



rosstarrant architects

Burgin Independent Schools Addition & Renovation

Burgin Independent Board of Education
Burgin, Kentucky

RTA 1904
BG 19-262

Project Manual

Volume 1 of 2
September 2019

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**INDEX TO SPECIFICATIONS
FOR
BURGIN INDEPENDENT SCHOOLS ADDITION & RENOVATION
BURGIN, KENTUCKY
RTA 1904
BG 19-262**

VOLUME 1 OF 2

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SECTION 001115 - ADVERTISEMENT FOR BIDS

Sealed proposals for the following work will be received by the Burgin Independent Board of Education in the manner and on the date hereinafter specified for the furnishing of all labor, materials, supplies, tools, equipment, services, etc., necessary for the construction of the Burgin Independent School Addition & Renovation as set forth in the specifications and as shown on the drawings prepared by RossTarrant Architects, Inc., 101 Old Lafayette Avenue, Lexington, Kentucky 40502.

Bid Submittal: Contractors must submit their bids to the Burgin Independent Board of Education, 440 East Main Street, Burgin, Kentucky 40310 until: October 8, 2019, 11:00 am, local time.

Each Proposal shall be submitted on forms contained in the Project Manual. Proposals shall be enclosed in a sealed envelope with the following information on the outside:

Sealed Bid for the:

Burgin Independent School Addition & Renovation

No proposal shall be withdrawn for a period of sixty (60) days after the date of bid opening.

Pre-Bid Conference: A pre-bid conference will be held on September 24, 2019 at 11 am local time, at the project site.. Each bidder is encouraged to visit the site to review field conditions prior to submitting a bid.

Addenda: The last date for the Architect to receive items to be addressed in any addenda is October 1, 2019 by 12:00 p.m. EDT. All requests must be submitted to the Architect in writing.

Method of Receiving Bids: Bids will be received from General Contractors for a Total Lump Sum Amount. All phases of the work shall be bid to and through the General Contractor submitting the proposal. Bid Security in the amount of five (5) percent of each proposal submitted must accompany each Proposal in accordance with the Form of Proposal.

It is the Owner's intent to purchase significant quantities of materials through direct purchase orders. After review of bids, the Owner will issue purchase orders for major material items. Refer to the Supplemental Instructions to Bidders, General Conditions, Supplementary Conditions, and Division 1 sections for additional information.

Right to Reject and Waiver: The Owner reserves the right to accept any bid, to reject any or all bids, to waive any informalities in bids received where such acceptance, rejection, or waiver is considered to be in the best interest of the Owner or to reject any bid where evidence or information submitted by the bidder does not satisfy the Owner that the bidder is qualified to carry out the details of the Contract Documents. The Owner's desire to waive irregularities and informalities as to a bid shall be reviewed and final judgement made by the Kentucky Department of Education, Division of Facilities Management, prior to approval of the contract and financing plan.

Plans and Specifications Reviewed: Contract Documents may be examined at the following places:

Burgin Independent Board of Education, 440 East Main Street, Burgin, Kentucky 40310

CMTA, Inc., 2429 Members Way, Lexington, Kentucky 40504

Structural Design Group, Inc., 220 Great Circle Road, Suite 106, Nashville, Tennessee 37228

Joby Smith & Associates, Inc., 8111 LeSourdville-Westchester Road, Westchester, Ohio 45069

Obtaining Plans and Specifications: Bidders may obtain contract documents from Lynn Imaging, 328 Old East Vine Street, Lexington, Kentucky 40507 (telephone (859) 255-1021), in accordance with the following deposit and charge schedule.

First and Second Set: \$200.00 Per Set, Refundable

Additional Sets: \$200.00 Per Set, Non-Refundable

Postage and handling fees shall be paid directly to Lynn Imaging. Deposit checks shall be made payable to RossTarrant Architects, Inc. It is most important that requesting firm identify the position of the firm as to prime bidder, miscellaneous Contractor, material supplier, or other. Please give name, address, telephone number and email address of person responsible for receiving Addenda material and general communication concerning this bidding.

Plans and Specifications must be returned directly to Lynn Imaging within thirty (30) calendar days after the closing date for the receipt of bids, in good condition, otherwise no refund will be made.

General Information: State Wage Rates are not applicable. Conflicts of interest, gratuities and kickbacks are defined in KRS 45A.445 and as provided for in KRS 45A.455 are absolutely prohibited. Preference for resident bidders shall be given as outlined in KRS 45A.90 to 45A.94. The successful bidder must supply a 100% Performance and Payment Bond as outlined in the Project Manual.

Project Location: Burgin Independent School, 440 East Main Street, Burgin, Kentucky 40310

Project Description: The project scope includes a 9000 square foot addition of a Kitchen and Cafeteria. The building addition is a masonry load bearing structure with metal joists and deck, a lightweight concrete roof with a single-ply membrane roof, brick and CMU veneer masonry, aluminum storefront systems, and new site elements. Major systems to include Mechanical, Plumbing, Fire Protection, Electrical & Voice/Data.

END OF SECTION

SECTION 002100 - INSTRUCTIONS TO BIDDERS

PART 1 GENERAL

Refer to the Kentucky Department of Education Version of AIA Document A701-1997.

END OF SECTION

Kentucky Department of Education Version of **AIA** Document A701™ – 1997

Instructions to Bidders



This version of AIA Document A701™–1997 is modified by the Kentucky Department of Education. Publication of this version of AIA Document A701–1997 does not imply the American Institute of Architects' endorsement of any modification by the Kentucky Department of Education. A comparative version of AIA Document A701–1997 showing additions and deletions by the Kentucky Department of Education is available for review on the Kentucky Department of Education Web site.

Cite this document as "AIA Document A701™– 1997, Instructions to Bidders — KDE Version," or "AIA Document A701™–1997 — KDE Version."

Kentucky Department of Education Version of AIA® Document A701™ – 1997

Instructions to Bidders

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

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

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This version of AIA Document A701–1997 is modified by the Kentucky Department of Education. Publication of this version of AIA Document A701 does not imply the American Institute of Architects' endorsement of any modification by the Kentucky Department of Education. A comparative version of AIA Document A701–1997 showing additions and deletions by the Kentucky Department of Education is available for review on the Kentucky Department of Education Web site.

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

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 other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications and all Addenda issued prior to execution of the Contract.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201™, or in other Contract Documents are applicable to the Bidding Documents.

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

§ 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 Form of Proposal for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids. The Base Bid shall include all labor, material, bonds, and the cost of all direct purchase orders for material to be purchased by the Owner.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of 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 The Bidder by making a Bid represents that:

§ 2.1.1 The Bidder has read and understands the Bidding Documents or Contract Documents, to the extent that such documentation relates to the Work for which the Bid is submitted, and for other portions of the Project, if any, being bid concurrently or presently under construction.

§ 2.1.2 The Bid is made in compliance with the Bidding Documents.

§ 2.1.3 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 personal observations with the requirements of the proposed Contract Documents.

1. The submission of a Bid will be construed as evidence that a site visit and examination of local conditions have been made. Later claims for labor, equipment, or materials required or difficulties encountered which could have been foreseen had such an examination been made will not be recognized.

§ 2.1.4 The Bid is based upon the materials, equipment and systems required by the Bidding Documents without exception.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Copies

§ 3.1.1 Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Advertisement or Invitation to Bid in the number and for the deposit sum, if any, stated therein. The deposit will be refunded to Bidders who submit a bona fide Bid and return the Bidding Documents in good condition within ten days after receipt of Bids. The cost of replacement of missing or damaged documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the Bidding Documents and the Bidder's deposit will be refunded.

§ 3.1.2 (Not Used)

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

§ 3.1.4 The Owner and Architect may make copies of the Bidding Documents available on the above terms for the purpose of obtaining Bids on the Work. No license or grant of use is conferred by issuance of copies of the Bidding Documents.

§ 3.2 Interpretation or Correction of Bidding Documents

§ 3.2.1 The Bidder shall carefully study and compare the Bidding Documents with each other, and with other work being bid concurrently or presently under construction to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall at once report to the Architect and Construction Manager (if utilized) errors, inconsistencies or ambiguities discovered.

§ 3.2.2 Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the Architect and Construction Manager (if utilized) at least seven days prior to the date for receipt of Bids.

§ 3.2.3 Interpretations, corrections and changes of the Bidding Documents will be made by Addendum. Interpretations, corrections and changes of the Bidding Documents made in any other manner will 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 No substitution will be considered prior to receipt of Bids unless written request for approval has been received by the Architect at least ten days prior to the date for receipt of Bids. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work, including changes in the work of other contracts that incorporation of the proposed substitution would require, shall be included. 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.

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

§ 3.3.4 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 all who are known by the Architect and Construction Manager (if utilized) to have received a complete set of Bidding Documents.

§ 3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

§ 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 Each Bidder shall ascertain prior to submitting a Bid 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 the Bidding Documents.

§ 4.1.2 All blanks on the Form of Proposal shall be legibly executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.

§ 4.1.4 Interlineations, alterations and erasures 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."

§ 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 make no additional stipulations on the Form of Proposal nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name of the Bidder and the nature of legal form of the Bidder. The Bidder shall provide evidence of legal authority to perform within the jurisdiction of the Work. Each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give 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.

§ 4.2 Bid Security

§ 4.2.1 Each Bid greater than \$25,000 shall be accompanied by bid security in the form of a Bond provided by a Surety Company authorized to do business in the Commonwealth of Kentucky, or in the form of a certified check, and in an amount equal to at least five percent (5%) of the Base Bid amount, pledging that the Bidder will enter into a contract with the Owner on the terms stated in the Bid and will, if required, furnish bonds covering the faithful performance of the Contract and payments 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.

§ 4.2.2 If a surety bond is required, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney.

§ 4.2.3 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until either (a) the Contract has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn or (c) all Bids have been rejected.

§ 4.3 Submission of Bids

§ 4.3.1 All copies of the Bid, the bid security, if any, 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.

§ 4.3.2 Bids shall be deposited at the designated location prior to the time and date for receipt of Bids as indicated in the Advertisement or Invitation to Bid or any extensions thereof made by Addendum. Bids received after the closing time and date for receipt and opening of Bids will be rejected and returned to the Bidder unopened.

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

§ 4.3.4 Oral, telephonic, telegraphic, facsimile or other electronically transmitted bids will not be considered.

§ 4.4 Modification or Withdrawal of Bid

§ 4.4.1 A Bid may not be modified, withdrawn or canceled by the Bidder during the stipulated time period following the time and date designated for the receipt of Bids, and each Bidder so agrees in submitting a Bid.

§ 4.4.2 Prior to the time and date designated for receipt of Bids, a Bid submitted may be modified or withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder. Written confirmation over the signature of the Bidder shall be received, and date- and time-stamped by the receiving party on or before the date and time set for receipt of Bids. A change shall be so worded as not to reveal the amount of the original Bid.

§ 4.4.3 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

§ 4.4.4 Bid security, if required, shall be in an amount sufficient for the Bid as resubmitted.

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

At the discretion of the Owner, if stipulated in the Advertisement or Invitation to Bid, the properly identified Bids received on time will be publicly opened and will be read aloud.

§ 5.2 Rejection of Bids

The Owner shall have the right to reject any or all Bids. A Bid not accompanied by a required bid security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

§ 5.3 Acceptance of Bid (Award) [Reference: KRS 45A.365]

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest qualified Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. 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 own best interests.

§ 5.3.2 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 low 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

§ 6.1.1 Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request, a properly executed AIA Document A305™, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted as a prerequisite to the issuance of Bidding Documents.

§ 6.1.2 In determining the qualifications and responsibilities of the Bidder, the Owner shall take into consideration the Bidder's skill, experience, facility, previous work standing, financial standing, capacity and ability to handle work in addition to that in progress, and quality and efficiency of construction plant and equipment proposed to be used on the project.

§ 6.2 (Not Used)

§ 6.3 Submittals

§ 6.3.1 Each Bidder shall submit as part of the Form of Proposal a list of subcontractors proposed for each major branch of work itemized and described in the specifications for the Project. The Bidder's listing of a subcontractor for a work category certifies that the subcontractor has in current employment, skilled staff and necessary equipment to complete that category. The Architect and Construction Manager (if utilized) will evaluate the ability of all listed subcontractors to complete the work and notify the Owner. Listing of the Bidder as the subcontractor may invalidate the Bid should the Architect's and Construction Manager's (if utilized) review indicate the bidder does not have skilled staff and equipment to complete the work category at the time the Bid was submitted.

- .1 Changing subcontractors from those listed with the Form of Proposal is prohibited unless the bidder provides grounds for such a change that are consistent with provisions of the Instructions to Bidders. Said change shall be accompanied by a written explanation from the Bidder as well as a written release from the listed subcontractor. All letters shall be on original company stationery with original signatures from an officer in the company legally approved to act for the company. An unjustifiable change of subcontractors may invalidate the Bid. Any change to a proposed person or entity shall be addressed as noted in Section 6.3.3 of these Instructions to Bidders

§ 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 in writing 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, (1) withdraw the Bid or (2) submit an acceptable substitute person or entity with an adjustment in the Base Bid or Alternate Bid to cover 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.

§ 6.4 List of Materials, Suppliers, and Manufacturers

§ 6.4.1 Each Bidder shall submit a complete list of materials/equipment with supplier's and manufacturer's name in the form and manner indicated on the Form of Proposal and in compliance with materials and equipment specified.

§ 6.4.2 In addition to the list furnished with the Form of Proposal, the successful Bidder thereafter known as the Contractor, may be requested within thirty (30) calendar days after award of contract to furnish to the Architect and Construction Manager (if utilized) a more detailed and complete list of the materials and equipment, together with the manufacturer's or maker's name, brand and/or catalogue number, and product data or illustration thereof.

§ 6.4.3 Prior to the award of contract, the Architect and Construction Manager (if utilized) will make a preliminary check of the lists included with the Form of Proposal and advise the Bidder and the Owner of the acceptance thereof, and of such other actions as may be necessary in order to meet the requirements of the contract specifications. Should it develop that any of the materials or equipment named in the list do not meet the requirements of the project specifications, the Bidder shall be required to offer to the Owner other materials or equipment in compliance with the specifications at no change in contract price. Preliminary review and acceptance of the above list shall not relieve the Contractor of furnishing equipment and materials in accordance with the specifications.

§ 6.4.4 Written approval shall be obtained from the Architect regarding any material/equipment, supplier, and manufacturer substitution. Substitutions are permitted in the following instance:

- .1 Failure to comply with contract requirements;
- .2 Failure of the supplier or manufacturer to meet delivery schedules or other conditions of the contract;
- .3 Written release by the supplier or manufacturer.

§ 6.4.5 The Owner reserves the right to reject the bid of any Bidder who fails to furnish the information required under Sections 6.3 and 6.4.

§ 6.5 Unit Prices

§ 6.5.1 Each Bidder shall submit as part of the Bid a list of unit prices as designated on the Form of Proposal.

§ 6.5.2 Unit prices are for changing or adjusting the scope or quantity of work from that indicated by the contract drawings and specifications.

§ 6.5.3 Unit prices shall include all labor, materials, equipment, appliances, supplies, overhead and profit.

§ 6.5.4 Only a single unit price per item shall be given and it shall apply for either more or less work than indicated or specified in the contract documents. In the event the contract is adjusted by unit prices, a change order shall be issued for the change and for the increased or decreased amount.

§ 6.5.5 Unit prices listed by the Bidder and accepted by the Owner shall apply to all phases of work whether the work is performed by the Bidder or by the Bidder's (Contractor's) subcontractors.

§ 6.5.6 For unit prices that apply to a lump sum Base Bid, the Owner reserves the right, prior to an award of contract, to negotiate, adjust and/or reject any price that is determined by the Architect, Construction Manager, or Owner to be excessive or unreasonable in amount.

§ 6.5.7 On line item total sum bids where Bidders are quoting firm unit prices for estimated quantities of units of work, the unit price is the Bid and is not subject to change, either by the Bidder or Owner. The Owner reserves the right to correct mathematical errors in extensions and additions by the Bidder. The Owner's corrected bid sum total shall take preference over the Bidder's computed bid sum total.

§ 6.6 Bid Division, Material Suppliers, and Purchase Orders

§ 6.6.1 This Section applies to projects with or without Bid Division (Multiple Prime Contracts), and those Projects that provide for direct purchase by the Owner of materials and equipment from Material Suppliers.

§ 6.6.2 For Projects with Bid Division: General Construction and Concrete, Masonry, Plumbing, HVAC and Electrical Contractors shall provide with their Bid a breakdown of major material items (excluding sales tax). This breakdown shall include description of the item, name of the manufacturer, name of the supplier, and the amount of the supplier's quote. The Owner will issue Purchase Orders direct to the suppliers for these materials. The following shall be provided:

- .1 Within four (4) days from the Bid Date, the low Bidder shall furnish to the Owner the list of material suppliers of the items listed on the bid breakdown, with authorization given to the Contractor to quote the materials listed and that the Supplier will furnish the listed materials to the Owner under the Owner's standard Purchase Order for the amount stated on the Contractor's bid breakdown. Failure of any Contractor to provide this written list of material suppliers with authorization will cause forfeiture of the bid security.
- .2 The Contractor shall also guarantee to the Owner that materials listed in the breakdown to be purchased directly by the Owner shall comply with requirements of the Contract Documents and that the quantity of such material is sufficient to complete the Bid Division. The Performance and Payment Bonds required of the Contractor shall be in the combined amount of the materials designated in its bid to be acquired by Purchase Order by the Owner and all remaining items of cost in the respective Bid Division. Contractor shall provide an invoice from the supplier to the Owner with Contractor's Application for Payment.
- .3 Material Suppliers will be paid the full amount of their invoices. Retainage that would otherwise be withheld from invoices submitted by and paid to a material supplier shall be withheld from the approved payment request of the Contractor. Refer to General Conditions for further requirements regarding retainage.
 - .a Lockers, Library, Kitchen, Shop, Technology, Science or other major equipment bid divisions shall provide with their Bid a breakout price for the material portions of the Bid (excluding sales tax). Award of contract will be based on the lump sum price of the accepted Bid that includes labor and materials. The Owner will issue a Purchase Order for the material and a contract for the labor and incidental materials. Retainage will be held on both the Purchase Order and the Contract in accordance with the General Conditions.
 - .b The language of the Bid Divisions is designed to outline and define the work in general to be included in a particular Bid Division and to prevent overlapping and conflicting requirements within other Bid Divisions. No Bidder shall use the omission of any item from this language as a basis for a claim for additional cost when such item is specified or indicated to be part of a complete and workable system.
 - .c It is the responsibility of the Bidder to determine which Bid Division or combination of Bid Divisions the Bidder desires to Bid.

§ 6.6.3 For Projects without Bid Division but with direct purchase by the Owner of materials and equipment from Material Suppliers, Contractors shall comply with paragraph 6.6.2 above as applicable to the Project. The Owner will issue Purchase Orders direct to the suppliers for these materials. Award of contract will be based on the lump sum price of the accepted bid that includes labor and materials. Retainage will be held on both the Purchase Orders and the Contract(s) in accordance with the General Conditions.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 Bond Requirements

§ 7.1.1 Unless stipulated otherwise in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Bonds shall be executed by a surety company authorized to do business in Kentucky.

§ 7.1.2 The cost of such bonds 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.

§ 7.2 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 be commenced prior thereto 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™-2010, Performance Bond and Payment Bond — KDE Version. Both bonds shall be written in the amount of the Contract Sum, being the total of the Base Bid, as described in Section 1.5 herein, and all Alternates accepted by the Owner.

§ 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 thereto a certified and current copy of the power of attorney.

ARTICLE 8 FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on AIA Document A101™-2007, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum — KDE Version, except for those Projects utilizing a Construction Manager the Agreement will be written on AIA Document A132™-2009, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Advisor Edition — KDE Version. Owner-Contractor Agreements shall be valid only after written notice by the Kentucky Department of Education that the proposed Agreements are approved.

ARTICLE 9 PUBLIC WORKS ACT [Reference: KRS 337.505 to 337.550]

§ 9.1 Labor Regulations

§ 9.1.1 Work shall be performed in compliance with applicable provisions of the Kentucky Prevailing Wage Act on Public Works Projects, KRS 337.505 through KRS 337.550.

§ 9.1.2 Prevailing wage rates, included with the Bidding Documents, shall be paid on this Project if required under Section 10.1.1. The stipulated wage rates represent prevailing minimum wage rates of pay allowable and shall not be construed to mean that higher rates may not have to be paid in order to secure labor.

§ 9.1.3 Any Bidder and/or subcontract bidder in violation of any wage or work act provision (KRS 337.510 to KRS 337.550) and under citation by the Kentucky Department of Labor is prohibited by KRS 337.990 from bidding on or working on any and all public works contracts either in their name or in the name of any other company, firm, or other entity in which there is vested interest. No Bid shall be submitted by a prime Bidder or sub-bidder in violation of KRS Chapter 337. The responsibility of the qualifications of the sub-contract Bidder is solely that of the prime Bidder. The rejection of the subcontract Bidder and resubmittal of a qualified subcontract Bidder shall be addressed per the provisions of these Instructions to Bidders relating to subcontract Bidders (subcontractors) and materials.

§ 9.2 Davis-Bacon Act Provisions

Projects funded with Federal Funds shall comply with the Davis-Bacon Act (Subchapter IV of Chapter 31 of the Title 40 of the United States Code). Where the amount received from federal revenue sharing is less than 25 percent of the estimated total construction cost of a public school project, state law and not the federal applies to the wage rate and the prevailing wage scale to be used for the project (OAG 74-329). Refer to Supplementary Conditions for direction regarding application of federal rates, if included in the bidding documents, to this project. In the event both state and federal wage rates apply, the higher of the two rates shall be used to determine labor costs.

ARTICLE 10 TAXES

§ 10.1 Kentucky Sales and/or Use Tax [Reference KRS 139.495(1)]

Bidders are informed that construction contracts of the Commonwealth of Kentucky and political subdivisions are not exempt from the provisions of the Kentucky Sales and/or Use Tax, unless provisions are clearly noted in the bidding documents for the direct purchase of certain materials and equipment by the Owner. Materials and equipment which are to be submitted for direct purchase are as noted by the Architect or Construction Manager in the Form of Proposal and shall be limited to forty (40) items with a minimum price of \$5,000 each. All other materials and equipment shall be included in the Contract Price and are subject to Kentucky Sales and/or Use Taxes. Current Sales and/or Use Tax shall be provided for and included in the bid amount as no adjustment will be permitted nor made after the receipt of bids.

§ 10.2 Federal Excise Tax

The Commonwealth of Kentucky and its political subdivisions are exempt from Federal Excise Tax.

ARTICLE 11 POST BID REVIEW AND MATERIAL SUBMITTAL

§ 11.1 Representative at Bid Opening

§ 11.1.1 Each prime Bidder shall have an authorized representative at the bid opening for submittal of the list of materials and equipment, and the post bid review which follows immediately after the opening and reading of bids.

§ 11.1.2 Following the opening of bids, the three (3) apparent low Bidders shall remain for a post-bid review, and shall submit a completed list of materials, equipment and suppliers within one (1) hour from the close of the reading of the bids. The list of materials and equipment shall be the listing contained in the Form of Proposal.

§ 11.1.3 The post bid review, open to all bidders, will be conducted jointly with representatives of the Architect and Construction Manager (if utilized), Owner, and apparent low Bidder. Preliminary review will be directed toward Bidder's qualifications, list of subcontractors, list of materials and equipment, and unit prices.

