid high-energy suppression filter system that integrates transient voltage surge suppression (TVSS) with high-frequency electrical line noise filtering for high exposure applications.
- 2) The specified unit shall provide effective high energy transient voltage suppression, surge current diversion, high frequency attenuation and line control for all electrical modes of equipment connected downstream from the facility's meter or main overcurrent device in high exposure ANSI/IEEE C62.41-1991 environments. The unit shall be connected in parallel with the facility's wiring system.
- 3) The unit shall be designed and manufactured in the USA by a qualified manufacturer of suppression filter system equipment. The qualified manufacturer shall have been engaged in the commercial design and manufacture of such products for a minimum of five (5) years.
- 4) These specifications are based on Current Technology's DP and EGP TVSS Series. For consideration, other manufacturers shall provide detailed compliance or exception statements to all provisions of this specification fourteen (14) days prior to bid.

b) Standards

- 1) The specified unit shall be designed, manufactured, tested, and installed in compliance with the following standards:
 - American National Standards Institute and Institute of Electrical and Electronic Engineers (ANSI/IEEE C62.41-1991 and C62. 45-1987);
 - Canadian Standards Association (CSA);
 - Federal Information Processing Standards Publication 94 (FIPS PUB 94);
 - National Electrical Manufacturers Association (NEMA);
 - National Fire Protection Association (NFPA 70 [NEC], 75, AND 78);
 - Underwriters Laboratories (UL 1449 and 1283).
- 2) The unit shall be UL 1449 Listed and CSA Approved as a Transient Voltage Surge Suppressor and UL 1283 Listed as an Electromagnetic Interference Filter.

c) Environmental Requirements

- 1) Storage Temperature. Storage temperature range shall be -40 to +85 C (-40 to + 185F).
- 2) Operating Temperature. Operating temperature range shall be -40 to +60C (-40 to +140F).
- 3) Relative Humidity. Operation shall be reliable in an environment with 5% to 95% non-condensing relative humidity.
- 4) Operating Altitude. The unit shall be capable of operation in altitudes up to 13,000 feet above sea level.
- 5) Audible Noise. The unit shall not generate any audible noise.
- 6) Magnetic Fields. No appreciable magnetic fields shall be generated. Unit shall be capable of use directly in computer rooms in any location without danger to data storage systems or devices.

d) Electrical Requirements

- 1) Unit Operating Voltage. The nominal unit operating voltage at configuration shall be as indicated on the drawings.

<u>MODEL NUMBER</u>	<u>VOLTAGE</u>	<u>POLES</u>	<u>CONFIGURATION</u>
DP277/480-3GY-DF	277/480	3	Grounded Wye; 4 Wire +ground
EGP-120/208 MLO	120/208	3	Grounded Wye;

- 2) Maximum Continuous Operating Voltage (MCOV). The maximum continuous operating voltage (MCOV) of all suppression components utilized in the unit shall not be less than 125% of the facility's nominal operating voltage for 120 volt nominal systems and not less than 115% of the facility's nominal operating voltage for 208 and 480 volt nominal systems.
- 3) Operating Frequency. The operating frequency range of the unit shall be 47 to 63 Hertz.
- 4) Protection Modes. In accordance with NEMA Standard LS 1-1992, the unit shall provide protection in all modes. For a wye-configured system the primary mode of protection shall be line-to-neutral, the secondary modes of protection shall be line-to-ground and neutral-to-ground. For a delta-configured system the primary mode of protection shall be line-to-line and the secondary mode shall be line-to-ground, if the system is grounded.
- 5) Tested Single-Pulse Surge Current Capacity. Based on ANSI/IEEE C62.41-1991's standard 8x20 microsecond current waveform, and in accordance with NEMA Publication No. LS 1-1992, the tested single-pulse surge current capacity, in amps, of the unit shall be no less than as follows:

<u>MODE OF PROTECTION</u>	<u>L-L</u>	<u>L-N</u>	<u>L-G</u>	<u>L-G</u>
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Tested Single-Pulse				
Surge Current Capacity DP	150,000	150,000	100,000	100,000
EGP	80,000	80,000	80,000	100,000