ARTICLE 12 EQUAL EMPLOYMENT AND NONDISCRIMINATION

The Commonwealth of Kentucky and its political subdivisions are committed to equal job opportunities on public contracts and prohibited from discrimination based on race, creed, color, sex, age, religion, or national origin.

ARTICLE 13 CONFLICT OF INTEREST, GRATUITIES AND KICKBACKS, USE OF CONFIDENTIAL INFORMATION [Reference KRS 45A.455]

Conflict of Interest, Gratuities, Kickbacks, and Use of Confidential Information as described in KRS 45A.455 are expressly prohibited. Penalties for any violation under this statute are located in KRS 45A.990.

ARTICLE 14 KENTUCKY FAIRNESS IN CONSTRUCTION ACT OF 2007 [Reference KRS 371.400 to 371.425]

Projects constructed for school districts in the Commonwealth of Kentucky are subject to provisions of the Kentucky Fairness in Construction Act of 2007 as it relates to the right to litigate, the right to delay damages against the Owner, the right to file a mechanic's lien, prompt payment by Owners, amount of retainage that can be withheld and other provisions of the Act.

ARTICLE 15 KENTUCKY PREFERENCE LAW [Reference KRS 45A.490 to 45A.494]

§ 15.1 Projects constructed for school districts in the Commonwealth of Kentucky are subject to provisions of the reciprocal preference for Kentucky Preference for Resident Bidders law, KRS 45A.490 to KRS 45A.494. Reciprocal preference shall be given by public agencies to resident bidders.

§ 15.2 The Kentucky Finance and Administration Cabinet shall maintain a list of states that give to or require a preference for their own resident bidders, including details of the preference given to such bidders, to be used by public agencies in determining resident bidder preferences. The cabinet shall also promulgate administrative regulations in accordance with KRS Chapter 13A establishing the procedure by which the preferences required by this Section shall be given.

§ 15.3 The reciprocal preference as described in KRS 45A.490 to KRS 45A.494 above shall be applied in accordance with Kentucky Administrative Regulation 200 KAR 5:400.

SECTION 002114 - SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

SCOPE

The following Supplemental Instructions to Bidders modify, change, delete from, or add to AIA Document A701-1997 "Instructions to Bidders", Kentucky Department of Education version, which is included herein as a part of the Contract Documents.

ARTICLE 3 - BIDDING DOCUMENTS

Add the following:

3.5 Bids will be received from Contractors for a total lump sum amount. All phases of the work shall be bid to and through the Contractor submitting the proposal.

3.6 As outlined in the Advertisement for Bids, no proposal shall be withdrawn for a period of sixty (60) days after the date of bid opening.

3.6.1 The successful bidder shall agree to hold the price for Bid Alternate No. 7 throughout the construction period. The Owner reserves the right to add this Bid Alternate to the Contract Agreement through Change Order.

ARTICLE 4 - BIDDING PROCEDURES

Modify Paragraph 4.2.1 as follows:

"Each Bid greater than \$100,000 shall be accompanied by bid security in the form of a Bond provided by a Surety company authorized to do business in the Commonwealth of Kentucky, or in the form of a certified check, and in an amount equal to at least five percent (5%) of the Base Bid amount, pledging that the Bidder will enter into a contract with the Owner on the terms stated in the Bid and will, if required, furnish bonds covering the faithful performance of the Contract and payments 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."

Add to Paragraph 4.3.1:

4.3.1.1 The bidder shall submit the following documents at the time of the bid opening:

Form of Proposal (KDE Document) - Submit one original.

Bid Security - Submit one original.

Form of Proposal Pages 2 & 3: List of Proposed Subcontractors - Submit one original.

4.3.1.2 The bidder shall submit the following documents within 1 hour of the bid opening:

Form of Proposal Pages 4 & 5: List of Proposed Suppliers and Manufacturers. An electronic copy is acceptable.

Form of Proposal Pages 6 & 7: Unit Prices. An electronic copy is acceptable.

4.3.1.3 The bidder shall submit the following documents within 24 hours of the bid opening:

Form of Proposal Section 004117: Coated Foam (Silicone) Roofing System Manufacturer's Certification

Form of Proposal Section 004118: Lightweight Insulating Concrete System Manufacturer's Certification - Submit completed form. An electronic copy is acceptable.

Form of Proposal Section 004125: Thermoplastic Membrane Roofing System Manufacturer's Certification - Submit completed form. An electronic copy is acceptable.

Form of Proposal Section 004129: Sprayed-In-Place Thermal Insulation (072100) Installer's Certification - Submit completed form. An electronic copy is acceptable.

Form of Proposal Section 004138: Finish Hardware Supplier's Certification - Submit completed form. An electronic copy is acceptable.

Form of Proposal Section 004140: Bidder's Qualifications - Submit one completed form within 24 hours of the bid opening. An electronic copy is acceptable.

4.3.1.4 The bidder shall submit the following documents within 48 hours of the bid opening:

Form of Proposal Section 004145: Identification of Minority and Women Subcontractors and Material Suppliers. An electronic copy is acceptable.

4.3.1.5 The apparent successful bidder shall submit the following documents within 4 days of the bid opening:

Form of Proposal Pages 8-10: Direct Material Purchases. An electronic copy is acceptable.

Purchase Orders: Purchase Order Forms should be submitted for each of the vendors listed on the Direct Material Purchases List. These Purchase Orders shall be submitted on the KDE forms provided, and shall be signed by each vendor. Electronic copies are acceptable.

Contractor shall be responsible for verifying that the materials listed on the Bid Form Direct Material Purchases List are in full compliance with the Supplier/Manufacturer List provided within two hours of the bid opening. Should an inconsistency become apparent, the Architect shall be able to select the manufacturer at no additional cost to the Owner.

Kentucky Department of Education Purchase Order Summary Form Section 004156. An electronic copy is acceptable.

W9 Forms: Submit W9 Forms for each vendor listed on the Direct Material Purchases List. Electronic copies are acceptable.

4.3.1.6 The apparent successful bidder may be asked to submit the following document within 24 hours of the bid opening:

Form of Proposal Section 004142: Bidder's Financial Statement - Submit one completed form within 24 hours of the bid opening if requested. An electronic copy is acceptable.

ARTICLE 6 - POST-BID INFORMATION

Add the following paragraphs:

6.3.5 In determining the qualifications of the bidder with regard to the bidder's experience, the bidder is expected to be able to show experience which reflects a similar or equivalent scale, scope and complexity to the project. Qualifying bidders should expect to be able to provide the following:

6.3.5.1 Project experience of at least five projects with a construction cost of over \$2,000,000 within the last five years;

6.3.5.2 Project experience of at least ten projects with a similar type of construction within the last five years, directly related to educational function, if possible.

ARTICLE 7 - PERFORMANCE BOND AND PAYMENT BOND

Revise the last sentence of Paragraph 7.2.2 to read:

Unless otherwise provided, both bonds shall be written in the amount of the sum of the contract amount plus the total amount of all purchase orders.

ARTICLE 9 - PUBLIC WORKS ACT (REFERENCE KRS 337.550)

Delete Article 9.1 Labor Regulations in its entirety. Kentucky prevailing wage rates will not apply to this project.

Delete Article 9.2 David-Bacon Act Provisions in its entirety. Federal prevailing wage rates will not apply to this project.

ARTICLE 10 - TAXES

Add the following paragraphs:

10.3. It is the Owner's intention to purchase major material items by direct Purchase Order. Refer to documents included in this Project Manual for information concerning this process.

10.3.1 As provided by KRS 139.310 and the Kentucky Administrative Regulation 103 KAR 26:070 (Contract Construction), each contractor is responsible for Kentucky Sales and Use Tax on all materials purchased and installed by the Contractor or a third party hired by the Contractor.

10.3.2 The sales and use tax is to be excluded on those material items purchased by the Owner directly from the material supplier as indicated on the Direct Material Purchases List. If a contractor lists his own company as the supplier for items listed on this list, the Owner will not issue a Purchase Order and exemption certificate. Accordingly, the sales and use tax on the materials used to fulfill the terms of the contract will be the liability of the contractor.

10.3.3 The material breakout amount indicated by a prospective bidder is considered final.

END OF SECTION

BG No. 19-262

Date: _____ To: (Owner) Burgin Independent Board of Education

Project Name: Burgin Independent School Addition & Renovation Bid Package: NA (GC)

City, County: Burgin, Mercer County, Kentucky

Name of Contractor: _____

Mailing Address: _____

Business Address: _____ Telephone: _____

Having carefully examined the Instructions to Bidders, Contract Agreement, General Conditions, Supplemental Conditions, Specifications, and Drawings, for the above referenced project, the undersigned bidder proposes to furnish all labor, materials, equipment, tools, supplies, and temporary devices required to complete the work in accordance with the contract documents and any addenda listed below for the price stated herein.

Addendum _____ (Insert the addendum numbers received or the word "none" if no addendum received.)

BASE BID: For the construction required to complete the work, in accordance with the contract documents, I/We submit the following lump sum price of:

_____ Use Figures

_____ Dollars & _____ Cents

Use Words

Use Words

ALTERNATE BIDS: (If applicable and denoted in the Bidding Documents)

For omission from or addition to those items, services, or construction specified in Bidding Documents by alternate number, the following lump sum price will be added or deducted from the base bid.

Alternate Bid No.	Alternate Description	+ (Add to the Base Bid)	- (Deduct from the Base Bid)	No Cost Change from the Base Bid
Alt. Bid No. 1	Basement Renovation			<input type="checkbox"/>
Alt. Bid No. 2	FMD Classroom & First Aid Office			<input type="checkbox"/>
Alt. Bid No. 3	Media Center Circulation Desk			<input type="checkbox"/>
Alt. Bid No. 4	Parent Loop Canopy #1			<input type="checkbox"/>
Alt. Bid No. 5	Parent Loop Canopy #2			<input type="checkbox"/>
Alt. Bid No. 6	Owner's Preferred Hardware Manufacturers			<input type="checkbox"/>
Alt. Bid No. 7	Main Entry Drive			<input type="checkbox"/>
Alt. Bid No. 8				<input type="checkbox"/>
Alt. Bid No. 9				<input type="checkbox"/>
Alt. Bid No. 10				<input type="checkbox"/>

A maximum of 10 Alternate Bids will be acceptable with each Base Bid. Do not add supplemental sheets for Alternate Bids to this document.

LIST OF PROPOSED SUBCONTRACTORS:

List on the lines below each major branch of work and the subcontractor involved with that portion of work. If the branch of work is to be done by the Contractor, so indicate.

The listing of more than one subcontractor in a work category shall invalidate the bid.

The listing of the bidder as the subcontractor for a work category certifies that the bidder has in current employment, skilled staff and necessary equipment to complete that category. The architect/engineer will evaluate the ability of all listed subcontractors to complete the work and notify the owner. Listing of the bidder as the subcontractor may invalidate the bid should the architect's review indicate bidder does not have skilled staff and equipment to complete the work category at the time the bid was submitted.

A maximum of 40 subcontractors will be acceptable with each bid. Do not add supplemental sheets for subcontractors to this document.

The bidder shall submit the list of subcontractors with the bid.

	<u>BRANCH OF WORK</u> (to be filled out by the Architect)	<u>SUBCONTRACTOR</u> (to be filled out by the contractor)
1.	Structural Concrete – Footings, Stem Walls & Slabs	
2.	Structural Steel / Joists / Decking	
3.	Underslab Vapor Barrier	
4.	Masonry & Stone	
5.	VCT	
6.	Ceramic Tile	
7.	Aluminum Storefront & Glazing	
8.	Door Hardware	
9.	Painting	
10.	PVC Roofing System	
11.	Coated Foam Roofing	
12.	Lightweight Insulating Concrete	
13.	Sprayed on Thermal Insulation	
14.	Gypsum Board Assemblies	
15.	Food Services Equipment	
16.	Electrical	
17.	Electrical – Low Voltage	

	<u>BRANCH OF WORK</u> (to be filled out by the Architect)	<u>SUBCONTRACTOR</u> (to be filled out by the contractor)
18.	Fire Alarm	
19.	HVAC	
20.	Sheet Metal	
21.	Temperature Controls	
22.	Plumbing	
23.	Insulation	
24.	Earthwork	
25.	Storm Drainage	
26.	Asphalt Pavement	
27.	Concrete Pavement	
28.	Lawn and Landscaping	
29.	Dumpster Enclosure	
30.		
31.		
32.		
33.		
34.		
35.		
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39.		
40.		

LIST OF PROPOSED SUPPLIERS AND MANUFACTURERS:

List on the lines below each major material category for this project and the suppliers and manufacturers involved with that portion of work. Listing the supplier below means the Contractor is acknowledging authorization from the Supplier to include the Supplier in this bid.

The listing of more than one supplier or manufacturer in a material category shall invalidate the bid.

A maximum of 40 suppliers and manufacturers will be acceptable with each bid. Do not add supplemental sheets for suppliers to this document.

The bidder shall submit the list of suppliers and manufacturers within one (1) hour of the bid.

	<u>MATERIAL DESCRIPTION BY SPECIFICATION DIVISION AND CATEGORY</u> (to be filled out by the Architect or Contractor)	<u>SUPPLIER</u> (to be filled out by the Contractor)	<u>MANUFACTURER</u> (to be filled out by the Contractor)
1.	Concrete - Structural		
2.	Concrete Unit Masonry		
3.	Structural Steel		
4.	Steel Joist		
5.	Steel Decking		
6.	VCT		
7.	Ceramic Wall Tile (All Types)		
8.	Cultured Stone Veneer		
9.	Printed Wall Graphics		
10.	Aluminum Storefront		
11.	Premanufactured Canopy		
12.	Ceiling Tile & Grid		
13.	Paint		
14.	Face Brick		
15.	Sprayed On Thermal Insulation		
16.	Coated Foam Roofing		
17.	Thermoplastic Membrane		
18.	Food Service Equipment (attach list)		

	<u>MATERIAL DESCRIPTION BY SPECIFICATION DIVISION AND CATEGORY</u> (to be filled out by the Architect or Contractor)	<u>SUPPLIER</u> (to be filled out by the Contractor)	<u>MANUFACTURER</u> (to be filled out by the Contractor)
19.	Disconnect Switches		
20.	Surge Protector (T.V.S.S.)		
21.	Emergency Manual Transfer Switch		
22.	Telephone / Data Equipment		
23.	AV Door Intercom		
24.	Grounding System		
25.	Panelboards and Switchgear		
26.	Fire Alarm System		
27.	Paging / Intercom System		
28.	Security / Intrusion Detection System		
29.	Cafeteria Sound System		
30.	Lighting Fixture Types (attach list)		
31.	Rooftop Packaged HVAC Equipment		
32.	Split Systems		
33.	Exhaust Fans		
34.	Plumbing Fixtures		
35.	Hot Water Heater		
36.	Register, Grilles, Diffusers		
37.	Asphalt		
38.	Concrete – Site		
39.	Storm Drainage Piping		
40.	Storm Drainage Structures		

UNIT PRICES:

Indicate on the lines below those unit prices to determine any adjustment to the contract price due to changes in work or extra work performed under this contract. The unit prices shall include the furnishing of all labor and materials, cost of all items, and overhead and profit for the Contractor, as well as any subcontractor involved. These unit prices shall be listed in units of work.

A maximum of 40 unit prices will be acceptable with each bid. Do not add supplemental sheets for unit pricing to this document.

The bidder shall submit the list of unit prices within one (1) hour of the bid.

	<u>WORK</u> (to be filled out by the Architect)	<u>PRICE / UNIT</u> (to be filled out by the Contractor)	<u>UNIT</u> (to be filled out by the Contractor)
1	Reinforced concrete in-place footings (earth forms and formed edges)		/CY
2	Reinforcing steel in-place		/TON
3	4-inch granular sub base with vapor barrier		/SF
4	Footing, stem wall, and reinforcing		/LF
5	Structural Steel (W-, HSS- shapes), Erected		/LB
6	Steel joists, erected		/LB
7	Misc structural steel (angles, embed plates, kickers, etc.)		/TON
8	1-1/2 inch, Type B, Steel roof deck, galvanized, erected		/SF
9	¾-inch dia. Expansion anchor, installed		/EA
10	Underslab Vapor Barrier		/SF
11	2 x 4 wood blocking demolition / replacement		/LF
12	2 x 6 wood blocking demolition / replacement		/LF
13	2 x 8 wood blocking demolition / replacement		/LF
14	VCT, installed		/SF
15	Ceramic Wall Tile, installed		/SF
16	Ceramic Floor Tile, installed		/SF
17	Wall Type 2A, 10' Tall		/SF
18	1-1/2 ton Console Heat pump		/EA
19	10 Feet of insulated 1" HPR/HPS piping with hose kit and accessories to serve heat pump		/EA

	<u>WORK</u> (to be filled out by the Architect)	<u>PRICE / UNIT</u> (to be filled out by the Contractor)	<u>UNIT</u> (to be filled out by the Contractor)
20	5/8" ACR refrigerant piping with insulation and hangers		/LF
21	4" sanitary sewer piping, including excavation and backfill		/LF
22	1" Domestic Hot Water with hangers and insulation		/LF
23	1" Domestic Cold Water with hangers and insulation		/LF
24	Supply Air Diffuser S-3 with 15 feet of branch ducts		/EA
25	Voice/Data outlet with 200' of conduit/wiring and terminations		/EA
26	Duplex Convenience Outlet Installed Complete with 50 ft. of 3/4" Conduit and 2#12, 1#12 Ground		/EA
27	Duplex Convenience Outlet Installed Complete with 30 ft. of 3/4" Conduit plus 20 ft. of wiremold and 2#12, 1#12 Ground		/EA
28	Fire alarm A/V unit with 25' of conduit/wiring and connection to circuit		/EA
29	Fire alarm Manuel Pull Station with 25' of conduit/wiring and connection to circuit		/EA
30	Fire Alarm Duct Smoke Detector Complete with 50 Ft. of 3/4" Conduit and Conductors, connection to circuit		/EA
31	Exit light with 25' of conduit/wiring and connection to circuit		/EA
32	Trench Earth Excavation and Off Site Disposal		/CY
33	Trench Rock Excavation and Off-Site Disposal		/CY
34	DGA, Installed and Compacted		/CY
35	Demolish Existing Asphalt Pavement and Base and Dispose of Off Site (Alternate No. 7)		/SY
36	Asphalt Pavement		/SY
37	12" PE Pipe installed with a 3-foot bury		/LF
38	Mass Earth Excavation and Off-Site Disposal		/CY
39			
40			

DIRECT MATERIAL PURCHASES:

Indicate on the lines below those materials to be purchased directly by the Owner with a Purchase Order to be issued by the Owner to the individual suppliers. The value of the direct Purchase Order cannot be less than \$5,000. Following the approval of bids, the Contractor shall formalize this list by completing and submitting the electronic Purchase Order Summary Form provided by KDE. Listing the supplier below means the Contractor is acknowledging authorization from the Supplier to include the Supplier in this bid.

A maximum of 50 POs will be acceptable with each bid. Do not add supplemental sheets for additional POs to this document.

The bidder shall submit the list of Purchase Orders within four (4) days of the bid.

	<u>SUPPLIER</u> (to be filled out by the Contractor)	<u>PURCHASE ORDER DESCRIPTION</u> (to be filled out by the Contractor)	<u>PURCHASE ORDER AMT.</u> (to be filled out by the Contractor)
1.			
2.			
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18.			
19.			

	<u>SUPPLIER</u> (to be filled out by the Contractor)	<u>PURCHASE ORDER DESCRIPTION</u> (to be filled out by the Contractor)	<u>PURCHASE ORDER AMT.</u> (to be filled out by the Contractor)
20.			
21.			
22.			
23.			
24.			
25.			
26.			
27.			
28.			
29.			
30.			
31.			
32.			
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39.			
40.			
41.			
42.			
43.			
44.			

	<u>SUPPLIER</u> (to be filled out by the Contractor)	<u>PURCHASE ORDER DESCRIPTION</u> (to be filled out by the Contractor)	<u>PURCHASE ORDER AMT.</u> (to be filled out by the Contractor)
45.			
46.			
47.			
48.			
49.			
50.			

TIME LIMIT FOR EXECUTION OF CONTRACT DOCUMENTS:

In the event that a bidder's proposal is accepted by the Owner and such bidder should fail to execute the contract within ten (10) consecutive days from the date of notification of the awarding of the contract, the Owner, at his option, may determine that the awardee has abandoned the contract. The bidder's proposal shall then become null and void, and the bid bond or certified check which accompanied it shall be forfeited to and become the property of the Owner as liquidated damages for failure to execute the contract.

The bidder hereby agrees that failure to submit herein above all required information and/or prices can cause disqualification of this proposal.

Submitted by:

NAME OF CONTRACTOR / BIDDER:

AUTHORIZED

REPRESENTATIVE'S

NAME:

Signature

AUTHORIZED

REPRESENTATIVE'S

NAME

(printed):

AUTHORIZED REPRESENTATIVE'S TITLE:

NOTICE: Bid security must accompany this proposal if the Base Bid price is greater than of \$25,000.

This form shall not be modified.

SECTION 004117 - COATED FOAM (SILICONE) ROOFING SYSTEM MANUFACTURER'S CERTIFICATION

PART 1 GENERAL

COATED FOAM (SILICONE) ROOFING SYSTEM MANUFACTURER'S CERTIFICATION

- A. This certification must be completed and submitted as outlined in the Supplemental Instructions to Bidders. Failure to submit this completed certification may be cause for rejection of the bidder's proposal.
- B.
- C. Date Submitted: _____
- D.
- E. Name & Address of Roofing Systems Manufacturer:
- F. _____
- G. _____
- H. _____
- I.
- J. Name & Address of Roofing Systems Installer:
- K. _____
- L. _____
- M. _____
- N.
- O. I certify that _____ (Name of Roofing Installer) is an approved applicator of our roofing systems, and upon completion of this project, providing all terms and conditions for the manufacturer's guarantee are met, we will provide a no-dollar-limit 20-year manufacturer's guarantee for the roof.
- P.
- Q.
- R. Signed: _____ Title: _____
- S. (Roofing Systems Manufacturer)
- T.
- U.
1. SPFA Accreditation-
- Provide proof of SPFA accreditation or provide proof of registration in SPFA program and attach to this form.
- V.

END OF SECTION

SECTION 004118 - LIGHTWEIGHT INSULATING CONCRETE SYSTEM MANUFACTURER'S CERTIFICATION

PART 1 GENERAL

LIGHTWEIGHT INSULATING CONCRETE SYSTEM MANUFACTURER'S CERTIFICATION

This certification must be completed and submitted as outlined in the Supplemental Instructions to Bidders. Failure to submit this completed certification may be cause for rejection of the bidder's proposal.

Date Submitted: _____

Name & Address of Lightweight Insulating Concrete Systems Manufacturer:

Name & Address of Lightweight Insulating Concrete Systems Installer:

I certify that _____ (Name of Lightweight Insulating Concrete Installer) is an approved, registered applicator of our lightweight insulating concrete systems. Upon completion of this project, providing all terms and conditions for the lightweight insulating concrete manufacturer's guarantee are met, we will provide a lightweight insulating concrete system that complies with, and will be a part of, the Special Project Full System Roof Warranty; single source, 20 year, No Dollar Limit (NDL) warranty as described in the roofing membrane specification, and signed by the roof membrane manufacturer.

Signed: _____ Title: _____

(Lightweight Insulating Concrete Systems Manufacturer)

SECTION 004125 - THERMOPLASTIC MEMBRANE ROOFING SYSTEM MANUFACTURER'S CERTIFICATION**PART 1 GENERAL****THERMOPLASTIC MEMBRANE ROOFING SYSTEM MANUFACTURER'S CERTIFICATION**

This certification must be completed and submitted as outlined in the Supplemental Instructions to Bidders. Failure to submit this completed certification may be cause for rejection of the bidder's proposal.

Date Submitted: _____

Name & Address of Roofing Systems Manufacturer:

Name & Address of Roofing Systems Installer:

I certify that _____ (Name of Roofing Installer) is an approved applicator of our roofing systems, and upon completion of this project, providing all terms and conditions for the manufacturer's guarantee are met, we will provide a no-dollar-limit 20-year manufacturer's guarantee for the roof.

Signed: _____ Title: _____

(Roofing Systems Manufacturer)

END OF SECTION

SECTION 004129 - SPRAYED-IN-PLACE THERMAL INSULATION (072100) INSTALLER'S CERTIFICATION

PART 1 GENERAL

SPRAYED-IN-PLACE THERMAL INSULATION (072100) INSTALLER'S CERTIFICATION

This certification must be completed and submitted as outlined in the Supplemental Instructions to Bidders. Failure to submit this completed certification may be cause for rejection of the bidder's proposal. Upon submittal of this form RossTarrant will verify from the ABAA website (www.airbarrier.org) the listed installers current and valid certification, at the time of bid, with the ABAA. Installers listed without current and valid ABAA certification will be rejected.

Date Submitted: _____

Name & Address of Sprayed-In-Place Thermal Insulation Installer:

I certify that _____ (Name of Sprayed-In-Place Thermal Insulation Installer) has achieved ABAA Accreditation for sprayed-in-place thermal insulation installation, and is a member with current and valid ABAA Certification.

ABAA Accreditation Number _____

I certify that _____ (Name of Sprayed-In-Place Thermal Insulation Subcontractor) installers have achieved ABAA Certification for sprayed-in-place thermal insulation installation, and is a member with current and valid ABAA Certification.

ABAA Certification Numbers _____

Signed: _____ Title: _____

END OF SECTION

SECTION 004138 - FINISH HARDWARE SUPPLIER'S CERTIFICATION**PART 1 GENERAL****FINISH HARDWARE SUPPLIER'S CERTIFICATION**

This certification must be completed and submitted as outlined in the Supplemental Instructions to Bidders. Failure to submit this completed certification may be cause for rejection of the bidder's proposal.

Date Submitted: _____

Name & Address of Finish Hardware Supplier:

I certify that _____ (print or type name of employee) is a current member of the Door and Hardware Institute (DHI), certified by DHI as an Architectural Hardware Consultant. I further certify that this person has fulfilled the educational experience requirements of the DHI's Continuing Education Program for Consultants and is authorized by DHI to use the Official Seal.

All hardware for this project shall be scheduled and furnished by or under direct supervision of the person listed above, who is also a full-time employee of the firm listed above.

DHI Membership Number _____

DHI Official Seal Valid Through _____ (Date)

Signed: _____ Title: _____

END OF SECTION

SECTION 004140 - BIDDER'S QUALIFICATION
PART 1 GENERAL
BIDDER'S QUALIFICATION

Company Name: _____

Mailing Address:

Shipping Address:

Telephone: _____

Fax Number: _____

Email (if applicable): _____

Projects completed within the last five years with a construction cost of \$2,000,000 or greater:

_____ \$ _____

Owner: _____ Telephone: _____

_____ \$ _____

Owner: _____ Telephone: _____

_____ \$ _____

Owner: _____ Telephone: _____

_____ \$ _____

Owner: _____ Telephone: _____

_____ \$ _____

Owner: _____ Telephone: _____

Projects completed within the last five (5) years with a similar type of construction, directly related to educational function, if possible:

_____ \$ _____
 Owner: _____ Telephone: _____
 _____ \$ _____
 Owner: _____ Telephone: _____
 _____ \$ _____
 Owner: _____ Telephone: _____
 _____ \$ _____
 Owner: _____ Telephone: _____
 _____ \$ _____
 Owner: _____ Telephone: _____

We now have the following jobs under contract and bonded:

_____ \$ _____
 _____ \$ _____
 _____ \$ _____
 _____ \$ _____
 _____ \$ _____
 _____ \$ _____
 _____ \$ _____
 _____ \$ _____

Personnel: The superintendent on site for the project is scheduled to be:

_____.

The project manager in the office for the project is scheduled to be:

_____.

END OF SECTION

SECTION 004142 - BIDDER'S FINANCIAL STATEMENT**PART 1 GENERAL****BIDDER'S QUALIFICATIONS**

The Bidder's Qualifications together with the attached affidavit are required by the conditions of the Invitation to be executed and submitted within 24 hours as part of the Proposal if requested.

A permanent place of business is maintained at: _____

The following construction Plant and Equipment will be made available for use of this Contract:

Adequate finances are possessed as indicated: (Note: A prepared Company certified financial statement may be substituted in lieu of the following.)

Conditions at close of business _____, 20_____

ASSETS

Cash in bank and on hand \$ _____

Receivable Notes, Accounts, Money Earned, Interest, Guarantee Loan \$ _____

Stocks and Bonds \$ _____

Real Estate, Furniture and Fixtures, and Materials \$ _____

Equipment (After depreciation) \$ _____

Other Assets (Name) \$ _____

Total Assets: \$ _____

LIABILITIES

Payable Notes, Accounts, Interest, Loans \$ _____

Real Estate Encumbrances \$ _____

Other Encumbrances (Name) \$ _____

Reserves \$ _____

Capital Stock Paid Up (All Classes) \$ _____

Surplus - Net Worth \$ _____

In addition to the foregoing, a complete and detailed certified financial statement will be furnished if required.

In the event the Contract is awarded the undersigned, surety bonds will be furnished by:

(Surety Company)

Signed: _____

(Representative of Surety Company)

Agent: _____

Address: _____

END OF SECTION

SECTION 004145 - IDENTIFICATION OF MINORITY AND WOMEN SUBCONTRACTORS AND MATERIAL SUPPLIERS

PART 1 GENERAL

1.01 SUBMITTAL DATA

- A. The utilization of minority and women subcontractors and material suppliers is encouraged and supported, whenever possible, on public school projects. The bidder and contractor should make full efforts to locate minority- and women-owned business persons.
- B. The apparent successful bidder shall submit this form, along with required attachments, within 48 hours of the Bid Opening.
- C. For assistance in identifying subcontractors and material suppliers, bidders may contact the Kentucky Office for Minority Business Enterprises, mwbe.ky.gov, Phone (502) 564-8099 or the Office of Equal Opportunity, Contract Compliance, finance.ky.gov, Phone (502) 564-2874.
- D. Minority and women subcontractors and material suppliers to hold subcontracts on this project:

Company Name	City/State	Certified MWBE
		Yes/No
		Yes/No
		Yes/No
		Yes/No
		Yes/No
		Yes/No
		Yes/No
		Yes/No
		Yes/No
		Yes/No
		Yes/No

- E. Bidder must attach to this Form of Proposal a list of all minority and women subcontractors and material suppliers contacted in order to prepare a bid.

END OF SECTION

SECTION 004155 - PURCHASE ORDER**PART 1 GENERAL****1.01 OWNER'S PURCHASE ORDER**

- A. Following approval of the Bid Breakout List on the Form of Proposal, the Contractor shall provide copies of Purchase Orders on the attached Kentucky Department of Education Purchase Order Form, or may also provide the same complete information in another format agreed to by the Architect. This Purchase Order shall be governed by the Terms and Conditions of the Purchase Order, also attached.
1. An electronic copy of this form may be requested from the Architect.
 2. Once the Architect has received complete information, the data will be entered into the Kentucky Department of Education FACPAC system, and an actual Purchase Order form will be generated for the Contractor to use in getting vendor signatures. This KDE Purchase Order form includes the same information on the form attached to this section.

END OF SECTION

Board of Education: _____

BG# _____

District PO Number: _____

(THIS PURCHASE ORDER NUMBER MUST APPEAR ON ALL PACKAGES, INVOICES AND SHIPPING PAPERS)

Project Name: _____

Kentucky Sales Tax
Exemption Number: _____

Bid Package No.: _____

Date of Order: _____

Specification Section:
(IF APPLICABLE) _____

Vendor Name: _____

Material Description
/ Category: _____

Vendor Address: _____

Facility Name: _____

Requested By: _____

Vendor Phone: _____

AUTHORIZATION

THE ATTACHED TERMS & CONDITIONS ARE HEREBY
ACKNOWLEDGED AND MADE PART OF THIS ORDER.

Vendor Email: _____

Bill To: _____

Owner Authorized Name: _____

Bill to Address: _____

Owner Authorized Signature: _____

Owner Authorization Date: _____

Ship To: _____

Ship to Address: _____

Vendor Authorized Name: _____

Vendor Authorized Signature: _____

Attention of: _____

Vendor Authorization Date: _____

The following project contacts must be notified 48 hours in advance of delivery to jobsite.

Contact Name	Phone Number	Contact Name	Phone Number

Furnish the necessary materials to complete the following bid package(s) / specification section(s) in its entirety. All materials shall be in accordance with the requirements of the Contract.

ITEM NO.	QUANTITY	ITEM DESCRIPTION	UNIT PRICE	TOTAL
		Bid Package(s):	L. S.	
		Specification Section(s):	L. S.	
		SPECIMEN COPY ONLY		

TERMS & CONDITIONS OF PURCHASE ORDER

1. Drawings, catalogs, cut sheets, or samples shall be submitted for approval.
2. All invoices shall be sent to the contractor/subcontractor designated on the purchase order for approval. No invoices shall be sent directly to the Board of Education (Owner) for payment.
3. All invoices shall reference the purchase order number.
4. No change in, modification of, or revision of this order shall be valid unless in writing and signed by the Owner.
5. Vendor agrees to observe and comply with all applicable federal, state and locals laws, rules, ordinances and regulations in performance of this order.
6. Vendor shall not assign this order or any right hereunder without first having obtained the written consent of the Owner.
7. Deliveries are to be made in accordance with the Owner's schedule, as directed by the General Contractor (GC), Construction Manager (CM) or Qualified Provider (QP).
8. The Owner may cancel this purchase order in whole or in part in the event that the vendor fails or refuses to deliver any of the items purchased, within the time provided, or otherwise violates any of the conditions of this purchase order, or if it becomes evident that the vendor is not providing materials in accordance with the specifications or with such diligence as to permit delivery on or before the delivery date.
9. The vendor agrees to deliver the items to the supplied hereunder free and clear of all liens, encumbrances and claims.
10. If any of the goods covered under this purchase order are found to be defective in material or workmanship, or otherwise not in conformity with the requirements of this order, the Owner, in addition to the other rights which it may have under warranty or otherwise, shall have the right to reject the same or require that such articles or materials be corrected or replaced promptly with satisfactory materials or workmanship.
11. By acknowledging receipt of this order, by performing the designated work or any portion thereof, or by shipping the designated goods, the vendor agrees to the terms and conditions outlined.
12. This purchase order shall be governed in all respects by the laws of the Commonwealth of Kentucky.
13. In the event the quantities of materials supplied via this purchase order are insufficient to complete the work, the GC, CM or QP shall, at no expense to the Owner, provide such materials as necessary to complete the work.
14. In the event that at the completion of the work the vendor has not submitted invoices totaling the value of this purchase order, this purchase order shall be considered complete and closed.

SECTION 004156 - KENTUCKY DEPARTMENT OF EDUCATION PURCHASE ORDER SUMMARY**PART 1 GENERAL****1.01 KENTUCKY DEPARTMENT OF EDUCATION PURCHASE ORDER SUMMARY FORM**

- A. The Contractor shall provide a signed Kentucky Department of Education Purchase Order Summary Form within four (4) calendar days from the date of the bid opening.

An electronic copy of this form may be requested from the Architect in Excel format.

KENTUCKY DEPARTMENT OF EDUCATION PURCHASE ORDER SUMMARY		004156 - 1
---------------------------------------------------------------	--	------------

February 8, 2012

**Date
Submitted**

February 8, 2012

**Date
Submitted**

All signatures below are required based upon the appropriate PO certification statement phase. (Initial / Final)

**Kentucky Department of Education
District Facilities Branch**

Purchase Order Summary Form

702 KAR 4:160

February 8, 2012

BG# 19-262

District Name Burgin Independent Board of Education

District Code _____

Facility Name Burgin Ind. School Addition & Renovation

Facility Code _____

☒ **Initial Statement**

☐ **Chang Order Stmt.** **Date Submitted**

☐ **Final Statement** _____

PO Number	Bid. Div.	Specification Section No.	Purchase Order Description	Vendor Name	Initial PO Amount	Change Order Amt. To Date	Reason For Change	Final PO Amount
-----------	-----------	---------------------------	----------------------------	-------------	-------------------	---------------------------	-------------------	-----------------

Initial Certification Statement

I certify that to the best of my knowledge, information and belief, all materials listed within this document will be purchased in accordance with 103 KAR 26:070.

Owner's Signature Date

General Contractor's Signature Date

Architect's Signature Date

Final Certification Statement

I certify that to the best of my knowledge, information and belief, all materials listed within this document have been purchased in accordance with KRS 103 KAR 26:070.

Owner's Signature Date

General Contractor's Signature Date

Architect's Signature Date

SECTION 005200 - CONTRACT AGREEMENT FORM

FORM OF GENERAL CONDITIONS

- 1.01 Refer to Kentucky Department of Education Version of AIA Document A101-2007, Standard Form of Agreement Between Owner and Contractor.

END OF SECTION

Kentucky Department of Education Version of **AIA** Document A101™ – 2007

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



This version of AIA Document A101™–2007 is modified by the Kentucky Department of Education. Publication of this version of AIA Document A101–2007 does not imply the American Institute of Architects' endorsement of any modification by the Kentucky Department of Education. A comparative version of AIA Document A101–2007 showing additions and deletions by the Kentucky Department of Education is available for review on the Kentucky Department of Education Web site.

Cite this document as "AIA Document A101™–2007, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum — KDE Version," or "AIA Document A101™–2007 — KDE Version."

Kentucky Department of Education Version of AIA® Document A101 – 2007

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 _____
(In words, indicate day, month and year.)

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

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

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

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

The Owner and Contractor agree as follows.



This version of AIA Document A101–2007 is modified by the Kentucky Department of Education. Publication of this version of AIA Document A101 does not imply the American Institute of Architects' endorsement of any modification by the Kentucky Department of Education. A comparative version of AIA Document A101–2007 showing additions and deletions by the Kentucky Department of Education is available for review on the Kentucky Department of Education Web site.

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

Init.

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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
- 10 INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Owner direct Purchase Orders, 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 the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

(Insert the date of commencement if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner's time requirement shall be as follows:

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

Init.

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than () days from the date of commencement, or as follows:
(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work. Either list requirements for earlier Substantial Completion here or refer to an exhibit attached to this Agreement.)

Portion of Work

Substantial Completion Date

, subject to adjustments of this Contract Time as provided in the Contract Documents.

Liquidated Damages: As actual damages for delay in completion of Work are impossible to determine, the Contractor and his Surety shall be liable for and shall pay to the Owner the sum of

(\$), not as a penalty, but as fixed, agreed and liquidated damages for each calendar day of delay until the Contract Work is substantially completed as defined in the General Conditions of the Contract for Construction. The Owner shall have the right to deduct liquidated damages from money in hand otherwise due, or to become due, to the Contractor, or to sue and recover compensation for damages for failure to substantially complete the Work within the time stipulated herein. Said liquidated damages shall cease to accrue from the date of Substantial Completion.

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.

(List the base bid amount, sum of accepted alternates, total construction cost (the sum of base bid amount plus sum of accepted alternates), sum of Owner's direct Purchase Orders. The Contract Sum shall equal the sum of Total Construction Cost, less Owner direct Purchase Orders. Either list this information here or refer to an exhibit attached to this Agreement.)

	Amount
Base Bid	\$
Sum of Accepted Alternates	\$
Total Construction Cost (the sum of base bid amount plus sum of accepted alternates)	\$
Sum of Owner's direct Purchase Orders	\$
Contract Sum (total construction cost less Owner direct Purchase Orders)	\$

Init.

§ 4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires. Either list alternates here or refer to an exhibit attached to this Agreement.)

Number	Item Description	Amount
Total of Alternates		

§ 4.3 Unit prices, if any:

(Identify and state the unit price; state quantity limitations, if any, to which the unit price will be applicable. Either list unit prices here or refer to an exhibit attached to this Agreement.)

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

§ 4.4 Allowances included in the Contract Sum, if any:

(Identify allowance and state exclusions, if any, from the allowance price. Either list allowances here or refer to an exhibit attached to this Agreement.)

Item	Price
------	-------

Init.

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 certified amount 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 shall be made by the Owner not later than _____ (_____) days after the Architect receives the Application for Payment.

State law (KRS 371.405) requires the Owner to pay undisputed Applications for Payment within forty-five (45) business days following receipt of the invoices. If the Owner fails to pay the Contractor within forty-five (45) business days following receipt of an undisputed Application for Payment, state law requires the Owner shall pay interest to the Contractor beginning on the forty-sixth business day after receipt of the Application for Payment, computed at the rate required by state law.

§ 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, unless objected to by the Architect, 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 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- .1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of _____ percent (_____ %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™-2007, General Conditions of the Contract for Construction — KDE Version;
- .2 Add 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), less retainage of _____ percent (_____ %);
- .3 Subtract the aggregate of previous payments made by the Owner; and
- .4 Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201-2007 — KDE Version.

§ 5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

- .1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and
(Section 9.8.5 of AIA Document A201-2007 — KDE Version requires release of applicable retainage upon Substantial Completion of Work with consent of surety, if any.)

- .2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201-2007 — KDE Version.

§ 5.1.8 Reduction or limitation of retainage, if any, shall be as follows:

When Owner direct Purchase Orders are used, retainage that would otherwise be held on materials and equipment shall transfer to the Contractor, and the material suppliers will be paid the full amount of their invoices. The Owner shall retain ten percent (10%) from each Application for Payment, and an amount equal to ten percent (10%) of approved Purchase Order payments, up to fifty percent (50%) completion of the Work, then provided the Work is on schedule and satisfactory, and upon written request of the Contractor together with consent of surety and the recommendation of the Architect, the Owner shall approve a reduction in Retainage to five percent (5%) of the current Contract Sum plus Purchase Orders. No part of the five percent (5%) retainage shall be paid until after Substantial Completion of the Work, as defined in the General Conditions of the Contract for Construction. After Substantial Completion, if reasons for reduction in retainage are certified in writing by the Architect, a reduction to a lump sum amount less than the five percent (5%) retainage may be approved by the Owner when deemed reasonable. The minimum lump sum retainage shall be twice the estimated cost to correct deficient or incomplete work.

§ 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 Section 12.2.2 of AIA Document A201-2007 — KDE Version, and to satisfy other requirements, if any, which extend beyond final payment;
- .2 a final Certificate for Payment has been issued by the Architect; and
- .3 the Contractor provides the Owner with affidavits that all payrolls, bills for materials, supplies and equipment, and other indebtedness connected with the Work have been paid or otherwise satisfied, and with Consent of Surety for final payment.

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 INITIAL DECISION MAKER

The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201-2007 — KDE Version, unless the parties appoint below another individual, not a party to this Agreement, to serve as 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.)

Init.

§ 6.2 BINDING DISPUTE RESOLUTION

For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A201–2007 — KDE Version, the method of binding dispute resolution shall be as follows:

(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, 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.)

- ☐ Arbitration pursuant to Section 15.4 of AIA Document A201–2007 — KDE Version
- ☐ Litigation in a court of competent jurisdiction where the Project is located
- ☐ Other: *(Specify)*

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 A201–2007 — KDE Version.

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2007 — KDE Version.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2007 — KDE Version or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at such rate required by state law, or in the absence of law, at the legal rate prevailing at the time and place where the Project is located.
(Insert rate of interest agreed upon, if any.)

§ 8.3 The Owner's representative:
(Name, address and other information)

§ 8.4 The Contractor's representative:
(Name, address and other information)

Init.

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

§ 8.6 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A101–2007, Standard Form of Agreement Between Owner and Contractor — KDE Version.

§ 9.1.2 The General Conditions are AIA Document A201–2007, General Conditions of the Contract for Construction — KDE Version.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

(Either list Supplementary and other Conditions of the Contract here or refer to an exhibit attached to this Agreement.)

Document	Title	Date	Pages
----------	-------	------	-------

§ 9.1.4 The Specifications:

(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

Section	Title	Date	Pages
---------	-------	------	-------

init.

§ 9.1.5 The Drawings:

(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

Number	Title	Date
--------	-------	------

§ 9.1.6 The Addenda, if any:

(Either list the Addenda here or refer to an exhibit attached to this Agreement.)

Number	Date	Pages
--------	------	-------

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

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

- .1 AIA Document E201™–2007, Digital Data Protocol Exhibit, if completed by the parties, or the following
- .2 Other documents, if any, listed below:

Init.

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2007 — KDE Version provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

- A. AIA Document A701–1997, Instructions to Bidders — KDE Version
- B. Contractor's Form of Proposal
- C. KDE Purchase Order Summary Form

ARTICLE 10 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201–2007 – KDE Version.

(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201–2007 – KDE Version. Either list insurance and bond information here or refer to an exhibit attached to this Agreement.)

Type of Insurance or Bond

Limit of Liability or Bond Amount (\$0.00)

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

OWNER (Signature)

CONTRACTOR (Signature)

(Printed name and title)

(Printed name and title)

Init.

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SECTION 005410 - PERFORMANCE & PAYMENT BOND
FORM OF GENERAL CONDITIONS

1.01 Refer to the AIA Document A312, Performance & Payment Bond, 2010

END OF SECTION

Kentucky Department of Education Version of 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)

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

Signature: _____
Name
and Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

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



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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.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

§ 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:

§ 16.1 Surety Company shall be licensed to conduct business in the Commonwealth of Kentucky.

§ 16.2 Insurance Agency and Agents issuing bond shall be registered and licensed to conduct business in the Commonwealth of Kentucky with the appropriate Power of Attorney included.

§ 16.3 Bond shall comply with all statutory requirements of the Commonwealth of Kentucky including the Kentucky Unemployment Insurance Law.

§ 16.4 No suit, action or proceeding by reason or any default whatever shall be brought on this bond after two (2) years from the date on which final payment of the contract fall due and provided further that if any alterations or additions which may be made under the contract or in the work to be done under it, or the giving by the Owner of any extension of time for the performance of the contract or any other forbearance on the part of either the Owner or the Principal shall not, in any way, release the Principal and Surety, or either of them, their heirs, executors, administrators, successors, or assigns for their liability hereunder. Notice to the Surety of any such alterations, extensions, or forbearance being expressly waived.

This obligation shall remain in force and effect until the performance of all covenants, terms and conditions herein stipulated and after such performance, it shall become null and void.

(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 _____

Kentucky Department of Education Version of AIA® Document A312™ – 2010

Payment Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place
of business)

OWNER:

(Name, legal status and address)

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

Company: _____
(Corporate Seal)

SURETY

Company: _____
(Corporate Seal)

Signature: _____

Name

and Title:

(Any additional signatures appear on the last page of this Payment Bond.)

Signature: _____

Name

and Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)



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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.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

§ 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:

§ 18.1 Surety Company shall be licensed to conduct business in the Commonwealth of Kentucky.

§ 18.2 Insurance Agency and Agents issuing bond shall be registered and licensed to conduct business in the Commonwealth of Kentucky with the appropriate Power of Attorney included.