6) Unit Performance Ratings. The unit's published performance ratings shall be the UL 1449 Listed suppression ratings. The UL 1449 suppression rating shall be, for each mode of protection, as follows:

<u>MODEL NUMBER (1)</u>	<u>VOLTAGE</u>	<u>POLES</u>	<u>CONFIGURATION</u>	<u>UL 1449 SUPPRESSION</u>	
				<u>L-L</u>	<u>L-N</u>
DP277/480-3GY-DF	277/480	3	Grounded Wye	-	800/800
EGP-120/208-MLO	120/208	3	LL-800 LN-400	LG-400	NG-500

PART 2 - PRODUCTS

a) Main Entrance DP Series

1) High-Performance Suppression System. The unit shall include an engineered solid-state high-performance suppression system, utilizing either selenium cells or metal oxide varistors with similar operating characteristics, or both.

The suppression systems' components shall optimally share surge currents in a seamless, low-stress manner assuring maximum performance. The suppression system shall not utilize gas tubes, spark gaps, silicon avalanche diodes or other components which might short or crowbar the line, thus leading to interruption of normal power to or system upset of connected loads. The suppression system shall not incorporate non-field replaceable fusing or any other components which may degrade performance or reliability of the suppression system.

2) High-Frequency Extended Range Tracking Filter. The unit shall include a high-frequency extended range tracking filter and shall be UL 1283 Listed as an Electromagnetic Interference Filter. The filter shall reduce fast rise-time, high-frequency, error-producing transients and electrical line noise to harmless levels, thus eliminating disturbances which may lead to system upset. The filter shall provide minimum noise attenuation as follows:

Attenuation Frequency	100 kHz	1 MHz	10 MHz	100 MHz
Insertion Loss (ratio)	50-1	350-1	500-1	250-1
Insertion Loss (dB)	34	51	54	48

Note: Standardized insertion loss data obtained utilizing MIL-STD-E220A 50 ohm insertion loss methodology.

The DP shall function in coordination with other suppression-filter devices within the facility-wide suppression-filter system to provide minimum noise attenuation as follows:

Attenuation Frequency	100 kHz	1 MHz	10 MHz	100 MHz
Insertion Loss (ratio)	355-1	50,000-1	500,000-1	1,000,000,-1
Insertion Loss (dB)	51	94	114	120

Note: Standardized insertion loss data obtained utilizing MIL-STD-E220A 50 ohm insertion loss methodology.

3) Internal Connections. All internal wiring associated with the suppression filter system and subject to surge currents shall utilize low-impedance copper bus bar and/or #2 AWG copper conductor or larger. All internal connections associated with the suppression/filter system and subject to surge currents shall be made with compression solderless-type lugs and shall be bolted to the bus bars in order to reduce overall system impedance.

4) Field Connections. The unit shall include mechanical lugs for each phase, neutral and ground, if applicable. The lugs shall accommodate up to #2 AWG copper conductor with integral fused disconnect switch and up to 1/0 AWG copper conductor without integral fused disconnect switch.

5) Field Installation. The unit shall be installed as close as practical to the facility's wiring system in accordance with applicable national/local electrical codes and the manufacturer's recommended installation instructions. Connection shall be with #2 AWG copper conductor or larger and not be any longer than necessary, avoiding unnecessary bends.

6) Unit Status Indicators. The unit shall include solid-state, long-life, externally mounted LED visual status indicators that monitor the on-line status of each phase of the unit.

7) Enclosure. Standard surface-mounted units shall be provided in a NEMA 1 type enclosure of 14 gauge steel, painted inside and out with Sherwin Williams Polane T or equal paint.

8) Integral Fused Disconnect Switch. The unit shall include an integral fused and safety interlocked disconnect switch located in the unit enclosure with an externally mounted manual operator. The switch shall disconnect all ungrounded circuit conductors from the distribution system to enable testing and maintenance without interruption of power to the facility's distribution system. The switch shall be rated for 600 Vac. Each current-carrying ungrounded circuit conductor connected to the facility's distribution system shall be individually fused with 200,000 AIC rated fuses in order to provide maximum fault current protection. The unit shall be UL 1449 Listed with the integral fused disconnect switch and the UL 1449 Suppression Rating for this configuration shall be provided. (1.4.6 Performance Ratings).

b) Non-Linear Panelboard - EGP Series
(Supplied By TVSS Company of the same make as standard panels)

1) Trim. The unit shall be constructed with surface-mounted baked enamel sheet metal trim and shall be top- or bottom-fed as indicated on the drawings. A directory card holder shall be mounted on the inside of the hinged door that includes flush-type latch/lock assembly. Multi-sectional panelboards shall be as indicated on the drawings and shall be configured with feed-through lugs in either two (2) and three (3) section configurations.