§ 18.3 Bond shall comply with all statutory requirements of the Commonwealth of Kentucky including the Kentucky Unemployment Insurance Law.

§ 18.4 No suit, action or proceeding by reason or any default whatever shall be brought on this bond after two (2) years from the date on which final payment of the contract fall due and provided further that if any alterations or additions which may be made under the contract or in the work to be done under it, or the giving by the Owner of any extension of time for the performance of the contract or any other forbearance on the part of either the Owner or the Principal shall not, in any way, release the Principal and Surety, or either of them, their heirs, executors, administrators, successors, or assigns for their liability hereunder. Notice to the Surety of any such alterations, extensions, or forbearance being expressly waived.

This obligation shall remain in force and effect until the performance of all covenants, terms and conditions herein stipulated and after such performance, it shall become null and void.

(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 _____

SECTION 007200 - GENERAL CONDITIONS

FORM OF GENERAL CONDITIONS

- 1.01 Refer to the Kentucky Department of Education Version of AIA Document A201, General Conditions of the Contract for Construction, 2007 Edition.

END OF SECTION

Kentucky Department of Education Version of AIA® Document A201™ – 2007

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)

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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), Owner direct Purchase Orders, 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 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 and certify termination of the Agreement under Section 14.2.2.

§ 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.

§ 1.2.2 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 will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment 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 this 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 material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them 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 material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 Transmission of Data in Digital Form

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

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 Information and Services Required of the Owner

§ 2.2.1 (Not Used)

§ 2.2.2 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.

§ 2.2.3 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.

§ 2.2.4 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.

§ 2.2.5 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.

§ 2.3 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.

§ 2.4 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 written 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 deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor 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. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

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 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 2.2.3, 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 make 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 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, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and 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 written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required 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 authorized by the Architect in accordance with Sections 3.12.8 or 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

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.

§ 3.6 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 21 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 an equitable adjustment 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 in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed 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 furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply 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 Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be 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, 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 maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be 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 the way by which 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 requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing 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 written 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. 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 cause such services or certifications to be provided by a properly 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, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, 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. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 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, and 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 and patching shall be restored to the condition existing prior to the cutting, fitting and 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 such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's 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 or 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 Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect 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 such 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 the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such 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 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.

§ 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.

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

§ 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, and, at the discretion of the Owner may be the Owner's representative during the one-year period for correction of Work described in Section 12.2. 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, except as provided in Section 3.3.1.

§ 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 report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) 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 Facilitating Contract Administration

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 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 13.5.2 and 13.5.3, whether or not such 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, material and equipment 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

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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, unless otherwise specifically stated by the Architect, 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 authorize 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 duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 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 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 or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design)

proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply 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 previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate agreement, written where legally required for validity, 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, which the Contractor, by these 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 in writing; 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 such 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 Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 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 other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the 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, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor 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 report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report 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, except as to defects not then reasonably discoverable.

§ 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 the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors 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, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.1.4 Proposed Change in the Work equal to or exceeding \$25,000 additive or deductive, shall be subject to approval by the Kentucky Department of Education prior to execution of the Change Order by the Owner.

§ 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 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 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.

§ 7.3.6 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.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and 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 not to exceed fifteen (15%) of the net cost of the change. 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 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .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 related to the Work; and
- .5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 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 has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

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, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be

furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 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 an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order 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

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.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's 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. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage as stipulated in Section 9.3.4.

§ 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 material 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, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.3.4 When Owner direct Purchase Orders are used, retainage that would otherwise be held on materials and equipment shall transfer to the Contractor, and the material suppliers will be paid the full amount of their invoices. The Owner shall retain ten percent (10%) from each Application for Payment, and an amount equal to ten percent (10%) of approved Purchase Order payments, up to fifty percent (50%) completion of the Work, then provided the Work is on schedule and satisfactory, and upon written request of the Contractor together with consent of surety and the recommendation of the Architect, the Owner shall approve a reduction in Retainage to five percent (5%) of the current Contract Sum plus Purchase Orders. No part of the five percent (5%) retainage shall be paid until after Substantial Completion of the Work, as defined in Section 9.8. herein. After Substantial Completion, if reasons for reduction in retainage are certified in writing by the Architect, a reduction to a lump sum amount less than the five percent (5%) retainage may be approved by the Owner when deemed reasonable. The minimum lump sum retainage shall be twice the estimated cost to correct deficient or incomplete 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 issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part 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 comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. 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. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. 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 material 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 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 the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 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 material or equipment suppliers 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 Architect will reflect such payment on the next Certificate 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 or as required by state law, whichever is more restrictive, 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 material and equipment 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 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, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment 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 and 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, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 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' written 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 shut-down, 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. The ability to occupy and utilize the Work or designated portion thereof shall require an

occupancy permit issued by the Kentucky Department of Housing, Building, and Construction and any other agencies that have statutory authority and approval requirements.

§ 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, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall 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 such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such 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 as required under Section 11.3.1.5 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 written 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 and, 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 terms and conditions of 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.

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- .1 Upon receipt and approval of the final Application for Payment, for each Contract and Purchase Order, if any, the Architect will prepare, and the Architect and Owner shall complete their portion of the Kentucky Department of Education BG-4 Contract Closeout Form – 2013, and forward the board-approved BG-4 form to the Kentucky Department of Education with a copy of the final Certificate for Payment upon the Board authorizing the BG-4 form, accepting the Work, and approving final payment to the Contractor or Material Supplier.

§ 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 and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial 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 and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, 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. If such lien 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 such lien, 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 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 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; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material 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 or the Contractor's Subcontractors or Sub-subcontractors; 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 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 owners and users of adjacent sites and utilities.

§ 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, except damage or loss 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, written notice of such 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

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. 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 report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written 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 such material or substance or who are to perform the task of removal or safe containment of such 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 in the amount of the Contractor's reasonable additional costs of shut-down, 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 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 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 indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance 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 indemnify 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 Liability Insurance

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents. Such insurance shall be no less than the following amounts:

- | | |
|----------------------|----------------------------------------------------------------------------------------------|
| (1) Public Liability | \$200,000.00 one person/maximum each person
\$500,000.00 one accident/maximum each person |
| (2) Property Damage | \$200,000.00 one accident/maximum
\$500,000.00 aggregate |

§ 11.1.2.1 The insurance required by Section 11.1.1 shall be written for not less than the following limits, or greater if required by law:

- (1) Worker's Compensation:
 - a. State Statutory
 - b. Applicable Federal (e.g., Longshoreman's) Statutory
 - c. Employer's Liability \$500,000
- (2) Comprehensive or Commercial General Liability (including Premises-Operations; Independent Contractor's Protection; Product Liability and Completed Operations; Broad Form Property Damage);
 - a. General Aggregate (except Products-Completed Operations) \$1,000,000
 - b. Products-Completed Operations Aggregate \$1,000,000
 - c. Personal/Advertising Injury (per person/organization) \$1,000,000
 - d. Each Occurrence (Bodily Injury and Property Damage) \$1,000,000
 - e. Limit per Person Medical Expense \$10,000
 - f. Exclusions of Property in Contractors Care, Custody or Control will be eliminated.
 - g. Property Damage Liability Insurance will provide Coverage for Explosion, Collapse, and Underground Damage.
- (3) Contractual Liability:
 - a. General Aggregate \$1,000,000
 - b. Each Occurrence (Bodily Injury and Property Damage) \$1,000,000
- (4) Automobile Liability:
 - a. Bodily Injury \$500,000 Each Person
\$1,000,000 Each Accident
 - b. Property Damage \$500,000 Each Accident, or
a combined single limit of \$1,000,000
- (5) Liability coverage for the Owner, the Architect, the Architect's Consultants and others listed in the Supplementary Conditions will be provided (subject to customary exclusions for professional liability), by endorsement as additional insured's on the Contractor's Liability Policy.
- (6) Excess Liability Umbrella Form:
 - a. General Aggregate \$1,000,000
 - b. Each Occurrence \$1,000,000

§ 11.1.2.2 There shall be an endorsement in each of the above policies reading as follows: "It is hereby agreed that in the event of a claim arising under this policy, the company may not deny liability be reason of the insured being a state, county, municipal corporation or governmental agency."

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents 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 during the Contractor's completed operations.

§ 11.2 Owner's Liability Insurance

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

§ 11.3 Property Insurance

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or

companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 Boiler and Machinery Insurance

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 Loss of Use Insurance

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 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, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 Before an exposure to loss may occur, the Owner shall provide the Architect and the Kentucky Department of Education with certificates of insurance coverage required by this Section 11.3.

§ 11.3.7 Waivers of Subrogation

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, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, 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 covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance 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 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 Performance Bond and Payment Bond

§ 11.4.1 Unless otherwise provided, when the Contract Sum exceeds twenty-five thousand dollars (\$25,000) the Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. A surety company authorized to do business in Kentucky shall execute bonds, and the cost thereof shall be included in the Contract Sum. Unless otherwise provided, the amount of each bond shall be equal to 100% of the Contract Sum plus Purchase Orders, or 100% of the Lump Sum Base Bid plus or minus accepted Alternates, whichever is greater.

§ 11.4.2 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.

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, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 Correction of Work

§ 12.2.1 Before or After Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after 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 an 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 written 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 2.4.

§ 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, whether completed or partially completed, of the Owner or separate contractors 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 except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.1.1 None of the Contract Documents for this project shall be construed against the party preparing documents on the grounds that the party prepared or drafted the document, or any portion thereof.

§ 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 such 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 such assignment.

§ 13.3 Written Notice

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 Rights and Remedies

§ 13.4.1 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.

§ 13.4.2 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 there under, except as may be specifically agreed in writing.

§ 13.5 Tests and Inspections

§ 13.5.1 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 (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 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 13.5.1, 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 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 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.

§ 13.5.4 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.

§ 13.5.5 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.

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

§ 13.6 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as required by state law, or in the absence of law, at the legal rate prevailing at the time and place where the Project is located.

§ 13.7 Time Limits on Claims

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time 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 13.7.

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 or a Subcontractor, Sub-subcontractor or their agents or employees or any

other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, 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 promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, 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' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor 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' written 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 for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .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 above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, 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' written 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 as described in 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 written 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 Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

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, 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.

§ 15.1.2 Notice of Claims

Claims by either the Owner or Contractor must be initiated by written 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 must 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 Continuing Contract Performance

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. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 Claims for Additional Cost

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

§ 15.1.5 Claims for Additional Time

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein 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.

§ 15.1.5.2 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.

§ 15.1.6 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 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, 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 arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no 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 such 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 an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, 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 15.1.6 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 shall be in accordance with the Construction Industry Mediation Procedures of the American Arbitration Association 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 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. 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 Either party, at its sole discretion, 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 Either party, at its sole discretion, 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 the Owner and Contractor under this Agreement.

SECTION 007300 - SUPPLEMENTARY CONDITIONS**PART 1 GENERAL****1.01 SUMMARY**

- A. These Supplementary Conditions amend and supplement the General Conditions defined in Document 007200 - General Conditions and other provisions of the Contract Documents as indicated below. Provisions that are not so amended or supplemented remain in full force and effect.
- B. The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

1.02 DEFINITIONS

- A. The term "OWNER" as used throughout these documents means the Burgin Independent Board of Education.
- B. The term "ARCHITECT" as used throughout these documents means RossTarrant Architects, Inc., 101 Old Lafayette Avenue, Lexington, Kentucky 40502.
- C. The terms "PLANS" and "DRAWINGS" are used interchangeably and are construed to have the same meaning.

1.03 GENERAL

- A. These specifications and drawings accompanying them describe the work to be done and the materials to be furnished for the construction of the project.
- B. The Contractor and each Subcontractor shall verify all measurements at the site before ordering any materials or doing any work. No additional compensation shall be allowed due to any discrepancy indicated and actual dimensions. The Contractor shall promptly notify the Architect of any dimensional discrepancies and shall obtain the direction of the Architect before proceeding with the Work.
- C. Bidders, before submitting proposals, shall visit and examine the site to satisfy themselves as to the nature and scope of the new construction and any difficulties attending the execution. The submission of a proposal will be construed as evidence that a visit and examination have been made. Later claims for labor, equipment, or materials required or difficulties encountered which could have been foreseen had such an examination been made will not be recognized.
- D. The Kentucky Fairness in Construction Act, KRS371.400 to KRS 371.990, applies to this construction contract, and where there is a conflict between the terms and conditions of these contract documents and the provisions of the Kentucky Fairness in Construction Act, the latter shall prevail.
- E. Within 10 days after award of contract and as required by KRS 45A.343, Section (2)(a), each Contractor and all Subcontractors performing work under the contract shall in writing to the Owner reveal any final determination of a violation by the Contractor or Subcontractor within the previous 5 year period pursuant to KRS Chapters 136, 139, 141, 337, 338, 341 and 342 that apply to the Contractor or Subcontractor. As required by KRS 45A.343, Section (2)(b), Contractors and Subcontractors performing work under the contract shall be in continuous compliance with the provisions of KRS Chapters 136, 139, 141, 337, 338, 341 and 342 that apply to the Contractor or Subcontractor for the duration of the contract.
- F. By signing any Change Order/Application and Certificate of Payment, the Contractor indicates his agreement therewith, including any adjustment in the Contract Sum or Contract Time and waives any and all claims for additional compensation or Contract time against either the Owner or the Architect for work associated with the Change Order/Application and Certificate of Payment. The Contractor expressly agrees that the Architect shall be deemed a Third Party Beneficiary of this provision.

1.04 ARCHITECT'S STATUS

- A. The Architect is the agent of the Owner during construction and until final payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument which will be shown to the Contractor. The Architect has authority to reject work which does not conform to the Contract Documents.

1.05 ARCHITECT'S WORK PRODUCT

- A. The Architect's work product is prepared and produced for the sole and exclusive benefit of the Owner. Any real or inferred benefits to third parties is hereby expressly disclaimed.

1.06 ADMINISTRATION OF THE CONTRACT

- A. The Architect will perform certain administrative functions of the construction contract. Nothing contained in these contract documents, not any other oral or written agreements, memoranda, or communications shall create any express or implied contractual relationship between the Architect and the Contractor.
- B. The Architect may make periodic visits to the work site in accordance with the conditions of his contract with the Owner. The purpose of these visits and observations is to endeavor to guard against defects and deficiencies, not to supervise the Contractor's work.
- C. The Architect makes no express or implied representations of guaranteeing the Contractor's work.
- D. The Architect is not a specialist in construction methods, techniques, sequences or procedures and therefore assumes no responsibility for the construction operations and safety program.

1.07 INDEMNIFICATION

- A. The Contractor shall hold harmless and indemnify the Architect, employees, officers, agents and consultants from all claims, loss, damage, actions, causes of actions, expense and/or liability resulting from, brought for, or an account of any personal injury or property damage received or sustained by any person, persons, (including third parties), or any property growing out of, occurring, or attributable to any work performed under or related to this contract, resulting in whole or in part from the negligence of the Contractor, any Subcontractor, any employee, agent or representative.
- B. None of the Bidding Documents or Contract Documents prepared for this project, including, but not limited to, all contracts, drawings, or specifications, shall be construed against the party preparing any document on the ground that the party prepared or drafted the document, or any portion thereof.

1.08 WORKMANSHIP

- A. The Workmanship shall be of the highest quality, in every respect, as usually recognized in the building industry. Poor or inferior workmanship (as determined by the Architect, Engineers, or inspecting authorities) is to be removed and replaced to conform to the highest quality standards of the trades concerned, or otherwise corrected.
- B. The Contractor shall only employ labor on the Project or in connection with the Work capable of working harmoniously with all trades, crafts and any other individuals associated with the Project. The Contractor shall also use its best efforts to minimize the likelihood of any strike, work stoppage or other labor disturbance.
- C. If the Work is to be performed by trade unions, the Contractor shall make all necessary arrangements to reconcile, without delay, damage or cost to the owner and without recourse to the Architect or the Owner any conflict between the Contract Documents and any agreements or regulations of any kind in force among members or councils which regulate or distinguish what activities shall not be included in the work of any particular trade.

- D. In case the progress of the Work is affected by any undue delay in furnishing or installing any items or materials or equipment required under the Contract Documents because of such conflict involving any such labor agreement or regulation, the Owner may require that other material or equipment of equal kind and quality be provided pursuant to a Change Order or Construction Change Directive.

1.09 DRAWINGS AND SPECIFICATIONS

- A. None of the Bidding Documents or Contract Documents prepared for this project, including, but not limited to, all contracts, drawings or specifications, shall be construed against the party preparing any document on the grounds that the party prepared or drafted the document, or any portion thereof.
- B. Where it is obvious that a drawing illustrates only a part of a given work or of a number of items, the remainder shall be deemed repetitious and so constructed.
- C. If there is conflict within or between Contract Documents involving quality or quantity of work required, it is intention of Contract that work of highest quality or greater quantity indicated or specified shall be provided. Whether or not the word "all" is used, coverage is specifically and expressly noted. In all cases where an item is referred to in singular number, it is intended that reference shall apply to as many such items as are required to perform the work.
- D. The work under this contract does not include any items marked N.I.C. on the drawings (not in contract).
- E. Division of Specifications into sections is done for convenience of reference and is not intended to control contractors in dividing work among subcontractors or to limit scope of work performed by any trade under any given section.
- F. The Contractor's failure to report in writing to the Architect and Owner errors, omissions or inconsistencies in the Contract Documents within ten (10) days of the Contractor's Discovery of same shall operate as a waiver of any claim or defenses by the Contractor arising from those errors, omissions or inconsistencies.

1.10 ALLOCATION OF WORK

- A. Where certain materials are specified to be installed under various headings, it shall be the responsibility of the General Contractor to re-allocate such work under the proper subcontractor if the specification is in conflict with the local jurisdiction.

1.11 OWNER'S RIGHT TO STOP THE WORK

- A. If the Contractor fails to correct defective work or persistently fails to supply materials or equipment in accordance with the Contract Documents, the Owner may order the Contractor to stop the work, or any portion thereof, until the cause of such order has been eliminated.

1.12 NOTICE AND SERVICE THEREOF

- A. All notices (relating to any part of this contract) to Contractors from the Owner shall be in writing and considered delivered and the service thereof completed, when the notice is posted, by registered mail, to the Contractor at his last address or delivered in person to the Contractor or his authorized representative on the work.

1.13 CODES AND ORDINANCES

- A. All branches of the work shown on the plans or specified, whether specifically mentioned or not, shall be executed in strict compliance with all local or state regulations and codes, and shall be in compliance with all National Codes when same have jurisdiction.

1.14 DELAYS AND EXTENSION OF TIME

- A. In addition to the terms stated in Articles of the General Conditions, the following items apply to delays and extension of time.

1. It is agreed that time is of the essence for each and every portion of this Contract and where under the Contract an additional time is allowed for the completion of any Work, the new time limit fixed by such extension shall be of the essence of this Contract. An extension of time shall not be cause for extra compensation under the Contract. The Contractor may be granted an extension of time and/or relief from liquidated damages when the delay in completion of the Work is due to:
 - a. Any preference, priority, or allocation order duly issued by the government;
 - b. Unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a Contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and unusually severe weather.
 2. Claims for extensions of time and/or relief from liquidated damages, except for weather related claims, must be made in writing not later than twenty-one (21) calendar days after the beginning of the delay. Claims for extension of time due to unusual inclement weather shall be made in writing not later than the tenth day of the month following the month in which the delay occurred.
 3. Claims for extensions of time or relief from liquidated damages shall be stated in numbers of whole or half calendar days. The actual dates on which delay(s) occurred must be stated. In case of claims, extension of time shall be granted only because such unusual inclement weather prevented the execution of critical items of the work.
 4. Unusual inclement weather as used herein means unusually severe weather which is beyond the normal weather recorded and expected for the locality and/or the season or seasons of the year. Normal weather shall be determined based as reported by the United States Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) for the location indicated below.
 5. When adverse weather exceeds that which is normally expected, as defined above, and the Contractor is making a claim for delay due to adverse weather, the Contractor shall submit to the Architect and Owner the following at the Project Progress Meeting immediately following the month in which the excessive adverse weather occurred:
 - a. Current weather data from NOAA for the project site which documents and proves that the adverse weather occurred at the project site on days in which work was scheduled to occur.
 - b. Historical weather data from NOAA for the project site which documents and proves that the adverse weather that occurred at the project site was more than anticipated.
 - c. Contractor' s daily field reports showing that the adverse weather that was experienced at the project site caused delay in the work that was scheduled to be performed on during the period in which adverse weather was experienced.
 - d. Contractor' s written detailed explanation of the delay in the work and how it was caused by the abnormal adverse weather that was experienced at the project site and was beyond the ability of the Contractor to control or mitigate the delay for each occurrence.
- B. Any claim for extension of time for strikes or lockouts shall be supported by a citation of facts concerning the strike, including, but not limited to, the dates, the craft concerned, the reason for the

strike, efforts to resolve the dispute, and efforts to minimize the impact of the strike on progress.

- C. Any claims for extension of time for delays in transportation or for failures of suppliers shall be supported by a citation of facts demonstrating that the delays are beyond the Contractor's control, including, but not limited to, his efforts to overcome such delays.
- D. The time extensions for changes in the Work will depend upon the extent, if any, by which the changes cause delay in the completion of the various elements of construction. The Change Order granting the time extension may provide the Contract Completion Date will be extended only for those specific elements so delayed and that the remaining Work will not be altered or may further provide for an equitable readjustment of liquidated damages pursuant to the new Contract completion dates.

1.15 TIMES FOR COMPLETION

- A. Anticipated Start of Construction: November 14, 2019.
- B. Substantial Completion. Subject to the conditions of Article "Delays and Extensions of Time" of the General Conditions, the total work to be done under this combined construction contract shall be commenced upon execution of the contract agreement and shall be substantially completed in phases no later than as outlined on Drawing Sheet G0.2 - Phasing Plan.
- C. Final Completion. Subject to the conditions of Article "Delays and Extensions of Time" of the General Conditions, the total work to be done under this combined construction contract shall be fully completed in phases no later than within thirty (30) consecutive calendar days from the Date of Substantial Completion for each phase.
- D. The date of Final Completion for each phase shall be as indicated in the Owner-Contractor Agreement and the work is complete and all Contract requirements have been fulfilled by the Contractor.

1.16 LIQUIDATED DAMAGES

- A. It is mutually understood and agreed by and between parties of this contract, in execution of same, that time is of essence of the contract. In the event that the Contractor fails to substantially complete work to be performed under this contract by and at applicable completion time as identified in Article - Times for Completion, including any extension of time granted, Contractor shall pay to Owner \$1,000.00 per consecutive calendar day for each additional day per phase because of delay in completing as amended above as for liquidated damages, such as Owner's increased overhead and cost of additional architectural supervision and not as a penalty, for each and every calendar day, that Contractor shall be in default.
- B. Liquidated damages will be waived for and during extent of delay caused by Contractor's inability to obtain material or equipment by reasons such as Federal embargoes, priority orders, or other restrictions imposed by the United States Government, provided that adequate evidence is presented by Contractor to prove such delay and enable Owner to determine with exactness the extent and duration of such delay for each item of material and equipment involved.
- C. Owner shall have right to deduct liquidated damages from money in its hands otherwise due, or to become due, to Contractor or to sue for and recover compensation for damages for non-performance of this Contract at time stipulated herein.
- D. As actual damages for any delay in completion are impossible to determine, the Contractors and their sureties shall be liable for and shall pay to the Owner the sum of \$1,000.00 per day per phase as fixed, agreed, and liquidated damages for each calendar day of delay past 30 days past substantial completion, the work reaches Final Completion.

1.17 PUNCH LIST OBSERVATIONS

- A. At the time of substantial completion, the Architect shall prepare a list of deficient work items. The Contractor shall have thirty days to complete this list and achieve final completion, notifying the Architect once items are complete and ready to be verified. Should the Architect perform site observations to verify completion of these items more than two times, the Contractor shall be responsible for payment to the Architect for additional site visits, at a rate of \$100.00 per hour plus travel expenses. Time charged by the Architect shall include travel time, time on-site, and time in office preparing follow-up documentation.

1.18 ORDERING MATERIALS

- A. Immediately following award of contract for this work, Contractor shall determine the source of supply for all materials and length of time required for their delivery, including materials of subcontractors, and order shall be placed for such materials promptly.
- B. If, for any reason, any items specified will not be available when needed and the Contractor can show that he has made a reasonably persistent effort to obtain the items in question, the Architect is to be notified in writing within forty-five (45) days after the Contract is signed, and he will either determine a source of supply or arrange with the Owner for appropriate substitution within terms of Contract; otherwise, the Contractor will not be excused for delays in securing material specified and will be held accountable if completion of the building is thereby delayed.

1.19 HAZARDOUS MATERIALS

- A. The Contractor is hereby advised that RossTarrant Architects, Inc. is not a professional consultant in the determination of the presence of hazardous materials in any form, including, but not limited to, asbestos products, polychlorinated biphenyl (PCB) or other toxic substances. In addition, RossTarrant Architects, Inc. is not a design professional involved with making recommendations regarding the removal or encapsulation of hazardous materials in any form.
- B. If the work which is to be performed under this contract interferes in any way with existing components which contain hazardous materials, it shall be Contractor's responsibility to contact the Owner or Owner's Environmental Consultant regarding the proper means and methods to be utilized in dealing with the hazardous materials.
- C. By execution of the contract for construction, the Contractor hereby agrees to bring no claim for negligence, breach of contract, indemnity, or otherwise against the Architect, its principals, employees, agents, and consultants if such claim in any way would involve the investigation of, or any work related to hazardous materials in any form at the project site, including, but not limited to, asbestos, asbestos products, polychlorinated biphenyl (PCB) or other toxic substances. By execution of the contract for construction, the Contractor further agrees to defend, indemnify, and hold the Architect and his principals, employees, agents and consultants harmless from any such claim related to hazardous materials that may be brought by the Contractor's Subcontractors, Suppliers, or other third parties who may be acting under the direction of the Contractor pursuant to this project.

1.20 RULES OF MEASUREMENT

- A. The following Rules of Measurement shall apply in the use of Unit Prices:
 - 1. Except as provision is made hereinafter for arbitrary measurements, the quantity of excavation shall be its in-place volume before removal.
 - 2. No allowance will be made for excavating additional material of any nature taken out of the convenience of the Contractor, beyond the quantity computed under these Rules of Measurement.
 - 3. The quantities of excavation shall be computed from instrument readings in vertical cross sections located at such intervals as will assure accuracy.

4. General excavation for buildings and sections of buildings, bases for equipment, sump pits, etc., involving an area of 200 or more square feet, shall be classified as "Mass Excavation".
5. Excavation for pipes, wall footings, grade beams, column footings, and sections of buildings such as bases for equipment, sump pits, etc., involving an area of less than 200 square feet, shall be classified as "Trench Excavation".
6. "Mass Excavation" shall be arbitrarily assumed to extend to vertical planes two (2) feet outside wall lines, and to the elevation of plan subgrade.
7. "Trench Excavation" for walls, grade beams, and sections of building, such as bases for equipment, sump pits, etc., involving an area less than 200 square feet shall be arbitrarily assumed to extend 2 feet wider than wall and grade beam thicknesses and outside walls of sections of buildings such as bases for equipment, sump pit, etc., but in no case less than three (3) feet wide sides vertical.
8. "Trench Excavation" for pipes shall be arbitrarily assumed to be two (2) feet wider than the outside diameter of the pipe barrel and with sides vertical.
9. "Trench Excavation" for wall footings and column footings shall be computed as vertical shafts, each with a horizontal cross section identical in shape and size with the plan of the footing.
10. The quantities of form work will be the area of forms in contact with concrete.
11. Concrete quantities shall be computed form plan size or if there are no drawings, from actual measurement of the work ordered and placed, waste excluded.

1.21 INSURANCE AND BONDS

Refer to Article 11.4.1 of the General Conditions. Modify the paragraph as follows:

"11.4.1 Unless otherwise provided, when the Contract Sum exceeds one hundred thousand (\$100,000) the Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. A surety company authorized to do business in Kentucky shall execute bonds, and the cost thereof shall be included in the Contract Sum. Unless otherwise provided, the amount of each bond shall be equal to 100% of the Contract Sum plus Purchase Orders, or 100% of the Lump Sum Base Bid plus or minus accepted Alternates, whichever is greater."

- A. Refer to Article 11.4.1 of the General Conditions. Revise the last sentence to read: "The amount of each bond shall be equal to 100% of the Contract Sum plus the total of all Purchase Orders."
- B. In no event shall any failure of the Owner or Architect to receive certified copies or certificates of policies required or to demand receipt of such certified copies or certificates prior to the Contractor commencing the Work be construed as a waiver by the Owner or the Architect of the Contractor's obligations to obtain insurance pursuant to requirements. The obligation to procure and maintain any insurance required is a separate responsibility of the Contractor and independent of the duty to furnish a certified copy or certificate of such insurance policies.
- C. If the Contractor fails to purchase and maintain, or require to be purchased and maintained, any insurance required, Owner may, but shall not be obligated to, upon five (5) days' written notice to the Contractor, purchase such insurance on behalf of the Contractor and shall be entitled to be reimbursed by the Contractor upon demand.
- D. When any required insurance, due to the attainment of a normal expiration date or renewal date shall expire, the Contractor shall supply the Owner with Certificates of Insurance and amendatory riders or endorsements that clearly evidence the continuation of all coverage in the same manner, limits of

protection, and scope of coverage as was provided by the previous policy. In the event any renewal or replacement policy, for whatever reason obtained or required, is written by a carrier other than that with whom the coverage was previously placed, or the subsequent policy differs in any way from the previous policy, the Contractor shall also furnish the Owner with a certified copy of the renewal or replacement policy unless the Owner provides the Contractor with prior written consent to submit only a Certificate of Insurance for any such policy. All renewal and replacement policies shall be in form and substance satisfactory to the Owner and written by carriers acceptable to the Owner.

- E. Within ten (10) days of the filing of a mechanics' or materialmen's lien on the Project real estate or funds, Contractor shall at its expense furnish a bond or bonds in accordance with the appropriate statutes satisfactory for the release of or otherwise obtain the release of any mechanics' and materialmen's liens filed against the Project real estate or funds by any of Contractor's employees, subcontractors, suppliers, agents, consultants or anyone claiming through any of them. If the Contractor fails to furnish a bond within ten (10) days, the Owner may provide the bond and back charge all costs, including attorneys' fees, costs or expenses incurred as a result of a lien filed or asserted against Owner's property.

1.22 COMPLIANCE WITH IMMIGRATION REFORM AND CONTROL ACT OF 1986 ("IRCA")

- A. Owner and Contractor agree that Contractor shall be obligated to comply with all requirements imposed on employers under IRCA with regard to every Contractor employee ("Contract Worker") who will perform services for Contractor, where such service is provided in connection with Contractor's performance of this Agreement. Contractor further agrees that Contractor is the "employer" as that term is defined at 8 C.F.R. Section 274a. 1(g), and that Owner is not the "employer" as so defined, with regard to such Contract Workers. In furtherance of its duties as employer under IRCA, Contractor agrees to do the following:
1. Complete USCIS Form I-9 for all Contract Workers: Contractor agrees that it has sole responsibility for completing Form I-9 for all Contract Workers who provide services as a part of Contractor's performance of this Agreement, and that it will do so and will further update such Form to the extent required by law. Contractor further warrants that all of Contractor's agents and/or employees who complete Form I-9 for such Contract Workers will be knowledgeable of all Form I-9 requirements, including but not limited to, knowledge of which documents do and do not satisfy the requirements of Form I-9, and that such agents and employees will otherwise complete Form I-9, and that such agents and employees will otherwise complete Form I-9 in full compliance with IRCA.
 2. Contractor's Warranty of Employment Authorization for all Contract Workers: Contractor hereby warrants that no Contract Worker will provide services pursuant to this Agreement until Contractor has completed Form I-9 for such Contract Worker in the manner required by IRCA. Contractor further warrants that it will not permit any Contract Worker to perform services under this Agreement who Contractor knows or has reason to believe is not authorized to work in the United States, regardless of whether such individual is able to produce documents which satisfy the requirements of Form I-9. Contractor understands that Owner is acting in reliance on Contractor's warranty as described in this subparagraph and further states that without Contractor's warranty that it has taken all necessary steps to comply with IRCA and that Contractor believes all Contract Workers are authorized to work in the United States.
 3. Removal of Contract Workers not Authorized for Employment in the United States: Contractor agrees that if at any time after it assigns a Contract Worker to perform services under this Agreement, Contractor learns or has reason to believe that any Contract Worker is not authorized to work in the United States, Contractor shall immediately so inform Owner and Contractor shall cease assigning work to such Contract Worker providing services under

this Agreement.

4. **Indemnification and Hold Harmless:** Contractor agrees that in any event any government agency determines that any Contract Worker hired by Contractor to perform duties under this Agreement is not authorized for employment in the United States, Contractor shall indemnify and hold harmless Owner and any of Owner's agents, employees, officers, directors, trustees, or other persons acting on Owner's behalf, from any liability incurred by Owner as a result of such determination. Such indemnification shall include, by way of example but not in any way limited to, any civil or criminal fines or penalties assessed, alleged and any costs incurred in responding to or participating in any government investigation, finding, recommendation, hearing, appeal or any other proceeding, including attorneys' fees and costs.
5. **Liability for Subcontractors:** Contractor shall require all subcontractors to comply with these immigration provisions. The Contractor shall indemnify the Owner and any of the Owner's agents, employees, officers, directors, trustees, or other persons acting on the Owner's behalf, from any liability incurred by the Owner as a result of a determination that a subcontractor's worker hired to perform duties under this Agreement is not authorized for employment in the United States. Such indemnification shall include, by way of example but not in any way limited to, any civil or criminal fines or penalties assessed, alleged and any costs incurred in responding to or participating in any government investigation, finding, recommendation, hearing, appeal or any other proceeding, including attorneys' fees and costs.

1.23 OWNER PURCHASED MATERIALS

- A. Kentucky State Sales Tax does apply to all materials purchased for this Project, except those materials purchased directly by the Owner with an approved Purchase Order in accordance with KRS 139.495 (1) after appropriate Advertisement for Bids.
 1. A Material Supplier is a person or organization who has a direct Purchase Order responsibility to the Owner. A Material Supplier cannot be an installing Contractor or Subcontractor.
 2. The Purchase Order amount as bid may include all costs of delivery to the job site.
 3. Material Supplier assumes all responsibility for materials until delivery is accepted by the Contractor. The designated Contractor or Subcontractor responsible for installation of Purchase Order material or equipment is to supervise and accept delivery, unload, handle, store, lay out and install the items.
 - a. Upon delivery, the designated Contractor is to verify product suitability, quantity, quality and condition as soon as it can be ascertained and shall accept care, custody and control responsibility as if it were his own purchase. Any damage or loss after acceptance will be the responsibility of the designated Contractor or subcontractor.
 4. Material Supplier will guarantee all materials furnished under a purchase order to be in accordance with the requirements of the contract documents. This guarantee shall extend through the construction period and one (1) year from the date of substantial completion upon final acceptance by the Owner of the Project. Any damage or loss after acceptance will be the responsibility of the designated Contractor or subcontractor.
 5. The material breakout amount indicated by a prospective bidder is considered final. The KDE Form of Proposal stipulates the cost of the material and is validated by the signature of the Supplier. In order to qualify for tax exemption, the Kentucky Revenue Cabinet requires that the bid for the labor component and material component remain separate. Should a Purchase Order have an unused balance remaining at the close of the project, the Purchase

Order will be closed out. At no time will the remaining balance be transferred to the Contractor.

6. A Material Supplier can be paid by one payment upon satisfactory completion of the requirements of the Purchase Order with the Owner. This would include the delivery of materials and satisfactory verification of these materials and compliance with the closeout procedures as outlined in these specifications.
 7. Material Suppliers shall not require the Owner to complete any form of credit application. The General Contractor is responsible for guaranteeing the Owner's credit-worthiness.
- B. The Contractor shall provide a breakdown of major items (excluding sales tax) and associated Purchase Orders for the Owner's approval and signature.
1. The Contractor shall prepare Purchase Orders on the KDE forms included within this Project Manual, based upon his accepted Bid Breakout List from the Form of Proposal. Once executed, Purchase Orders are not to be altered, amended or changed in any way. Any Purchase Order not returned within the allotted time shall become null and void and the value of the Purchase Order will be added to the Contract Sum with the Contractor assuming responsibility for all taxes. Upon executed of the Purchase Orders by the Owner, the Purchase Orders will be delivered to the Contractor for distribution to the respective suppliers.
 2. In the event the quantities of materials supplied via Purchase Orders are insufficient to complete the Work, the Contractor shall, at no expense to the Owner, provide such materials as necessary to complete the Work.
 3. The Owner will provide to the Contractor Kentucky Sales Tax Exemption Certificates for each Material Supplier.
- C. The Contractor shall also guarantee and warrant to the Owner that all materials listed in the breakdown to be purchased directly by the Owner by Purchase Order shall fully conform to the requirements of the Contract Documents and the quantity of such material is sufficient to complete the work. Contractor will provide invoices from the Suppliers to the Owner with each Contractor's Application for Payment.
- D. As provided in KRS 139.310 and Kentucky Administrative Regulation 103 KAR 26:070 (Contract Construction), each contractor is responsible for Kentucky Sales and Use Tax on all materials purchased and installed by the contractor or a third party hired by the contractor.
1. The sales and use tax is to be excluded only on those material items purchased by the Owner directly from the Material Supplier. If a Contractor lists his own company, or an installing subcontractor, as the supplier on those items, any purchase order will be void, and the sales and use tax on the materials used to fulfill the terms of the contract will be the liability of the Contractor.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 011000 - SUMMARY**PART 1 GENERAL****1.01 PROJECT**

- A. Project Name: Burgin Independent School Addition & Renovation.
- B. Owner's Name: Burgin Independent Board of Education.

1.02 OWNER OCCUPANCY

- A. Owner intends to continue to occupy the campus during the entire construction period.
 - 1. A school calendar is available at the District's website, located here:
<http://www.burgin.k12.ky.us/>
- B. Owner intends to occupy the Project upon Substantial Completion.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- D. Schedule the Work to accommodate Owner occupancy of the adjacent campus.

1.03 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings. Do not disturb portions of the site beyond the areas in which the Work is indicated.
 - 1. Locate and conduct construction activities in ways that will limit disturbance to site.
- B. Arrange use of site and premises to allow:
 - 1. Owner occupancy.
- C. Provide access to and from site as required by law.
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- D. Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
- E. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to these areas. If additional storage is necessary, obtain and pay for such storage off site.
- F. **Important Note:** Deliveries may not be made during the afternoon school pick-up time.
- G. Pressure wash driveways where mud and debris from construction is generated on a regular basis.
- H. Existing building spaces may not be used for storage.
- I. The General Contractor shall conduct all his work, and the work of his subcontractors, without interruption of the business of the school.
- J. During school hours, Contractor maintains responsibility for noise abatement. No radios will be allowed and use of power-actuated and pneumatic tools, sawing, hammering, etc. should be limited as much as possible.
- K. Workers shall abide by a code of conduct to include wearing shirts at all times. Alcohol, smoking, drugs, firearms, foul language, and fraternizing with students or staff is strictly prohibited.

- L. The Contractor shall be responsible for ensuring no Contractor employee or subcontractor on its behalf appears on the school property who has been charged or convicted of a sex crime or violent crime like those covered in KRS 160.380(3) or KRS 17.545.

1.04 WORK SEQUENCE

- A. Refer to Sheet G0.2 for information concerning phasing of construction.
- B. Coordinate construction schedule and operations with Architect and Owner.

END OF SECTION

SECTION 012000 - PRICE AND PAYMENT PROCEDURES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.
- F. General Conditions, Special Conditions and Document 007300 - Supplementary Conditions: Additional requirements for progress payments, schedules of values, final payment, changes in the work.
- G. Section 012100 - Allowances: Payment procedures relating to allowances.
- H. Section 012200 - Unit Prices: Monetary values of unit prices, payment and modification procedures relating to unit prices.

1.02 SCHEDULE OF VALUES

- A. Form to be used: Use AIA Document G703 Continuation Sheets as form for Applications for Payment. If another form is used, the format must be consistent with AIA Document G703.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit a printed schedule on forms provided by the Owner or Architect.
- E. Submit Schedule of Values {CH#259547} within 15 days after date of Owner-Contractor Agreement.
- F. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization and bonds and insurance.
- G. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- H. Separate Contractor's overhead into a separate line item. Separate profit into either a single line item or spread throughout other costs.
- I. Revise schedule to list approved Change Orders, with each Application For Payment.
- J. Provide enough detail in Contract Sum breakdown to facilitate continued evaluation of Applications for Progress Payments.
- K. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
- L. Temporary facilities and other major cost items that are direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense.
- M. The Architect may from time to time require further verification of parts or the whole of the Schedule of Values. Modifications as required by the Architect shall be made by the Contractor as directed. Monies paid to the Contractor on previous payments shall then be modified to reflect the modifications made in the Schedule of Values.

1.03 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals of once per month, within the schedule provided by the Architect and the Owner at the time of contract award.
- B. Form to be used: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment. If another form is used, the format must be consistent with AIA Document G702 and AIA Document G703.
- C. Form Completion: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
- D. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- E. Forms filled out by hand will not be accepted.
- F. 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.
- G. Execute certification by signature of authorized officer.
- H. 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.
- I. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.
- J. Stored Materials: Include the following:
 - 1. A list of materials consigned to the Project (which shall be clearly identified), giving the place of storage, together with copies of invoices.
 - 2. Certification that all items have been tagged for delivery to the Project and that they will not be used for any other purpose.
 - 3. Evidence of adequate insurance covering the material in storage off-site, listing the Owner as an additional insured.
- K. Submit digital copies of each Application for Payment.
- L. Include the following with the application:
 - 1. Partial release of liens from major Subcontractors and vendors. With each application, submit waivers of mechanic's liens from subcontractors, suppliers and vendors for the construction period covered by the previous application.

- a. Provide a current Contractor's lien waiver and duly executed and acknowledged sworn statement showing all Subcontractors and materialmen with whom the Contractor has entered into subcontracts, the amount of each such subcontract, the amount requested for any Subcontractor and materialmen in the requested progress payment and the amount to be paid to the Contractor from such progress payment, together with similar sworn statements from all such Subcontractors and materialmen;
 - b. Provide duly executed waivers of mechanic's and materialmen's liens from all Subcontractors and, when appropriate, from materialmen and lower tier Subcontractors establishing payment or satisfaction of payment of all amounts requested by the Contractor on behalf of such entities or persons in any previous Application for Payment;
 - c. Submit partial waivers on each item for amount requested, before deduction for retainage, on each item.
 - d. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 - e. Forms: Submit forms for approval by Architect and Owner.
- M. Purchase Orders: With each Application for Payment, the Contractor shall submit invoices for direct payment by Owner for materials purchased by the Owner by Purchase Order. These invoices should be transmitted as follows:
 - 1. All invoices should be accompanied by a payment summary sheet, which should include the following:
 - a. Name of Project.
 - b. Name of Contractor.
 - c. List of each payment to be made, in tabular format, with the following headings:
 - 1) Purchase Order Number.
 - 2) Name of Supplier.
 - 3) Original Purchase Order Total.
 - 4) Any Change Order amounts for that Purchase Order.
 - 5) Current adjusted Purchase Order total.
 - 6) Previous Invoices.
 - 7) Current Invoices.
 - 8) Remaining Purchase Order Balance.
 - 9) Statement signed and notarized by the Contractor, as follows: "I hereby guarantee and warrant to the Owner that all materials listed in the breakdown above for payment conform fully to the requirements of the Contract Documents. These materials have been delivered to the project site, in good condition, and have been inspected to verify product suitability, quantity, quality and condition. I hereby accept responsibility for care, custody and control of these materials."
 - 2. In addition to the payment summary sheet outlined above, each set of vendor invoicing shall include a Contractor's Purchase Order Payment Authorization form, attached at the end of

this section.

- a. Attach copies of invoices to each Contractor's Purchase Order Payment Authorization Form.

1.04 MODIFICATION PROCEDURES

- A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor by Field Order.
- B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 2. Promptly execute the change.
- C. Substantiation of Costs: Provide full information required for evaluation.
 1. Provide detailed breakdown of labor and materials costs.
 2. Overhead and profit shall not exceed a total of 15% of the cost of the labor and materials cost.
 3. The Contractor shall not include in the cost of the Work any cost or rental of small tools, or any portion of the time of the Contractor or the superintendent, or any allowance for the use of capital, insurance or bond premium or any actual or anticipated profit, or job or office overhead not previously mentioned. These items are considered as being covered under the added amount for general overhead.
 4. Provide justification for any change in Contract Time.
 5. Provide credit for deletions from Contract, similarly documented.
 6. Support each claim for additional costs with additional information upon request:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
- D. Contractor shall submit an updated construction schedule that indicates the effect of the change, including but not limited to changes in activity duration, start and finish times, and activity relationship.
- E. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
 1. Change Orders modifying the contract amount by less than \$25,000.00 may be approved and executed by the Local Board of Education. Since the Local Board of Education typically meets on a monthly schedule, this approval could take as long as one month after the Contractor returns the signed documents to the Architect.
 2. Change Orders modifying the contract amount by more than \$25,000.00 cannot be executed by the Local Board of Education without prior approval from the Kentucky Department of Education. These Change Orders are to be approved by the Contractor and Architect, and then submitted to the Local Board of Education where they will be accepted. With acceptance from the Local Board of Education, they will then be submitted to the Kentucky

Department of Education. Upon approval from the Kentucky Department of Education, Change Orders may be executed by the Owner, and then and only then do they become a part of the Contract Documents.

3. Time for obtaining formal Change Order approval shall not be used as a claim for extending the construction period. Both the Architect and the Owner shall perform their responsibilities in a reasonable amount of time, but shall not be responsible for delays in the construction schedule.
- F. After execution of Change Order, 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.
- G. 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.
- H. Promptly enter changes in Project Record Documents.

1.05 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 1. All closeout procedures specified in Section 017000.
 2. AIA Document G707, Consent of Surety to Final Payment.
 3. AIA Document G706, Contractor's Affidavit of Payment of Debts & Claims
 4. AIA Document G706A, Contractor's Affidavit of Release of Liens
 5. Evidence that claims have been settled.
 6. Final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when Owner took possession of an assumed responsibility for corresponding elements of the Work.
 7. Final liquidated damages settlement statement.

END OF SECTION

SECTION 012100 - ALLOWANCES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Quantity allowances.
- B. Payment and modification procedures relating to allowances.

1.02 RELATED REQUIREMENTS

- A. Section 012000 - Price and Payment Procedures: Additional payment and modification procedures.