- 2) Boxes. The unit's box shall be formed of galvanized metal and chemically cleansed, and all breaks in galvanizing shall be painted with metallic paint. Minimum size shall be 20" wide by 5.75" deep unless otherwise indicated on the drawings.
- 3) Interiors. The unit shall have a removable interior as manufactured by General Electric, Square D., Siemens, Westinghouse or approved equal. The interior shall be so arranged that individual branch circuit breakers may be installed or removed without disturbing adjacent units, bus structure or insulation.
- 4) Copper Main Bus. The unit shall include an all copper main bus of the ampacity and arrangement as indicated on the drawings.
- 5) Circuit Breakers. The unit shall include bolt-on main, branch or sub-feed circuit breakers with frame size, poles, trip rating and minimum interrupting rating as indicated on the drawings. Circuit breakers shall have a minimum 10,000 amperes interrupting rating for 120/240 and 120/208 volt circuits and 14,000 amperes for 277/480 and 347/600 volt circuits or as indicated on the drawings. Circuit breakers shall be single handle, common trip for two and three-pole units.
- 6) 200% Rated Copper Neutral Bus. The unit shall include a 200% rated all copper neutral bus designed for the peculiar current demands associated with non-linear loads. The neutral bus shall include AL/CU rated mechanical solderless-type lugs in sufficient quantity and capacity as indicated on the drawings.
- 7) Safety Ground Bus. The unit shall include a safety ground bus with connection points equal to the number of branch breaker positions. The safety ground bus shall include AL/CU rated mechanical solderless-type lugs in sufficient quantity and capacity as indicated on the drawings.
- 8) Insulated Isolated Ground Bus. The unit shall include an insulated isolated ground bus with connection points equal to the number of branch breaker positions. The insulated isolated ground bus shall include AL/CU rated mechanical solderless-type lugs in sufficient quantity and capacity as indicated on the drawings.
- 9) Field Connections. The unit shall include mechanical solderless-type connection points and labels for each phase, neutral, safety ground and insulated isolated ground as indicated on the drawings.
- 10) Field Installation. The unit shall be installed in accordance with applicable national/local electrical codes and the manufacturer's recommended installation instructions.
- 11) Wiring Gutters. The unit shall have an all-around interior perimeter wiring gutter. The cross sectional dimension of the gutter shall be as required by national/local electrical codes but not less than 16 square inches.
- 12) Identification. The unit shall include manufacturer's nameplate and UL inspection labels on interior of cabinet.

13) High-Performance Suppression System. The unit shall include an engineered solid-state high-performance suppression system, utilizing arrays of fused non-linear voltage dependent metal oxide varistors with similar operating characteristics. The suppression system shall not utilize gas tubes, spark gaps, silicon avalanche diodes or other components which might short or crowbar the line, thus leading to interruption of normal power flow to or system upset of connected loads. The suppression system shall not incorporate non-field replaceable fusing or any other components which may degrade performance or reliability of the suppression system.

14) High-Frequency Extended Range Tracking Filter. The unit shall include a high-frequency extended range tracking filter and shall be UL 1283 Listed as an Electromagnetic Interference Filter. The filter shall reduce fast rise-time, high-frequency, error-producing transients and electrical line noise to harmless levels, thus eliminating disturbances which may lead to system upset. The filter shall provide minimum noise attenuation as follows:

Attenuation Frequency	100 kHz	1 MHz	10 MHz	100 MHz
Insertion Loss (ratio)	50-1	350-1	500-1	250-1
Insertion Loss (dB)	34	51	54	48

Note: Standardized insertion loss data obtained utilizing MIL-STD-E220A 50 ohm insertion loss methodology.