1.03 QUANTITY ALLOWANCES

- A. Quantity allowances shall be based upon unit prices incorporated into the Contract Documents. These unit prices include the Contractor's overhead and profit.
- B. Payment Procedures:
 - 1. Submit detailed records and logs to document actual quantities with next application for payment.
- C. Differences in cost will be adjusted by Change Order. No additional overhead and profit charges will be paid for increases in quantity allowances.

1.04 ALLOWANCES SCHEDULE

- A. Allowance No. 1: Provide labor, materials and equipment necessary for trench earth excavation and off-site disposal of 500 cubic yards of unsatisfactory soils as determined by the Architect, and replacement with 500 cubic yards of DGA installed and compacted. Comply with all contract document requirements. This allowance is for excavation required as a result of unforeseen conditions and does not represent the work shown on the construction drawings. Architect must approve materials for this allowance prior to the work. This quantity allowance shall be based upon unit prices incorporated into the Contract Documents. These unit prices include the Contractor's overhead and profit.
- B. Allowance No. 2: Provide labor, materials and equipment necessary for the demolition and replacement of 130 linear feet of 2x8, 2x6, and 2x4 pressure-treated wood blocking. Comply with all contract document requirements. This allowance is for replacement required as a result of unforeseen conditions and does not represent the work shown on the construction drawings. Architect must approve materials for this allowance prior to the work.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION - NOT USED****END OF SECTION**

SECTION 012200 - UNIT PRICES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Measurement and payment criteria applicable to Work performed under a unit price payment method.

1.02 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.03 MEASUREMENT OF QUANTITIES

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
- B. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect.
- C. Assist by providing necessary equipment, workers, and survey personnel as required.
- D. Measurement Devices:
 - 1. Weigh Scales: Inspected, tested and certified by the applicable state Weights and Measures department within the past year.
 - 2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
 - 3. Metering Devices: Inspected, tested and certified by the applicable state department within the past year.
- E. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
- F. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- G. Measurement by Area: Measured by square dimension using mean length and width or radius.
- H. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- I. Stipulated Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.
- J. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Architect prior to starting work.
- K. Contractor's Engineer Responsibilities: Sign surveyor's field notes or keep duplicate field notes , calculate and certify quantities for payment purposes.
- L. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at the Owner's expense, by an independent surveyor acceptable to Contractor.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION - NOT USED****END OF SECTION**

SECTION 012300 - ALTERNATES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Description of Alternates.
- B. Administrative and procedural requirements.

1.02 RELATED REQUIREMENTS

- A. Instructions to Bidders: Instructions for preparation of pricing for alternatives.

1.03 ACCEPTANCE OF Alternates

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.04 SCHEDULE OF Alternates

- A. Alternate No. 1 - Basement Renovation: Provide labor, materials and equipment necessary to renovate basement as indicated on the drawings and as specified. Comply with all contract document requirements.
 - 1. If awarded, the work under this Bid Alternate shall be constructed as outlined in Drawing Sheet G0.2 - Phasing Plan.
- B. Alternate No. 2 - FMD Classroom & First Aid Office: Provide labor, materials and equipment necessary to construct FMD Classroom and First Aid Office as indicated on the drawings and as specified. Comply with all contract document requirements.
 - 1. If awarded, the work under this Bid Alternate shall be constructed as outlined in Drawing Sheet G0.2 - Phasing Plan.
- C. Alternate No. 3 - Media Center Circulation Desk: Provide labor, materials and equipment necessary to install media center circulation desk as indicated on the drawings and as specified. Comply with all contract document requirements.
 - 1. If awarded, the work under this Bid Alternate shall be constructed as outlined in Drawing Sheet G0.2 - Phasing Plan.
- D. Alternate No. 4 - Parent Loop Canopy #1: Provide labor, materials and equipment necessary to construct Parent Loop Canopy #1 as indicated on the drawings. Comply with all contract document requirements.
 - 1. If awarded, the work under this Bid Alternate shall be constructed as outlined in Drawing Sheet G0.2 - Phasing Plan.
- E. Alternate No. 5 - Parent Loop Canopy #2: Provide labor, materials and equipment necessary to construct Parent Loop Canopy #2 as indicated on the drawings. Comply with all contract document requirements.
 - 1. If awarded, the work under this Bid Alternate shall be constructed as outlined in Drawing Sheet G0.2 - Phasing Plan.
- F. Alternate No. 6 - Owner-Preferred Hardware Manufacturers: Provide preferred manufacturers listed in Specifications Section 087100 Finish Hardware, Article 1.3, in lieu of all other manufacturers specified. Comply with all contract document requirements.

- G. Alternate No. 7 - Main Entry Drive: Provide labor, materials and equipment necessary to demolish the remaining asphalt pavement and base on the Main Entry Drive and install new asphalt pavement, base and striping as indicated on the drawings and as specified. Comply with all contract document requirements.
1. If awarded at the time of Contract Award, the work under this Bid Alternate shall be constructed as outlined in Drawing Sheet G0.2 - Phasing Plan.
 2. As outlined in Section 002114 Supplemental Instructions to Bidders, the Contractor shall hold the price for Bid Alternate No. 7 throughout the construction period. The Owner reserves the right to add this Bid Alternate to the Contract Agreement through Change Order. An appropriate construction period for work covered by this Bid Alternate will be determined at the time the Change Order is executed.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION - NOT USED****END OF SECTION**

SECTION 012400 - GEOTECHNICAL DATA**PART 1 GENERAL****1.01 GEOTECHNICAL REPORT**

- A. A geotechnical exploration of the site was conducted by S&ME, dated July 19, 2019.
 - 1. A digital copy in color may be requested of the Architect.
- B. The report of the geotechnical exploration is appended hereto for reference only and is not a part of the Contract Documents. The boring layout and log of borings is appended to the set of contract drawings. No warranty of content or accuracy is expressed or implied. Neither the Owner nor the Architect will be responsible for interpretations or conclusions drawn from this report by the Contractor. This data is made available solely for the convenience of the Contractor.

END OF SECTION



Report of Geotechnical Exploration
Burgin Independent School Addition
Burgin, Kentucky
S&ME Project No. 1183-19-024

PREPARED FOR:

Burgin Independent Board of Education
440 East Main Street
Burgin, Kentucky 40310

PREPARED BY:

S&ME, Inc.
2020 Liberty Road, Suite 105
Lexington, Kentucky 40505

July 19, 2019



July 19, 2019

Burgin Independent Board of Education
440 East Main Street
Burgin, Kentucky 40310

Attention: Mr. Will Begley - Superintendent

Reference: **Report of Geotechnical Exploration**
Burgin Independent School Addition
Burgin, Kentucky
S&ME Project No. 1183-19-024

Dear Mr. Begley:

S&ME, Inc. (S&ME) has completed our geotechnical exploration for the planned addition to the Burgin Independent School in Burgin, Kentucky. We performed our work in accordance with S&ME Proposal No. 11-1900160 dated May 3, 2019 as authorized by you. The purpose of this exploration was to obtain subsurface data at the site and provide geotechnical recommendations for design and construction of an addition to the existing structure.

This report explains our understanding of the project, documents our findings, and presents our conclusion and engineering recommendations.

Sincerely,

S&ME, Inc.

A handwritten signature in blue ink, appearing to read 'A. Fiehler'.

Andrew M. Fiehler, PE
Project Engineer
Licensed Kentucky 23,977

A handwritten signature in blue ink, appearing to read 'Benjamin C. Dusina'.

Benjamin C. Dusina, PE
Senior Engineer
Licensed Kentucky 26,628



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Appendices

Appendix I – Site Location Plan / Boring Location Plans

Appendix II – Test Boring Records / Boring and Sounding Summary

Appendix III – Laboratory Testing Results

Appendix IV – ACI 302.1R-96 “GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION”



1.0 INTRODUCTION

S&ME, Inc. (S&ME) has completed our geotechnical exploration for the planned addition to the Burgin Independent School in Burgin, Kentucky. We performed our work in accordance with S&ME Proposal No. 11-1900160 dated May 3, 2019 as authorized by you. The purpose of this exploration was to obtain subsurface data at the site and provide geotechnical recommendations for design and construction of an addition to the existing structure.

This report explains our understanding of the project, documents our findings, and presents our conclusion and engineering recommendations.

2.0 PROJECT INFORMATION

The proposed addition footprint is currently a combination of asphalt paved parking lot and lawn area. The proposed 10,000 square foot kitchen and cafeteria addition will be located at the southwest side of the existing school building. The addition will be constructed of concrete masonry load bearing walls with a brick veneer with a concrete slab on grade floor. Mr. Charles Haynes, PE of Structural Design Group indicated that maximum column loads of 75 kips and maximum wall loads of 5 kips per linear foot are expected.

Site topographic information noted about three to four feet of relief in the planned addition footprint. Based on a planned Finished Floor Elevation (FFE) of 882.86, and the shallow bedrock encountered in our borings, the design team plans to over-excavate the bedrock and backfill to the planned subgrade elevation with crushed stone.

New pavement areas are also planned. The existing parking lot and driveways will be re-configured and will include new pavement in the lawn areas to the west of the existing pavement.

3.0 REGIONAL GEOLOGY

A review of the USGS geologic map of the Harrodsburg Quadrangle (1972) indicates the site is underlain by Grier Limestone Member of the Lexington Limestone Formation of the Middle Ordovician Geologic Age. The Grier Limestone Member consists of limestone that is light-gray, medium to coarse grained, bioclastic, poorly sorted, and fossiliferous. The limestone occurs in irregular beds ranging from 0.1 to 0.8 feet thick, alternating with 0.1 to 2.0 feet thick sets of nodular fossiliferous limestone containing a micrograined calcite matrix. Our borings and rock soundings encountered bedrock at depths ranging from 1.3 to 7.1 feet below existing grades.

The Lexington Limestone is prone to differential weathering and solutioning, including sinkhole formation. The result is an erratic top of rock profile with open fractures, cavities, channels and soil filled, solution enlarged joints in the bedrock. Subsurface flow of water is partly controlled by solution widened fractures and by flat openings at contacts between major rock units. Alignments of solution enlarged fractures, sinkholes, caverns and depressions commonly indicate fracture zones followed by subsurface water courses. Solutioning by ground water has produced numerous sinkholes and caverns in the fragmented Grier Limestone Member. As such, several high-yielding springs occur within this Member. A review of the geologic mapping indicates that two springs along Cane Run Creek are on the western side of the site.



At least 10 sinkholes were mapped on the USGS geologic map in the Grier Limestone Member within one half mile of the project site with the closest mapped sinkhole being about 750 feet southwest of the site. No obvious sinkholes or closed depressions were observed on the site during our field work; however, the site has been regraded. Thus, any surface evidence of solution activity may have been filled or destroyed during site grading in these areas. There is a spring located in the northwest corner of the property. Springs are common in Karst areas. Another common feature of Karst topography associated with the Lexington Limestone are soil filled slots in the bedrock. While we did not encounter slots or other obvious signs of Karst development in our borings, there is the possibility they may occur between our borings. The Kentucky Geological Survey (KGS) identifies this area of Mercer County as a high potential for Karst activity.

The refusal materials at this site were explored by coring the upper five feet of refusal materials from borings B-1, B-2, B-4, and B-6 which correspond to the approximate corners of the addition footprint. Observation of the recovered rock cores indicated that the bedrock consists of moderately weathered limestone that is fine to medium grained. The rock cores confirm the geologic mapping of the limestone and shale of the Grier Limestone Member.

For more detailed descriptions of the data obtained from our borings, please refer to our Test Boring Records in Appendix II and the Laboratory Test Data in Appendix III.

4.0 EXPLORATION METHODS

The procedures used by S&ME for field and laboratory sampling and testing are in general accordance with ASTM procedures and established engineering practice. Appendix II contains brief descriptions of the procedures used in this exploration.

4.1 Field Exploration

A total of 14 soil test borings (labeled B-1 through B-14) and 21 rock soundings (labeled S-1 through S-21) were drilled for this project. Mr. Andrew Fiehler, PE, from our office was on-site during drilling to observe pertinent surface and site features indicative of the site geology and to direct the drilling operations. Upon completion of drilling, the boring locations and ground surface elevations were measured by an S&ME staff using survey grade GPS.

The borings were drilled by a track-mounted Diedrich D-50 drill rig using a combination of 6-7/8 inch O.D. hollow stem augers and 4-1/4 inch O.D. solid flight augers. Soil samples were obtained using a split-barrel sampler driven by an automatic hammer system in general accordance with ASTM D1586. We attempted to obtain relatively undisturbed (Shelby) tube samples of the soil; however, the shallow bedrock depths encountered prevented obtaining testable soil samples. Rock coring was performed in our boring in general accordance with ASTM D2113. The stratification lines shown on the boring record represent the approximate boundaries between soil and rock types. The transitions may be more gradual than shown. A general description of our field procedures, a test boring record legend and Test Boring Records are provided in Appendix II of this report. Also included in Appendix II is a summary of the weathered bedrock and auger refusal depths and elevations for the borings and rock soundings.



4.2 Laboratory Testing

Following retrieval, the recovered soil samples were placed in plastic storage bags. The recovered samples were returned to our laboratory where applicable laboratory tests were performed. These tests are used to assess the engineering properties of the soil. The soil samples were visually classified by a geologist according to the Unified Soil Classification System (ASTM D2487). S&ME conducted natural moisture content determinations and Atterberg limits tests on selected samples to aid in classification. We performed two unconfined compressive strength testing of representative rock core samples.

We also performed a standard Proctor and a California Bearing Ratio (CBR) test of a bulk sample of auger cuttings from boring B-7. A summary of laboratory tests performed and results of the laboratory testing are included in Appendix III.

5.0 SUBSURFACE CONDITIONS

Of the 35 borings and rock soundings drilled, 30 were drilled through the existing asphalt pavement. The asphalt thickness ranged from 2 to 6 inches thick with an average thickness of about 4 ½ inches. The asphalt thickness measurements are listed on the Boring and Sounding Summary included in Appendix II. Beneath the asphalt we encountered gravel base varying in thickness from about 2 to 12 inches. The remaining five (5) borings were advanced in lawn areas and encountered 3 to 7 inches of topsoil.

Beneath the surface materials three of the borings (borings B-7, B-8, and B-13) encountered 2 to 3 feet of previously placed soil fill. The remainder of the borings encountered residual clay grading from low plasticity (lean) clay to high plasticity (fat) clay with depth.

Natural moisture contents of the lean clay ranged from about 19 to 31 percent. Atterberg Limits tests on two samples of Lean Clay (CL) indicated liquid limits of 39 and 44 percent with plasticity indices of 21 and 25 percent. Natural moisture contents of the fat clay ranged from about 31 to 33 percent. Atterberg limits testing performed on two samples of the Fat Clay (CH) indicated liquid limit of 53 and 66 percent with plasticity indices of 30 and 37 percent.

Beneath the fat clay we encountered very weathered bedrock with clay seams grading to weathered bedrock overlying the auger refusal materials which we interpret to be intact bedrock. The very weathered to weathered bedrock horizon ranged from about one foot thick up to nine feet in thickness. Beneath the weathered bedrock we encountered limestone with interbedded shale as described in the Regional Geology section above. Two representative rock core samples were subjected to unconfined compressive strength testing which indicated strengths of 4,414 psi and 5,970 psi. While these strengths are in the Moderately Hard range, note that several other projects in Burgin have had rock unconfined strengths in the 10,000 to 12,000 psi range which required heavy rock excavation equipment.

Our borings were dry upon soil augering. Seasonal and periodic variations in precipitation can affect the observed water level conditions. Perched water is often encountered near the soil/bedrock transition and should not be considered the static groundwater table which is encountered at much greater depths in central Kentucky.



6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 General Discussion

The following recommendations are based upon a finished floor elevation (FFE) of 882.36 feet and the proposed site grading. We identified the following key issues that may impact the development of this site:

- Existing building and utilities within the addition footprint
- Shallow bedrock

6.1.1 *Existing Building and Utilities*

There are an existing building and several utilities within the addition footprint. We understand that the building will be demolished and the existing utilities relocated to outside the addition footprint. During demolition, the foundations and any below grade improvements should be removed and the resulting excavations backfilled with structural fill as outlined in Section 6.3 below.

During the survey of the site, S&ME retained a private utility locator to mark the underground utilities. During our exploration, school staff also mentioned several additional underground utilities; however, a consensus about the exact locations of the utilities could not be reached by the school staff. We anticipate that un-marked utilities are likely in the addition footprint.

6.1.2 *Shallow Bedrock*

Weathered bedrock and bedrock are relatively shallow at the site. Expect that utility excavations and site grading in areas of cut greater than about 2 to 4 feet will encounter bedrock. We anticipate that the highly weathered bedrock can be excavated with conventional excavation equipment; however, isolated layers or deeper excavations may require hoe-ramming or other hard rock removal methods.

The design team is planning to over-excavate the bedrock in the kitchen portion of the addition and backfill to the plan subgrade with compacted crushed stone to help reduce utility installation challenges in the kitchen. Our borings and soundings indicate that the planned excavation will occur in the weathered bedrock zone. Undercutting of the cafeteria portion is not planned at this time.

6.2 Site Preparation

The vegetation, topsoil, tree stumps, underground utilities and other debris should be removed from the proposed construction areas. We recommend that entire rootball from any trees be removed. The resulting holes from rootballs should be backfilled with compacted structural fill if it is required to reach subgrade elevation. The existing asphalt should be removed; however, the base stone can be left in-place provided it is stable when observed during proofrolling.

As mentioned, the kitchen portion of the addition is to be over-excavated to the approximate foundation bearing elevation and backfilled with compacted crushed stone. We recommend the use of Dense Graded Aggregate (DGA) or quarry screenings for the backfill. In the cafeteria portion of the addition, we recommend that at least one foot of cushion between the floor slab base and bedrock be included in the design and grading. Based on our



borings and rock soundings we do not anticipate that bedrock removal will be required. However, hand probing of the subgrade prior to placement of the floor slab base stone should be performed to verify the depth to bedrock.

Once the initial site preparation is complete, an S&ME engineer should be retained to visit the site and assess the exposed grade before fill is placed. Observed soft areas should be remediated at the S&ME engineer's discretion before moving on to subsequent tasks.

It is important an S&ME representative observes site stripping to assess that adequate (but not excessive) material has been stripped. Previously unexplored or unknown conditions could become evident during these operations. Weak, organic, or fat clay soils within three feet of the building footprint laterally should be removed and replaced with structural fill. S&ME must judge whether the recommendations in this report should be modified in view of the conditions encountered.

Once the initial site stripping has occurred, we recommend a proofroll of the at-grade areas and areas to receive structural fill. Proofrolling consists of observing a loaded dump truck or scraper traffic over the planned fill area. Areas observed to exhibit excessive rutting and/or deflection should be remediated at the engineer's direction. Areas where planned construction bears at or near the existing site grades may require stabilizing prior to beginning construction. Either undercutting and backfilling with structural fill, or aerating/drying and re-compaction of the soil will likely be required.

To help control the shrink/swell potential of the near surface soils, we recommend that the top two (2) feet of the building pad consist of soil with a plasticity index (PI) of less than 30 percent (i.e., lean clay). Where fat clay is present within two (2) feet of the building pad subgrade elevation, we recommend undercutting and replacing with lean clay. Fat clay can be used as structural fill in deeper fill areas. Our borings and laboratory testing do not indicate the need for undercutting of fat clay within the addition footprint. If suspect soils are observed during site grading, additional Atterberg Limits testing should be performed.

6.3 Structural Fill Placement

Structural fill is defined as inorganic natural soil with a maximum particle size of 3 inches and maximum dry density of at least 100 pounds per cubic foot (pcf) when tested by the standard Proctor method (ASTM D698) and a plasticity index (PI) of less than 30 percent. While the lean clay (CL) satisfies the criteria for structural soil fill, the fat clay (CH) at the site does not. The standard Proctor test of the lean clay indicated a maximum dry density of 106.9 pcf at an optimum moisture content of 16.8 percent.

Atterberg limits testing performed on the fat clay (CH) sample indicated a plasticity index range from 30 to 37 percent. This high plasticity clay should not be used within two (2) feet of the proposed subgrade level of floor slabs for structures and pavements.

Structural fill placement should occur in relatively thin (6 to 8-inch) layers and be compacted to at least 98 percent of the standard Proctor maximum dry density beneath the foundation and 95 percent of the standard Proctor maximum dry density in pavement areas. The moisture content of the fill should be maintained within 2 percent of the soil's optimum moisture content even though compaction may be achieved at moisture contents outside the specified range.



Structural fill beneath building pads, the adjacent sidewalks, and pavements should consist of lean clay soils with a plasticity index less than 30 percent, KYDOT Dense Graded Aggregate (DGA) or quarry screenings. Do not use fat clay as fill beneath the building, sidewalks, and pavements, as the expansive properties of the fat clay may result in unwanted swell and distress to lightly loaded structural elements such as sidewalks, pavements, etc. Excavated fat clay should be used in greenspace or non-structural areas that are not planned for future development.

It is imperative that, during construction, standard Proctor testing and additional Atterberg limits testing of fill soils should be performed by S&ME for compliance with the project specifications before they are used as fill material. If soils are imported to the site, we recommend the soils be tested for conformance with the project specifications before being transported to the site. Please realize laboratory conformance testing usually takes three to four business days to complete; therefore, the Contractor should plan accordingly.

In-place density testing must be performed on structural fill as a check that the recommended compaction criteria have been achieved. This allows our project engineer to evaluate the quality of the fill construction and assess that the design criteria is being achieved in the field. We further recommend these tests be performed on a full-time basis by S&ME. The testing frequency for density tests performed on a full-time basis can be determined by our personnel based on the area to be tested, the grading equipment used, and construction schedule. Tests should be performed at vertical intervals of 8-inches or less (the recommended lift thickness) as the fill is being placed.

6.4 Foundation Recommendations

S&ME recommends the foundations for the new addition bear on weathered bedrock or bedrock. We recommend the use of an allowable bearing pressure to **5,000 psf** (pounds per square foot) to size the foundations.

Based on the potential for Karst activity at this site, we recommend that 2-inch diameter probe holes be drilled to assess the continuity of the underlying bedrock. We recommend at least one probe hole be drilled every 25 feet along continuous footings. Additionally, at least one probe hole may be requested for each column footing. Two or more probe holes may be required, at the discretion of the engineer, when the footing sizes exceed 25 square feet. We recommend that the project budget contain a unit price contingency for additional probe hole drilling if additional probe holes are required based on encountered subsurface conditions.

The probe holes should be drilled to a depth of 5 feet into the bedrock-bearing material for all spread footing foundations. These probe holes are usually drilled with a pneumatic percussion drill. The Engineer should check the probe hole using a hooked-end steel feeler rod to assess the bedrock continuity. If this check indicates a discontinuous or compressible seam in the bedrock, the foundation should be excavated deeper. Additional probe holes may be required by the Geotechnical Engineer to check foundations supported on marginal material.

Once the bedrock is observed and tested by S&ME, backfill the over-excavated foundations to the design bottom of footing elevation with lean concrete or flowable fill.

Since the foundations will bear on bedrock, the frost depth requirement will not apply. We recommend all foundations have a minimum footing width of 24 inches to allow for hand cleaning of footing subgrades disturbed by the excavation process and the placement of reinforcing steel. The reinforcing steel should be clean and dry prior to concrete placement.