The EGP shall function in coordination with other suppression-filter devices within the facility-wide suppression-filter system to provide minimum noise attenuation as follows:

Attenuation Frequency	100 kHz	1 MHz	10 MHz	100 MHz
Insertion Loss (ratio)	355-1	50,000-1	500,000-1	1,000,000-1
Insertion Loss (dB)	51	94	114	120

Note: Standardized insertion loss data obtained utilizing MIL-STD-E220A 50 ohm insertion methodology.

15) Integral Circuit Breaker For Suppression/Filter System. The unit shall require an integral circuit breaker as a means of disconnecting the suppression/filter system for maintenance and/or test purposes without interruption of power to the facility's distribution system. The breaker shall be 2-pole for single-phase (120/240 Vac) and 3-pole for three-phase (120/208, 277/480 or 347/600 Vac) applications.

16) Suppression/Filter System Connections. All internal wiring associated with the suppression/filter system and subject to surge currents shall utilize low-impedance copper bus bar and/or #8 AWG copper conductor or larger. All internal connections associated with the suppression/filter system and subject to surge currents, shall be made with compression solderless-type lugs and shall be bolted to the bus bars in order to reduce overall system impedance.

PART 3 – DOCUMENTATION AND TESTING

- a) Equipment Manual. The manufacturer shall furnish an equipment manual with installation, operation, and maintenance instructions for the specified unit.
- b) Drawings. Electrical and mechanical drawings shall be provided by the manufacturer which show unit dimensions, weights, mounting provisions, connection details and layout diagram of the unit.
- c) UL 1449 Suppression Ratings. Documentation of unit's UL 1449 suppression rating shall be included as required product data submittal information. Manufacturer shall make available upon request certified documentation of applicable Location Category Testing in full compliance with ANSI/IEEE C62.41-1991 and ANSI/IEEE C62.45-1987 Guidelines.
- d) Spare Parts. A list of customer-replaceable spare parts shall be included in the unit's installation, operation and maintenance instructions. All spare parts shall be quickly and easily field-replaceable.
- e) Life Expectancy Testing. The unit shall be life-cycle tested to protect against and survive at least 2,500 ANSI/IEEE C62.41-1991 Category C3 surges without failing or degrading the UL 1449 Surge Suppression Rating by more than 10%. The EGP, when installed as part of a facility-wide suppression-filter system, shall be tested and capable of protecting against and surviving at least 6,000 ANSI/IEEE C62.41-1991 Category C3 surges without failing or degrading the UL 1449 Surge Suppression Rating by more than 5%.
- f) MCOV Testing. The unit shall be factory-tested and burned-in at the applicable MCOV for a minimum of one (1) hour.
- g) Warranty. The manufacturer shall provide a limited five-year warranty from date of shipment against failure when installed in compliance with applicable national/local electrical codes and the manufacturer's Installation, Operation and Maintenance Instructions.
- h) Quality Assurance. The unit shall be thoroughly factory-tested before shipment. Testing of each unit shall include but shall not be limited to UL manufacturing and production-line tests, quality assurance checks, MCOV and clamping voltage verification tests.

PART 4 – APPROVED VENDORS

Current Technology, Inc., LEA Dynatech, MCG, Square D., Liebert, Advanced Protection Technologies or approved equal.

PART 5 – REQUIRED SUBMITTALS

Submit manufacturer's data on surge suppression system and all its components.

END OF SECTION

SECTION 16900 - CONTROLS

PART 1 – MAGNETIC STARTERS

All motor starters shall be steel mounted, front wired with all terminals accessible for wiring directly from the front. No slate or ebony asbestos will be permitted on any size starter. All contacts shall be double break, solid silver cadmium oxide alloy, or approved equal, which will not require any filing, dressing or cleaning throughout the life of the control equipment. Bare copper or silver flashed copper contacts which require periodic filing or cleaning maintenance will not be permitted. Operating coils shall be pressure molded and so designed that if accidentally connected to excessive voltage, they will not expand, bubble or melt. When a coil fails under this condition, the starter shall definitely drop out by gravity and not freeze the starter in the "On" position. All motor starter coils shall be rated 120 volts unless shown otherwise on the Drawings. All magnetic motor starters shall have control transformers (one side fuse, the other grounded to box). Each magnetic starter shall be provided with one (1) spare N.O. and one (1) N.C. auxiliary contact. Transformer shall be sized to handle the loads shown in the Schedule and Schematics. No starter smaller than Size "0" shall be utilized. NOTE: ADDITIONAL CONTACT SHALL BE PROVIDED TO OPEN THE STARTER AND DE-ENERGIZE THE EQUIPMENT UPON SIGNAL FROM DDC(HVAC) CONTROL SYSTEM. THE SAME DDC CONTROL SYSTEM SIGNAL SHALL ALSO ENERGIZE THE EQUIPMENT VIA THE STARTER.

PART 2 – OVERLOAD RELAYS

a) Overload relays shall be of the melting alloy, hand-reset, trip-free variety. All overload relays shall be equipped with a trip indicator, visible from the front, which will indicate which motor has tripped. Overloads shall be installed in all ungrounded legs.

b) Taking into account the temperature rating of the motors, overloads shall be sized for one of three conditions:

- 1) Temperature at starter is the same as motors.
- 2) Temperature at starter is lower than at motor.
- 3) Temperature at starter is higher than at motor.

All overloads shall be sized from data on motor nameplate taking into consideration the above three (3) items. The sizing of overloads is the responsibility of the Contractor. Submit written list of overload vs. motors FLC to Engineer on all motors.

c) It shall be possible to field add two (2) extra N.O. or N.C. contacts in all motor starters without removing existing wiring or removing the starter from the enclosure.

PART 3 – PUSHBUTTONS, SWITCHES, PILOT LIGHTS, ETC.

a) Pushbuttons and switches shall be heavy duty, double-break silver contacts. Buttons shall have means of installing metal plate to designate function.

b) Pilot lights shall be press-to-test, 120 volts incandescent. Refer to Drawings for typical control diagram.

- c) Unless otherwise shown, all pushbuttons, switches, pilot lights, etc. shall be mounted in the face of the respective starters. Remote buttons, etc. shall be flush mounted where shown.

PART 4 – MANUAL STARTERS

Furnish and install, where shown on Drawings, 1 or 2 pole toggle operated manual starters. Starters shall be surface unless otherwise shown and shall have neon pilot lights. Starters shall be in a NEMA 1 enclosure. Heaters shall be sized from motor nameplate data.

PART 5 – AC COMBINATION STARTER

- a) General

Combination starters shall be manufactured in accordance with the latest published NEMA standards, sizes and horsepower ratings. Disconnect switch combination starters shall consist of a visible blade disconnect switch and a motor starter. Combination starters shall be mounted in general purpose enclosures unless otherwise indicated on the plans.

- b) Starters

All starters used in combination starters shall be manufactured in accordance with the latest published NEMA standards, sizes, and horsepower ratings. These starters shall be furnished with three melting alloy type thermal overload relays.

- c) Thermal Units

Thermal units shall be of one-piece construction and interchangeable. The starter shall be inoperative if a thermal unit is removed.

- d) Disconnect Handle

The disconnect handle used on combination starters shall always be in control of the disconnect device with the door opened or closed. The disconnect handle shall be clearly marked as to whether the disconnect device is "ON" or "OFF", and shall include a two-color handle grip, the black side visible in the "OFF" position indicating a safe condition, and the red side visible in the "ON" position indicating an unsafe or danger condition.

PART 6 – REQUIRED SUBMITTALS

Submit manufacturer's data on all starters, relays and other control devices.

END OF SECTION

SECTION 16950 - OCCUPANCY SENSORS

PART 1 - GENERAL

1.01 Work Included

- a) Contractor's work to include all labor, materials, tools, appliances, control hardware, sensor, wire, junction boxes and equipment necessary for and incidental to the delivery, installation and furnishing of a completely operational occupancy sensor lighting control system, as described herein.
- b) Contractor/supplier shall examine all general specification provisions and drawings for related electrical work required as work under division 16.
- c) Contractor shall coordinate all work described in this section with all other applicable plans and specifications, including but not limited to wiring, conduit, fixtures, hvac systems and building management systems.