6.5 Seismic Site Classification

The current seismic design procedures outlined in the NEHRP (National Earthquake Hazard Reduction Program) guidelines mandate structural design loads to be based on the seismic coefficients of the site. Based on the results of our exploration and the geology of the area, we recommend a site seismic classification of "B" for this project site. This classification is further defined in Table 1613.5.2 in the 2013 Kentucky Building Code.

6.6 Floor Slab Recommendations

The planned addition will have a first floor FFE of 882.36 feet MSL. Based on the results of our exploration, the proposed floor slab will be supported on newly placed and compacted fill. We recommend the upper two feet of the building pad subgrade consist of low plasticity fill with a plasticity index (PI) of less than 30 percent, Dense Graded Aggregate (DGA), or quarry screenings.

We recommend that control joints be placed in the slab around columns and along footing supported walls to reduce cracking due to minor differential settlements. We recommend that ACI 302.1R-96 "GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION" be followed for design and placement of concrete floor slabs, see attached form in Appendix IV to this report.

Between completion of grading and slab construction, floor slab subgrades are often disturbed by weather, footing and utility line installation, and other construction activities. For this reason, the subgrade should be evaluated by an S&ME engineer immediately prior to constructing the slab.

6.7 Pavement Recommendations

In order for the pavement to perform satisfactorily, the subgrade soils must have sufficient strength and be stable enough to avoid deterioration from construction traffic and support the paving equipment. In addition, the completed pavement section must resist freeze/thaw cycles and wheel loads from traffic. Generally, construction traffic loading is more severe than the traffic after construction.

The recommended pavement section given below is based on the assumption that the newly placed fill soil for the pavement subgrade is compacted to at least 95 percent of the standard Proctor maximum dry density at moisture contents ranging from ± 3 percent of the soil's optimum moisture content as determined by the standard Proctor test.

Minimizing infiltration of water into the subgrade and rapid removal of subsurface water are essential for the successful long-term performance of the pavement. Both the subgrade and the pavement surface should have a minimum slope of one-quarter inch per foot to promote surface drainage. Edges of the pavement should provide a means of water outlet by extending the aggregate base course through to side ditches. Side ditches should be at least 2 feet below the pavement surface.

The pavement materials should conform and be placed and compacted in accordance with the applicable sections of the Kentucky Transportation Cabinet (KTC) Standard Specifications for Road and Bridge Construction, latest edition. We used the American Association of State Highway and Transportation Officials (AASHTO) Guide for Design of Pavement Structures (1993) as a basis for our flexible pavement thickness analysis. The total pavement thickness requirement is a function of the CBR. While the laboratory testing indicated a CBR value of 5.1 percent,



we used a CBR of 4 percent for our calculations, based on our experience of similar soils in the vicinity of the project site.

Anticipated traffic data was not available at the time of this report. The following pavement design recommendations are based on the assumptions of a 20 year service life, a CBR value of 4 percent, 50,000 ESAL's for light duty pavement (light duty and parking lot) and 75,000 ESAL's for heavy duty pavement (drive lanes and drop off lanes). If actual or anticipated traffic volumes exceed the estimated ESAL value used for this design, S&ME must re-evaluate the pavement thickness recommendations. The total pavement thickness requirement is obtained from the AASHTO nomograph in terms of a structural number (SN), a weighted sum of the pavement layer thicknesses accounting for their structural and drainage properties.

S&ME recommends that the pavement section (base stone and asphalt) be placed after the majority of the new building construction has been completed. S&ME recommends that both binder and surface mix asphalt be placed sequentially before traffic is allowed on the new pavement. **S&ME recommends that the light duty pavement section be used for automobile parking only.**

The following pavement thickness design recommendations will not provide a sufficient pavement for haul roads. If construction sequencing requires that new pavement areas be constructed prior to substantial completion of the building, do not allow construction traffic on the finished pavement.

S&ME recommends the following flexible asphalt pavement sections for this project:

Table 6-1 – Flexible Pavement Bearing on Soil

Material	Light Duty	Heavy Duty	KY Transportation Cabinet Specification
Asphalt Surface Course	1-½ Inches	1-½ Inches	Section 400
Asphalt Binder Course	3 Inches	4 Inches	Section 400
Crushed Stone Base	5 Inches	6 Inches	Section 303

Our pavement recommendations are based on the assumption that S&ME is retained to monitor the installation of the asphalt and base, check the installed thickness of the aggregate materials, and perform in-place density tests. Asphalt placement should be monitored full-time to observe placement and compaction procedures. Asphalt samples should be collected periodically and tested for asphalt cement content, aggregate gradation, and density.

Impervious Concrete Pavement Alternative – We recommend that in areas where heavy, concentrated loads (i.e., dumpster area, entrances, loading docks, etc.) are expected, a rigid (concrete) pavement section be used. For dumpster areas, we recommend that rigid pavement be extended beyond the dumpster pad for the entire length of the garbage truck loading area. The pavement subgrade should be stabilized in accordance with the recommendations for the asphalt paved areas, and the related recommendations in this report. We recommend that the concrete pavement be supported by at least a 6 inch layer of compacted DGA. The DGA should be compacted to a minimum of 95 percent of the standard Proctor maximum dry density. We recommend a minimum concrete section of 6 inches for this site. The concrete should be air-entrained and have a 28-day compressive strength of 4,500 psi. Joint spacing should be at a maximum spacing of 15 feet each way.



7.0 FOLLOW-UP SERVICES

Our services should not end with the submission of this geotechnical report. S&ME should be kept involved throughout the design and construction process to maintain continuity and to assess whether our recommendations are properly interpreted and implemented. To achieve this, we should be retained to review project plans and specifications with the designers to see that our recommendations are fully incorporated. We also should be retained to observe and test the site preparation, foundation excavation, and building construction. If we are not allowed the opportunity to continue our involvement on this project, we cannot be held responsible for the recommendations in this report.

Our familiarity with the site and with the foundation recommendations will make us a valuable part of your construction quality assurance team. In addition, a qualified engineering technician should observe and test all structural concrete and steel. Only experienced, qualified persons trained in geotechnical engineering and familiar with foundation construction should be allowed to evaluate and test foundation excavations. Normally, full-time observations and testing of the site work and foundation installation is appropriate.

8.0 LIMITATIONS OF REPORT

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other representation or warranty either express or implied, is made.

We relied on project information given to us to develop our conclusions and recommendations. If project information described in this report is not accurate, or if it changes during project development, we should be notified of the changes so that we can modify our recommendations based on this additional information if necessary.

Our conclusions and recommendations are based on limited data from a field exploration program. Subsurface conditions can vary widely between explored areas. Some variations may not become evident until construction. If conditions are encountered which appear different than those described in our report, we should be notified. This report should not be construed to represent subsurface conditions for the entire site.

Unless specifically noted otherwise, our field exploration program did not include an assessment of regulatory compliance, environmental conditions or pollutants or presence of any biological materials (mold, fungi, bacteria). If there is a concern about these items, other studies should be performed. S&ME can provide a proposal and perform these services if requested.

S&ME should be retained to review the final plans and specifications to confirm that earthwork, foundation, and other recommendations are properly interpreted and implemented. The recommendations in this report are contingent on S&ME's review of final plans and specifications followed by our observation and monitoring of earthwork and foundation construction activities.

For more information on the use and limitations of this report, please read the Geoprofessional Business Association (GBA) document that follows this page.

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time to perform additional study.* Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.



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Appendix I – Site Location Plan / Boring Location Plans

Drawing Path: \\lexky\\Active\\Projects\\2019\\GEO\\1183-19-024 Burgin Independent Schools Addition Lexington\\Graphics\\1183-19-024 - FIG 1&2-V7.dwg

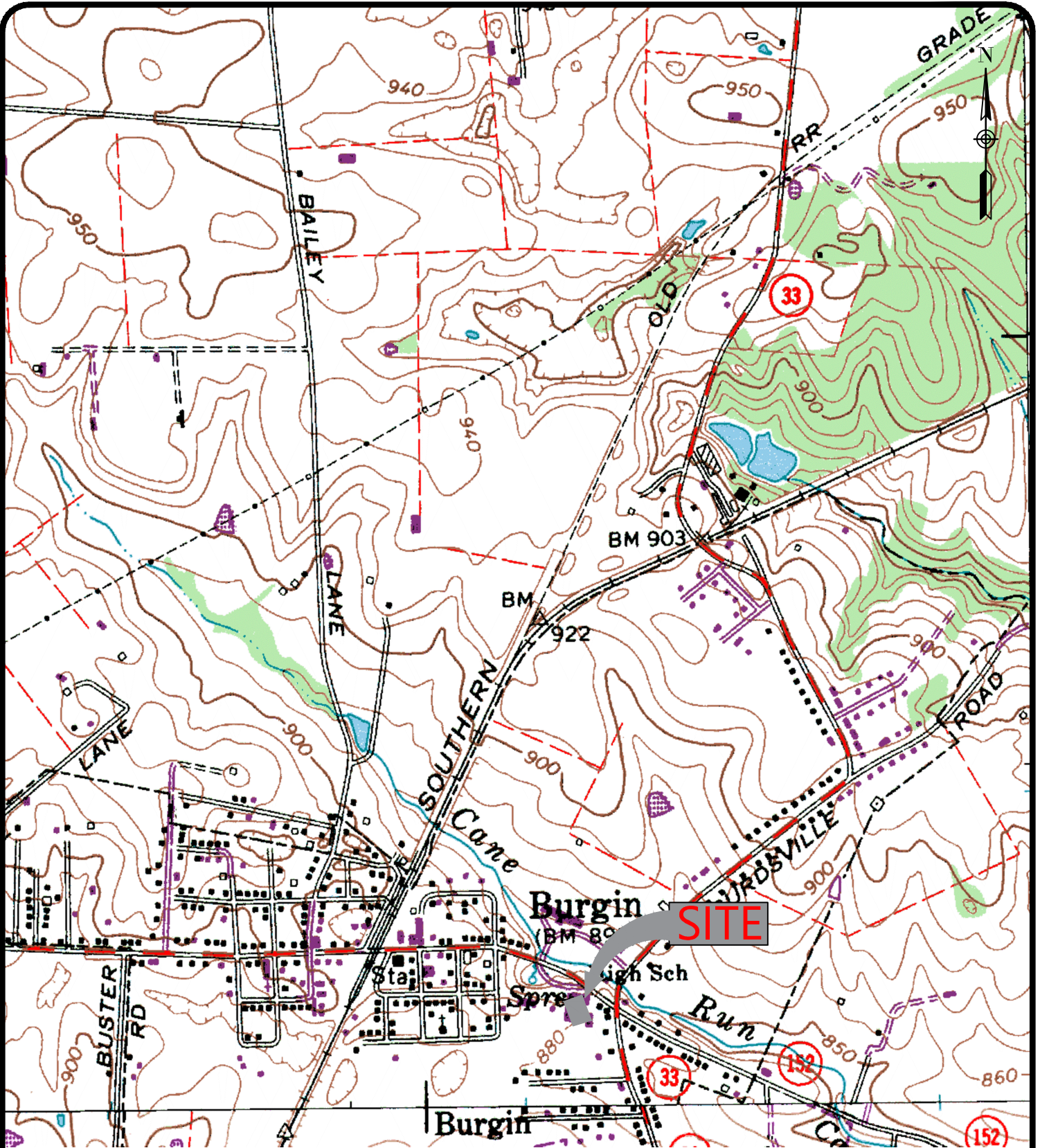
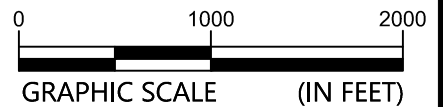


IMAGE SOURCE: USGS TOPOGRAPHIC



VICINITY MAP

BURGIN INDEPENDENT SCHOOLS
BURGIN INDEPENDENT SCHOOLS ADDITION
BURGIN, KENTUCKY

SCALE:
1IN = 1000FT
DATE:
6/10/2019
PROJECT NUMBER
1183-19-024

FIGURE NO.

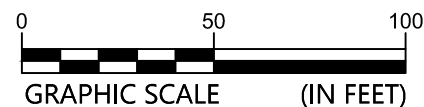
1

Drawing Path: \\lexkyActive\Projects\2019\GEO\1183-19-024 Burgin Independent Schools Addition Lexington\Graphics\1183-19-024 - FIG 1&2-V7.dwg



LEGEND

SOIL BORING LOCATION B-X



SOURCE : ROSS TARRANT ARCHITECTS; SURVEY BY : S&ME

BORING LOCATION PLAN

BURGIN INDEPENDENT SCHOOLS
BURGIN INDEOENDENT SCHOOLS ADDITION
BURGIN, KENTUCKY

SCALE:

1IN = 50FT

DATE:

6/10/2019

PROJECT NUMBER

1183-19-024

FIGURE NO.

2

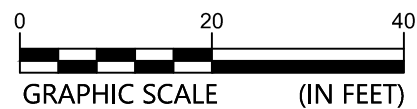
Drawing Path: \\lexkyActive\Projects\2019\GEO\1183-19-024 Burgin Independent Schools Addition Lexington\Graphics\1183-19-024 - FIG 1&2-V7.dwg



SOURCE : ROSS TARRANT ARCHITECTS; SURVEY BY : S&ME

LEGEND

SOIL BORING LOCATION B-X



BORING LOCATION PLAN

BURGIN INDEPENDENT SCHOOLS
BURGIN INDEPENDENT SCHOOLS ADDITION
BURGIN, KENTUCKY

SCALE:

1IN = 20FT

DATE:

6/10/2019

PROJECT NUMBER

1183-19-024

FIGURE NO.

3



Appendix II – Test Boring Records / Boring and Sounding Summary

TEST BORING RECORD LEGEND

FINE AND COARSE GRAINED SOIL INFORMATION

COARSE GRAINED SOILS (SANDS & GRAVELS)		FINE GRAINED SOILS (SILTS & CLAYS)			PARTICLE SIZE	
N	Relative Density	N	Consistency	Qu, KSF Estimated		
0-4	Very Loose	0-1	Very Soft	0-0.5	Boulders	Greater than 300 mm (12 in)
5-10	Loose	2-4	Soft	0.5-1	Cobbles	75 mm to 300 mm (3 to 12 in)
11-20	Firm	5-8	Firm	1-2	Gravel	4.74 mm to 75 mm (3/16 to 3 in)
21-30	Very Firm	9-15	Stiff	2-4	Coarse Sand	2 mm to 4.75 mm
31-50	Dense	16-30	Very Stiff	4-8	Medium Sand	0.425 mm to 2 mm
Over 50	Very Dense	Over 31	Hard	8+	Fine Sand	0.075 mm to 0.425 mm
					Silts & Clays	Less than 0.075 mm









































The **STANDARD PENETRATION TEST** as defined by ASTM D 1586 is a method to obtain a disturbed soil sample for examination and testing and to obtain relative density and consistency information. A standard 1.4-inch I.D./2-inch O.D. split-barrel sampler is driven three 6-inch increments with a 140 lb. hammer falling 30 inches. The hammer can either be of a trip, free-fall design, or actuated by a rope and cathead. The blow counts required to drive the sampler the final two increments are added together and designate the N-value defined in the above tables.

ROCK PROPERTIES

ROCK QUALITY DESIGNATION (RQD)		ROCK HARDNESS	
Percent RQD	Quality		
0-25	Very Poor	Very Hard:	Rock can be broken by heavy hammer blows.
25-50	Poor	Hard:	Rock cannot be broken by thumb pressure, but can be broken by moderate hammer blows.
50-75	Fair	Moderately Hard:	Small pieces can be broken off along sharp edges by considerable hard thumb pressure; can be broken with light hammer blows.
75-90	Good	Soft:	Rock is coherent but breaks very easily with thumb pressure at sharp edges and crumbles with firm hand pressure.
90-100	Excellent	Very Soft:	Rock disintegrates or easily compresses when touched; can be hard to very hard soil.

Length of Rock Core Recovered		X100	Core Diameter	Inches
Recovery =			BQ	1-7/16
			NQ	1-7/8
			HQ	2-1/2
RQD =				
Sum of 4 in. and longer Rock Pieces Recovered		X100		
Length of Core Run				

SYMBOLS

KEY TO MATERIAL TYPES				SOIL PROPERTY SYMBOLS	
	Topsoil		High Plasticity Inorganic Silt or Clay	N:	Standard Penetration, BPF
	Asphalt		Organic Silts/Clays	M:	Moisture Content, %
	Crushed Limestone		Well-Graded Gravel	LL:	Liquid Limit, %
	Fill Material		Poorly-Graded Gravel	PI:	Plasticity Index, %
	Shot-rock Fill		Silty Gravel	Qp:	Pocket Penetrometer Value, TSF
	Low Plasticity Inorganic Silt		Clayey Gravel	Qu:	Unconfined Compressive Strength Estimated Qu, TSF
	High Plasticity Inorganic Silt		Well-Graded Sand	γ	Dry Unit Weight, PCF
	Low Plasticity Inorganic Clay		Poorly-Graded Sand	γ_D :	
	High Plasticity Inorganic Clay		Silty Sand	F:	Fines Content
	Low Plasticity Inorganic Silt or Clay		Clayey Sand		
	Peat		Limestone	SAMPLING SYMBOLS  Undisturbed Sample  Split-Spoon Sample  Rock Core Sample  Auger or Bag Sample	
	Sandstone		Siltstone		
	Claystone		Weathered Rock		
	Dolomite		Granite		
	Gneiss		Schist		
	Amphibolite				No Sample Recovery
	Metagraywacke				Water Level After Drilling
	Phyllite				Extended Time Reading

Burgin Independent School Addition

Boring and Sounding Summary

S&ME Project Number 1183-19-024

	Surface Elev. (ft)	Top of Weathered Rock Depth (ft)	Top of Weathered Rock Elev. (ft)	Auger Refusal Depth (ft)	Auger Refusal Elev. (ft)	Asphalt Thick (in)
B-1	879.8	3.5	876.3	6.7	873.1	6
B-2	880.4	4.1	876.3	7.3	873.1	6
B-3	881.2	2.8	878.4	3.8	877.4	6
B-4	882.8	2.4	880.4	8.0	874.8	6
B-5	882.1	1.3	880.8	9.0	873.1	5
B-6	881.9	3.6	878.3	6.2	875.7	-
B-7	865.7	7.1	858.6	7.7	858.0	-
B-8	876.5	4.2	872.3	7.7	868.8	5
B-9	878.0	2.7	875.3	6.2	871.8	5
B-10	880.3	2.3	878.0	6.3	874.0	6
B-11	882.2	2.1	880.1	4.1	878.1	4.5
B-12	885.0	1.6	883.4	3.6	881.4	2
B-13	886.3	2.6	883.7	4.9	881.4	-
B-14	887.0	2.2	884.8	4.2	882.8	3
S-1	880.3	2.4	877.9	5.1	875.2	4
S-2	880.2	2.7	877.5	4.8	875.4	3.5
S-3	880.9	2.6	878.3	3.3	877.6	6
S-4	881.7	2.8	878.9	5.7	876.0	4
S-5	881.6	1.4	880.2	6.4	875.2	4
S-6	882.3	1.6	880.7	9.0	873.3	4
S-7	882.1	2.6	879.5	6.0	876.1	3
S-8	881.9	2.2	879.7	3.9	878.0	-
S-9	881.9	1.7	880.2	4.6	877.3	-
S-10	882.2	2.3	879.9	4.3	877.9	3.5
S-11	882.4	1.3	881.1	5.3	877.1	5
S-12	882.7	2.8	879.9	4.8	877.9	5
S-13	882.3	1.5	880.8	4.0	878.3	5
S-14	881.8	2.7	879.1	4.6	877.2	6
S-15	881.7	2.4	879.3	4.3	877.4	4
S-16	882.2	2.5	879.7	5.0	877.2	5
S-17	882.5	4.5	878.0	5.4	877.1	5
S-18	882.6	5.3	877.3	6.9	875.7	6
S-19	881.0	2.8	878.2	6.9	874.1	4
S-20	881.1	1.7	879.4	6.1	875.0	3.5
S-21	882.0	1.7	880.3	6.4	875.6	4



TEST BORING RECORD

BORING NO: **B-1**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 879.8	BORING STARTED: 5/31/2019		BORING COMPLETED: 5/31/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	879.8	0	Asphalt - 6 inches												
	879.3		Gravel - 6 inches												
	878.8		Fat Clay (CH) STIFF, brown, moist			10									3 - 4 - 5
	876.8		Weathered Limestone			0									50/1
		5													
	873.1		Auger Refusal at 6.7 feet / Begin Coring												
			Limestone, light to medium gray, thin to medium bedded with interbedded shale partings			43/43	28								
		10													
						60/60	84								
		15													
						14/17	86								
	863.1		Coring Terminated at 16.7 feet												
		20													



TEST BORING RECORD

BORING NO: **B-2**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 880.4	BORING STARTED: 5/31/2019		BORING COMPLETED: 5/31/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	880.4	0	Asphalt - 6 inches												
	879.9		Gravel - 5 inches												
	879.5		Lean Clay (CL) silty, FIRM, light brown, moist			12									2 - 1 - 3
	876.9		Weathered Limestone			4									12 - 50/1
		5													
	873.1		Auger Refusal at 7.3 feet / Begin Coring												
			Limestone, light to medium gray, thin to medium bedded with interbedded shale partings			35/37	55								
		10													
		15													
	863.0		Coring Terminated at 17.4 feet												
		20													



TEST BORING RECORD

BORING NO: **B-3**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 881.2	BORING STARTED: 5/31/2019		BORING COMPLETED: 5/31/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	881.2	0	Asphalt - 6 inches												
	880.7		Gravel - 5 inches												
	880.3		Lean Clay (CL) STIFF, light brown, moist			14									5 - 3 - 7
	878.4		Weathered Limestone												
	877.4		Auger Refusal at 3.8 feet												
		5													
		10													
		15													
		20													



TEST BORING RECORD

BORING NO: **B-4**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 882.8	BORING STARTED: 5/31/2019		BORING COMPLETED: 5/31/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	882.8	0	Asphalt - 6 inches												
	882.3		Gravel - 6 inches												
	881.8		Lean Clay (CL) FIRM, light brown, moist			12									3 - 10 -
	881.5		Highly Weathered Limestone with clay seams												50/5
	879.3		Weathered Limestone			3									50/5
		5													
	874.8		Auger Refusal at 8.0 feet / Begin Coring												
			Limestone, light to medium gray, thin to medium bedded with interbedded shale partings			28/28	54								
		10													
						60/60	70								
		15													
						36/36	77								
	864.4		Coring Terminated at 18.4 feet												
		20													



TEST BORING RECORD

BORING NO: **B-5**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 882.1	BORING STARTED: 5/31/2019		BORING COMPLETED: 5/31/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	882.1	0	Asphalt - 5 inches												
	881.7		Gravel - 7 inches												
	881.1		Highly Weathered Limestone with clay seams			9									18 - 50/5
						0									50/1
	877.6	5	Weathered Limestone												
	873.1	10	Auger Refusal at 9.0 feet												
		15													
		20													



TEST BORING RECORD

BORING NO: **B-6**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 881.9	BORING STARTED: 5/31/2019		BORING COMPLETED: 5/31/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)	BLOWS /6"
									0 10 20 30 40 50	
	881.9	0	Topsoil - 7 inches							
	881.3		Lean Clay (CL) STIFF, brown, moist			16				2 - 4 - 6
	879.4		Highly Weathered Limestone with clay seams			14				6 - 9 - 20
	878.4		Weathered Limestone			0				50/1
		5								
	875.7		Auger Refusal at 6.2 feet / Begin Coring							
			Limestone, light to medium gray, thin to medium bedded with interbedded shale partings							
						49/56	53			
		10								
						60/60	86			
		15								
	866.0		Coring Terminated at 15.9 feet							
		20								