1.02 Equipment Qualification

- a) Products supplied shall be from a single manufacturer that has been continuously involved in manufacturing of occupancy sensors for a minimum of five (5) years. Mixing of manufacturers shall not be allowed.
- b) All components shall be ul listed, offer a five (5) year warranty and meet all state and local applicable code requirements.
- c) Products shall be manufactured by an iso9002 certified manufacturing facility and shall have a defect rate of less than 1/3 of 1%.

1.03 System Description

- a) The objective of this section is to ensure the proper installation of the occupancy sensor based lighting control system so that lighting is turned off automatically after reasonable time delay when a room or area is vacated by the last person to occupy said room or area.
- b) The occupancy sensor based lighting control shall accommodate all conditions of space utilization and all irregular work hours and habits.
- c) Contractor shall warrant all equipment furnished in accordance to this specification to be undamaged, free of defects in materials and workmanship, and in conformance with specifications. The suppliers obligation shall include repair or replacement, testing without charge to the owner, all or any parts of equipment which are found to be damaged, defective or non-conforming and returned to the supplier. The warranty shall commence upon the owner's acceptance of the project. Warranty on labor shall be for a minimum period of one (1) year.

1.04 Submittals

- a) Manufacturer shall substantiate conformance to this specification by supplying the necessary documents, performance data and wiring diagrams. Any deviations to this specification must be clearly stated by letter and submitted.
- b) Submit a lighting plan clearly marked by manufacturer showing proper product, location and orientation of each sensor.
- c) Submit any interconnection diagrams per major subsystem showing proper wiring.
- d) Submit standard catalog literature which includes performance specifications indicating compliance to the specification.
- e) Catalog sheets must clearly state any load restrictions when used with electronic ballasts.

1.05 System Operation

- a) It shall be the contractor's responsibility to make all proper adjustments to assure owner's satisfaction with the occupancy system.
- b) It is the contractor's responsibility to verify with the manufacturer to ensure the proper placement and exact type of each sensor to be used in each space. The contractor shall submit documentation from the manufacturer in the shop drawing indicating the manufacturer has reviewed the individual spaces and recommends the exact product type and placement.

PART 2 - SPECIFIC REQUIREMENTS

2.01 Acceptable Manufacturers

- a) Watt stopper, sensor switch or pre-approved equal: for pre-approval, provide all the information listed under section 1.04a and 1.04d a minimum of ten (10) working days prior to initial bid date.
- b) The listing of any manufacturer as "acceptable" does not imply automatic approval. It is the sole responsibility of the Contractor to ensure that any price quotations received and submittals made are for sensors which meet or exceed the specifications included herein.

2.02 Products

- a) Dual technology sensors shall be either wall mounted, corner mounted or ceiling mounted in such a way as to minimize coverage in unwanted areas.
- b) Dual technology sensors shall consist of passive infrared and ultrasonic technologies for occupancy detections. Products that react to noise or ambient sound shall be considered.
- c) Ultrasonic sensors shall utilize advanced signal processing to adjust the detection

threshold dynamically to compensate for constantly changing levels of activity and air flow throughout controlled space.

- d.) Ultrasonic operating frequency shall be crystal controlled at 25 khz with \pm 0.005% tolerance, 32 khz within \pm 0.002% tolerance, or 40 khz \pm 0.002% tolerance to assure reliable performance and eliminate sensor cross-talk. Sensors using multiple frequencies are not acceptable.
- e.) All sensors shall be capable of operating normally with electronic ballast, pl lamp systems and rated motor loads.
- f.) Coverage of sensors shall remain constant after sensitivity control has been set. No automatic reductions shall occur in coverage due to the cycling of air conditioner or heating fans.
- g.) When specified, sensors shall utilize smartset technology for automatically adjustable time delay and sensitivity settings.
- h.) All sensors shall have readily accessible, user adjustable settings for time delay and sensitivity. Settings shall be located on the sensor (not the control unit) and shall be recessed to limit tampering. Time delay shall be set for 60min. In the case where the occupant of the room manually turns off the lights and leaves the room the sensor shall reset to an "ON" position thereby allowing an occupant to enter the room and the sensor energizing the light fixtures.
- i.) In the event of failure, a bypass manual override shall be provided on each sensor. When bypass is utilized, lighting shall remain on constantly or control shall divert to a wall switch until sensor is replaced. This control shall be recessed to prevent tampering.
- j.) All sensors shall provide an led as a visual means of indication at all times to verify that motion is being detected during both testing and normal operation.
- k.) Where specified, sensor shall have an internal additional isolated relay with normally open, normally closed and common outputs for use with hvac control, data logging and other control options. Sensors utilizing separate components or specially modified units to achieve this function are not acceptable.
- l.) All sensors shall have ul rated, 94vv-0 plastic enclosures.

2.03 Circuit Control Hardware

- a.) Control units - for ease of mounting, installation and future service, control unit(s) shall be able to externally mount through a ½" knockout on a standard electrical enclosure and be integrated, self-contained unit consisting internally of an isolated load switching control relay and a transformer to provide low-voltage power. Control unit shall provide power to a minimum of two (2) sensors.
- b.) Relay contacts shall ratings of:
 - 13a - 120 vac tungsten
 - 20a - 120 vac ballast

- c) Control wiring between sensors and controls units shall be class ii, 18-24 awg, stranded ul classified, pvc insulated or teflon jacketed cable suitable for use in plenums, where applicable.
- d) Minimum acceptable wire gauge from the circuit control hardware relays shall be #14 awg.

PART 3 - EXECUTION

3.01 Installation

- a) It shall be the contractor's responsibility to locate and aim sensors in the correct location required for complete and proper volumetric coverage within the range of coverage(s) of controlled areas per the manufacturer's recommendations. Rooms shall have ninety (90) to one hundred (100) percent coverage to completely cover the controlled area to accommodate all occupancy habits of single or multiple occupants at any location within the rooms(s). The locations and quantities of sensors shown on the drawings are diagrammatic and indicate only the rooms which are to be provided with sensors. The contractor shall provide additional sensors if required to properly and completely cover the respective room.
- b) It is the contractor's responsibility to arrange a pre-installation meeting with manufacturer's factory authorized representative, at owner's facility, to verify placement of sensors and installation criteria.
- c) Proper judgement must be exercised in executing the installation so as to ensure the best possible installation in the available space and to overcome local difficulties due to space limitations or interference of structural components. The contractor shall also provide, at the owner's facility, the training necessary to familiarize the owner's personnel with the operation, use, adjustment, and problem solving diagnosis of the occupancy sensing devices and systems.

PART 4 – CLASSROOMS/OFFICES AND CORRIDOR/S

Dt-300 360 degree technology sensors

1. The dual technology sensor shall be capable of detecting presence in the control area by detecting doppler shifts in transmitted ultrasound and passive infrared heat changes.
2. Sensors shall use patent pending ultrasonic diffusion technology that spreads coverage to a wider area.
3. Sensor shall utilize dual sensing verification principle for coordination between ultrasonic and pir technologies. Detection verification of both technologies must occur in order to activate lighting systems. Upon verification, detection by either shall hold lighting on.
4. Sensor shall have a retrigger feature in which detection by either technology shall retrigger the lighting system on within 5 seconds of being switched off.

5. Sensors shall be ceiling mounted with a flat, unobtrusive appearance and provide 360 degree coverage.
6. Ultrasonic sensing shall be volumetric in coverage with a frequency of 40 khz. It shall utilize advanced signal processed that automatically adjusts the detection threshold dynamically to compensate for changing levels of activity and airflow throughout controlled space.
7. To avoid false on activations and to provide immunity to rfi and emi, detection signature analysis shall be used to examine the frequency, duration, and amplitude of a signal, to respond only to those signals caused by human motion.
8. The pir technology shall utilize a temperature compensated, dual element sensor and a multi-element fresnel lens. The lens shall be poly ir4 material to offer superior performance in the infrared wavelengths and filter short wavelength ir, such as those emitted by the sun and other visible light sources. The lens shall have grooves facing in to avoid dust and residue build up which affects ir reception.
9. DT-300 and DT-305 sensors shall operate at 24 vdc/vac and halfwave rectified and utilize a watt stopper power pack.
10. Sensors shall utilize smartset technology to optimize time delay and sensitivity settings to fit occupant usage patterns. The use of smart set shall be selectable with a dip switch.
11. Sensors shall have a time delay that is adjusted automatically (with the smartset setting) or shall have a fixed time delay of 5 to 30 minutes, set by dip switch.
12. Sensors shall feature a walk-through mode, where lights turn off three minutes after the area is initially occupied if no motion is detected after the first 30 seconds.
13. The DT-300 sensors shall have a built-in light level sensor that works from 10 to 300 footcandles.
14. The dt-300 sensors shall have a manual on function that is facilitated by installing a momentary switch.
15. Sensors shall have eight occupancy logic options that give the ability to customize control to meet application needs.
16. The sensors shall feature terminal style wiring, which makes installation easier.
17. DT-300 sensor shall have an additional single-pole, double throw isolated relay with normally open, normally closed and common outputs. The isolated relay is for use with hvac control, data logging, and other control options.
18. Each sensing technology shall have an led indicator that remains active at all times in order to verify detection within the area to be controlled. The led can be disabled for applications that require less sensor visibility.
19. To ensure quality and reliability, sensor shall be manufactured by an iso 9002 certified manufacturing facility and shall have a defect rate of less than 1/3 of 1%.
20. Sensors shall have standard five year warranty and shall be ul and cul listed.

PART 5 - RESTROOMS

UT-300 ultrasonic occupancy sensors

1. The occupancy sensors shall be capable of detecting presence in the control area via doppler shifts in transmitted ultrasound.
2. Sensors shall use watt stopper's patented ultrasonic diffusion technology that spreads coverage to a wider area.
3. Ultrasonic sensing shall be volumetric in coverage with a frequency of 40 khz. It shall utilize advance signal processing, which automatically adjusts the detection threshold dynamically to compensate for constantly changing levels of activity and airflow throughout controlled space.
4. To avoid false on activation and to provide immunity to rfi and emi, detection signature analysis shall be used to examine the frequency, duration, and amplitude of a signal so as to only respond to those signals caused by human motion.
5. Sensors of varying frequencies shall not be allowed so as to prevent sensors from interfering with each other and to assure compatibility in the event more sensors are added.
6. UT-300 sensors shall operate at 24 vdc/vac and half-wave rectified and utilize a watt stopper power pack.
7. Detection shall be maintained only when a person of average size and weight moves within a maximum distance of twelve inches horizontally or vertically at the approximate speed of 12 inches per second. The sum of this distance, volume and speed represents the average condition ultrasonic sensors must meet so that the lights not go off when a person is reading or writing while seated at a desk.
8. The ut-300 sensors shall have a manual-on function that is facilitated by installing a momentary switch.
9. Sensors shall be mounted to the ceiling with a flat, unobtrusive appearance and provide 360 degrees of coverage.
10. Sensors shall utilize smartset technology that automatically adjusts time delay settings to fit occupants' usage patterns for optimal energy efficiency. Smartset feature shall be selectable with a dip switch. Sensor shall have user-adjustable sensitivity setting.
11. Sensor shall feature a walk-through mode that turns lights off three minutes after the area is initially occupied if no motion is detected after the first thirty seconds.
12. Hallway and corridor sensors shall be a ut-300-3/ut-305-3/ut-355-3 and shall cover 45 feet in each direction for a ten-foot wide walled hallway.
13. UT-300 sensor shall have an additional single-pole, double throw isolated relay with normally open, normal closed and common outputs. The isolated relay shall be for use with hvac control,

data logging and other control options.

14. Sensors shall have a dip switch-adjustable tim delay of five to thirty minutes.
15. Sensors shall feature terminal style wiring for easier installation.
16. The sensor shall have a constantly active led indicator to verify detection within the control area. Disabling led for applications that requires less visibility shall be possible.
17. To enure quality and reliability, sensor shall be manufactured by an iso 9002 certified manufacturing facility and shall have a defect rate of less than 1/3 of 1%.
18. Sensor shall have standard five-year warranty and shall be UL and CUL listed.

END OF SECTION