TEST BORING RECORD

BORING NO: **B-7**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 865.7	BORING STARTED: 5/30/2019		BORING COMPLETED: 5/30/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	865.7	0	Topsoil - 3 inches												
	865.5		FILL - Lean Clay (CL) silty with trace gravel and asphalt pieces, FIRM to STIFF, brown, moist			10									2 - 3 - 2
						6									4 - 6 - 8
	862.7		Lean Clay (CL) silty, STIFF, dark brown, moist												
						0									4 - 6 - 8
		5													
	859.7		Fat Clay (CH) STIFF, brown, moist			6									7 - 17 - 50/1
	858.6		Weathered Limestone												
	858.0		Auger Refusal at 7.7 feet												
		10													
		15													
		20													



TEST BORING RECORD

BORING NO: **B-8**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 876.5	BORING STARTED: 5/31/2019		BORING COMPLETED: 5/31/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	876.5	0	Asphalt - 5 inches												
	876.1		Gravel - 6 inches												
	875.6		FILL - Lean Clay (CL) with gravel and asphalt pieces, VERY STIFF, brown, moist			14					20				8 - 13 - 8
	873.0		Lean Clay (CL) VERY STIFF, light brown to brown, moist			16							40		3 - 29 - 10
	872.3	5	Highly Weathered Limestone with clay seams												
	870.5		Weathered Limestone			4								50	28 - 50/2
	868.8		Auger Refusal at 7.7 feet												
		10													
		15													
		20													



TEST BORING RECORD

BORING NO: **B-9**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 878.0	BORING STARTED: 5/30/2019		BORING COMPLETED: 5/30/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	878.0	0	Asphalt - 5 inches												
	877.6		Gravel - 2 inches												
	877.4		Lean Clay (CL) silty, FIRM, dark brown, moist			16									2 - 2 - 5
	876.0		Fat Clay (CL) FIRM, brown, moist												
	875.3		Highly Weathered Limestone with clay seams			2									3 - 50/2
	873.0	5	Weathered Limestone												
	871.8		Auger Refusal at 6.2 feet												
		10													
		15													
		20													



TEST BORING RECORD

BORING NO: **B-10**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 880.3	BORING STARTED: 5/30/2019		BORING COMPLETED: 5/30/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	880.3	0	Asphalt - 6 inches												
	879.8		Gravel - 4 inches												
	879.4		Lean Clay (CL) silty, FIRM, dark brown, moist			16									2 - 3 - 15
	878.8		Fat Clay (CH) VERY STIFF, brown, moist												
	878.0		Highly Weathered Limestone with clay seams			2									50/3
		5													
	874.5		Weathered Limestone												
	874.0		Auger Refusal at 6.3 feet												
		10													
		15													
		20													



TEST BORING RECORD

BORING NO: **B-11**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 882.2	BORING STARTED: 5/30/2019		BORING COMPLETED: 5/30/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	882.2	0	Asphalt - 4 1/2 inches												
	881.8		Gravel - 7 1/2 inches												
	881.2		Fat Clay (CH) STIFF, dark brown, moist												
						14									
	880.1		Highly Weathered Limestone with clay seams												
	879.0		Weathered Limestone												
	878.1		Auger Refusal at 4.1 feet												
		5													
		10													
		15													
		20													



TEST BORING RECORD

BORING NO: **B-12**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 885.0	BORING STARTED: 5/30/2019		BORING COMPLETED: 5/30/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	885.0	0	Asphalt - 2 inches												
	884.8		Gravel - 6 inches												
	884.3		Fat Clay (CH) with weathered limestone pieces, STIFF, brown, moist			4									8 - 50/1
	883.4		Highly Weathered Limestone with clay seams												
	882.8		Weathered Limestone												
	881.4		Auger Refusal at 3.6 feet												
		5													
		10													
		15													
		20													



TEST BORING RECORD

BORING NO: **B-13**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 886.3	BORING STARTED: 5/30/2019		BORING COMPLETED: 5/30/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	886.3	0	Topsoil - 3 inches			8									2 - 3 - 6
	886.1		FILL - Lean Clay (CL) silty with trace gravel pieces, STIFF, brown, moist												
	884.3		Lean Clay (CL) STIFF, brown, moist			6									5 - 29 - 50/1
	883.7		Fat Clay (CH) with weathered limestone layers, sampled as HARD soil, brown, moist												
	882.3		Weathered Limestone			4									6 - 50/2
	881.4	5	Auger Refusal at 4.9 feet												
		10													
		15													
		20													



TEST BORING RECORD

BORING NO: **B-14**

PROJECT: Addition to Burgin Independent		JOB NO: 1183-19-024	REPORT NO:
PROJECT LOCATION: Burgin, KY			
ELEVATION: 887.0	BORING STARTED: 5/30/2019		BORING COMPLETED: 5/30/2019
DRILLING METHOD: 4" HSA	RIG TYPE: D-50		HAMMER: AUTO
GROUNDWATER (ft): Dry		BORING DIAMETER (IN): 4	SHEET 1 OF 1
Remarks: Boring location and elevation measured by S&ME with survey grade GPS equipment			

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu	STANDARD PENETRATION RESISTANCE (N)						BLOWS /6"
									0	10	20	30	40	50	
	887.0	0	Asphalt - 3 inches												2 - 16 - 50/1
	886.8		Gravel - 12 inches												
	885.8		Lean Clay (CL) silty, STIFF, dark brown, moist			4									
	884.8		Highly Weathered Limestone with clay seams												
	884.0		Weathered Limestone												
	882.8		Auger Refusal at 4.2 feet												
		5													
		10													
		15													
		20													

FIELD TESTING PROCEDURES

Field Operations: The general field procedures employed by S&ME, Inc. are summarized in ASTM D 420 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 and in situ methods as well as borings.

Borings are drilled to obtain subsurface samples using one of several alternate techniques depending upon the subsurface conditions. These techniques are:

- 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 a field engineer who is on site to direct the drilling operations and log the recovered samples. 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 D 2488 and prepares the final boring records that 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 D 1586.

The borings were made by mechanically twisting a 5-5/8" outer diameter auger into the soil. At regular intervals, the drilling tools were removed and 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".

Representative portions of the 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.

Soil Auger Soundings: Soil auger soundings were made at the site at the locations shown on the attached Boring Location Plan. The soundings were performed by mechanically twisting a steel auger into the soil. However, unlike the soil test borings, a smaller diameter solid stem auger was used and no split-spoon samples were obtained. The driller provided a general description of the soil encountered by observing the soils brought to the surface by the twisting auger. The auger was advanced until refusal materials were encountered and the refusal depth was noted by the driller. The auger is then withdrawn and the depths to water or caved materials are then measured and recorded by the driller.

Soil auger soundings provide a rapid, economical method of obtaining the approximate bedrock depth, groundwater depth, and general soil conditions at locations where detailed soil testing and sampling is not required.

Water Level Readings: Water table readings are normally taken in conjunction with borings and are recorded on the "Test Boring Records". 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.



Appendix III – Laboratory Testing Results

Lab Summary



S&ME, Inc. Cincinnati: 862 East Crescentville Road, West Chester, OH 45246

Project No.: 1183-19-024

Report Date: 06/17/19

Project Name: Burgin Independent

Client Name: Estill County Board of Education

Client Address: Burgin, KY

BORING NO.	SAMPLE DEPTH, FT.	SAMPLE TYPE	USCS	NATURAL MOISTURE CONTENT, %	ATT. LIMITS			APPROX % RET. ON #40	MAX DRY DENSITY, PCF @ OPT MC % (STD. PROCTOR)	WET UNIT WEIGHT, PCF	DRY UNIT WEIGHT, PCF	APPROX ROCK UNCONFINED COMPRESSIVE STRENGTH, PSI	SOIL UNCONFINED COMPRESSIVE STRENGTH, PSF	% FINER THAN NO. 200	California Bearing Ratio (CBR) @ 95%
					L.L.	P.L.	P. I.								
B-1	1 - 2.5	SS	CH	31.3	53	23	30								
B-1	9.5-10	Core										4,414			
B-3	1 - 2.5	SS	CL	30.6	45	20	25								
B-4	10.9-11.4	Core										5,970			
B-6	1.5 - 3	SS	CL	19.2	39	18	21								
B-7	1.5 - 3	SS		27.8											
B-7	3.5 - 5	SS		26.2											
B-7	1.0 - 5.0	BULK	CL	24.5	45	25	20		106.9 @ 16.8 %						5.1
B-8	1 - 2.5	SS		25.2											
B-8	3.5 - 5	SS		33.3											
B-11	1 - 2.5	SS	CH	33.1	66	29	37								

Notes: * - Gravel excluded. † - Gravel significant portion of sample and was included in MC. **Gravelly material, low recovery, insufficient for mc test.

Kristy Cannady
Technical Responsibility

Signature

QAS
Position

06/17/19
Date

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MOISTURE - DENSITY REPORT

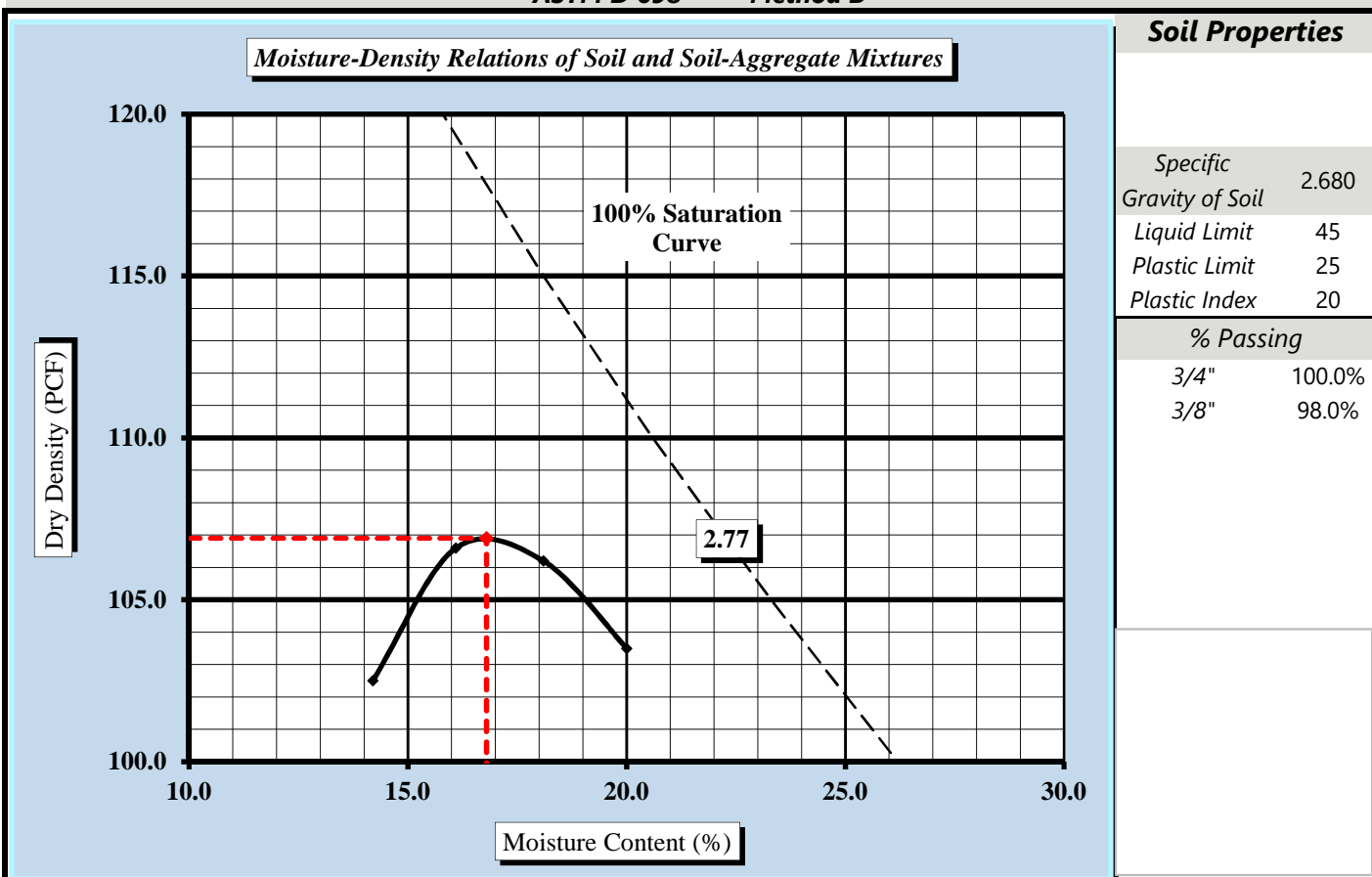


Quality Assurance

S&ME, Inc. - Columbus: 6190 Enterprise Court, Dublin, Ohio 43016			
S&ME Project #:	1183-19-024	Report Date:	6/28/2019
Project Name:	Burgin Independent Addition	Test Date(s):	6/27/2019
Client Name:	Burgin Independent Schools		
Client Address:	440 East Main St., Burgin, KY 40310		
Boring #:	B-7	Sample #:	BULK
		Sample Date:	5/22/2019
		Depth:	1.0'-5.0'

Sample Description: Brown LEAN CLAY (CL)

Maximum Dry Density	106.9	PCF.	Optimum Moisture Content	16.8%
ASTM D 698 - - Method B				



Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☐ 3/8 inch Sieve ☒ 3/4 inch Sieve ☐
Mechanical Rammer ☒ Manual Rammer ☐ Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Paula J. Manning
Technical Responsibility

Paula J. Manning
Signature

Project Manager
Position

6/28/2019
Date

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CBR (California Bearing Ratio) of Laboratory Compacted Soil

ASTM D 1883

Quality Assurance

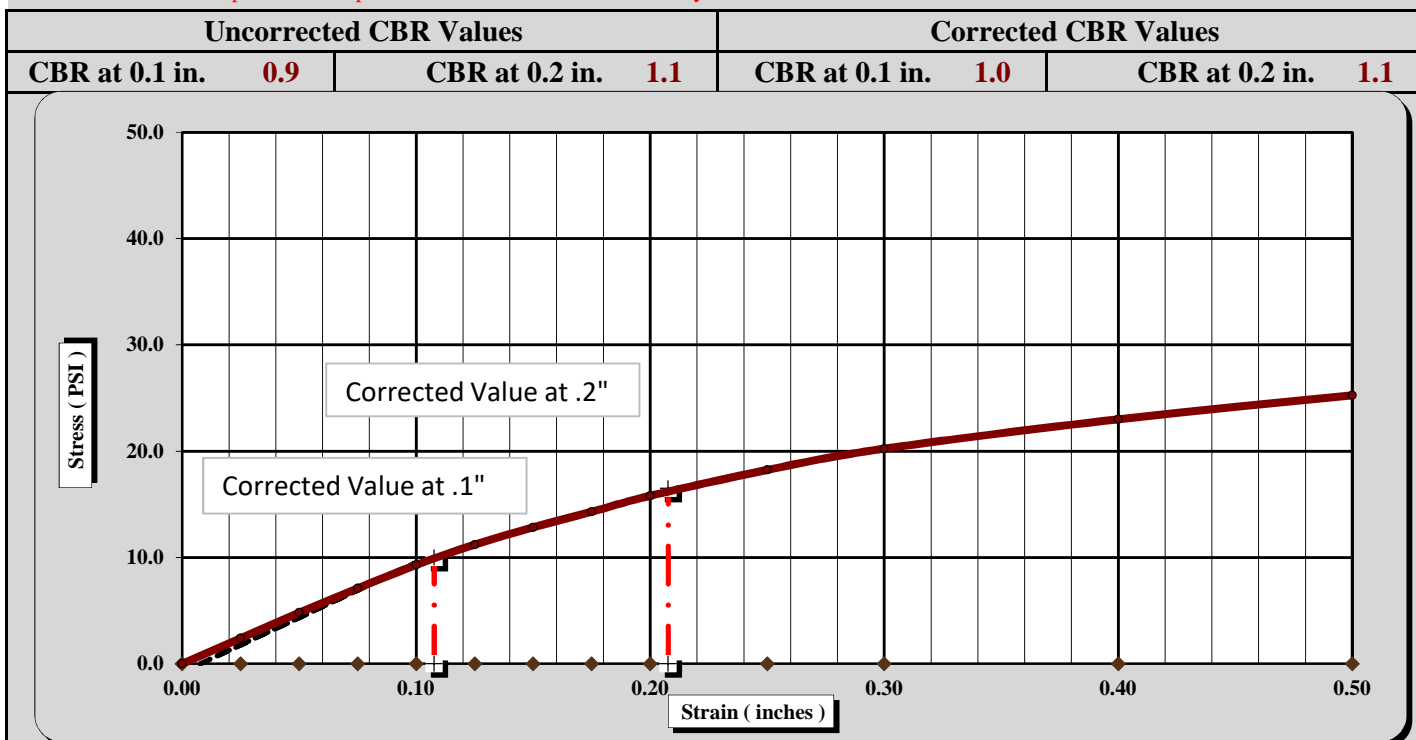


S&ME, Inc. - Dublin 6190 Enterprise Court, Dublin, OH 43016

S&ME Project #:	1183-19-024	Report Date:	07/19/19
Project Name:	Burgin Independent Addition	Test Date(s):	7/8-12/2019
Client Name:	Burgin Independent Schools		
Client Address:	440 East Main St., Burgin, KY 40310		
Location:	B-7	Sample No:	Bulk
		Sample Date:	06/03/19

Sample Description: **LEAN CLAY (CL)**

ASTM D 698 Method B	Maximum Dry Density:	106.9 PCF	Optimum Moisture Content:	16.8%
	Compaction Test performed on the Fine Fraction only		% Retained on the 3/4" sieve:	0.0%



CBR Sample Preparation:

The entire gradation was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1

Before Soaking		After Soaking	
Compactive Effort (Blows per Layer)	15	Final Dry Density (PCF)	91.8
Initial Dry Density (PCF)	92.6	Average Final Moisture Content	25.0%
Moisture Content of the Compacted Specimen	16.0%	Moisture Content (top 1" after soaking)	25.0%
Percent Compaction	86.7%	Percent Swell	0.9%
Soak Time:	96 ± 2 hrs.	Surcharge Weight	10.0
Liquid Limit	45	Surcharge Wt. per sq. Ft.	50.8
		Plastic Index	20

Notes/Deviations/References: ASTM D698 Method B was used for the initial compaction to determine MDD and OWC due to lack of material.

PJM
Technical Responsibility

Paula J. Manning
Signature

Group Leader
Position

7/19/2019
Date

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CBR (California Bearing Ratio) of Laboratory Compacted Soil

ASTM D 1883

Quality Assurance

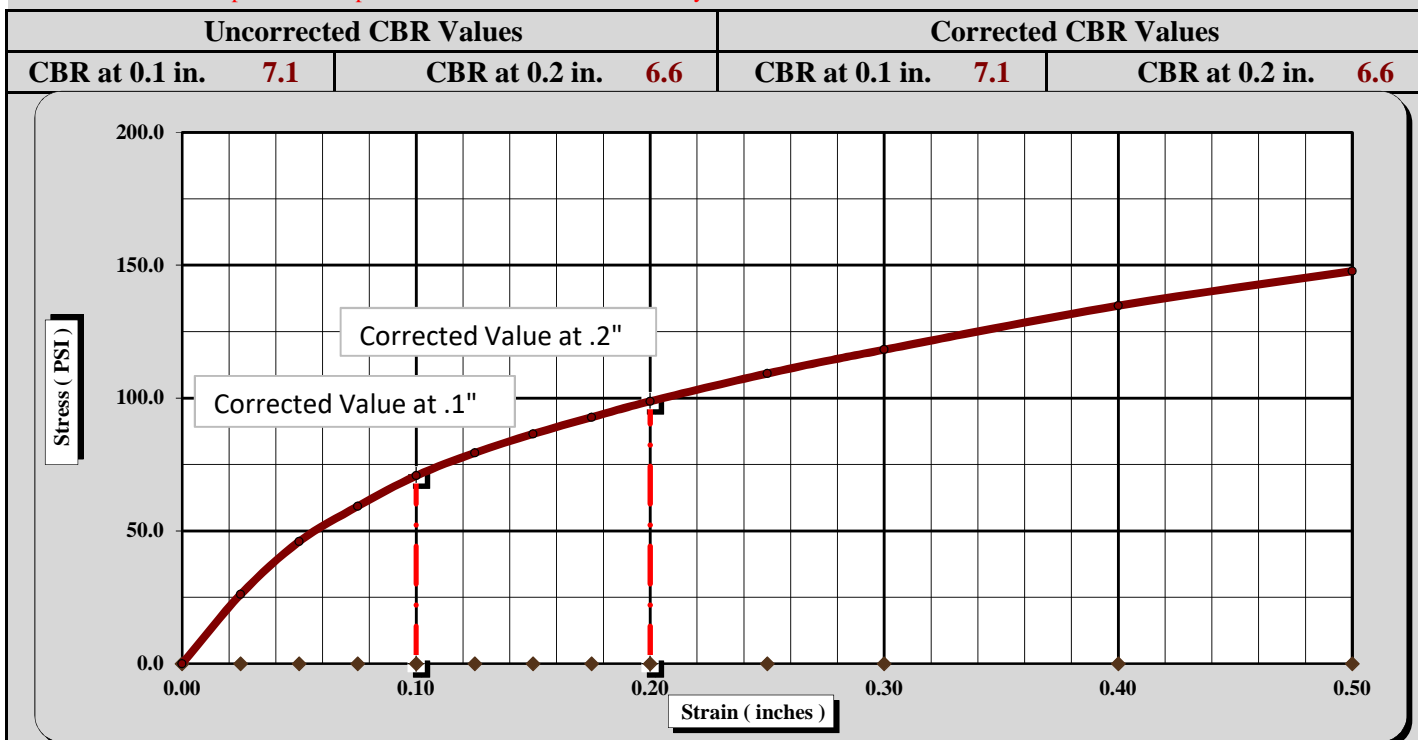


S&ME, Inc. - Dublin 6190 Enterprise Court, Dublin, OH 43016

S&ME Project #:	1183-19-024	Report Date:	07/19/19
Project Name:	Burgin Independent Addition	Test Date(s):	7/8-12/2019
Client Name:	Burgin Independent Schools		
Client Address:	440 East Main St., Burgin, KY 40310		
Location:	B-7	Depth (ft.):	Bulk
		Sample Date:	06/03/19

Sample Description: **LEAN CLAY (CL)**

ASTM D 698	Method B	Maximum Dry Density:	106.9 PCF	Optimum Moisture Content:	16.8%
		Compaction Test performed on the Fine Fraction only		% Retained on the 3/4" sieve:	0.0%



CBR Sample Preparation:

The entire gradation was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1

Before Soaking		After Soaking	
Compactive Effort (Blows per Layer)	56	Final Dry Density (PCF)	105.4
Initial Dry Density (PCF)	105.9	Average Final Moisture Content	18.6%
Moisture Content of the Compacted Specimen	16.4%	Moisture Content (top 1" after soaking)	18.6%
Percent Compaction	99.0%	Percent Swell	0.5%
Soak Time: 96 ± 2 hrs.	Surcharge Weight 10.0	Surcharge Wt. per sq. Ft.	51.0
Liquid Limit 45	Plastic Index 20		

Notes/Deviations/References: ASTM D698 Method B was used for the initial compaction to determine MDD and OWC due to lack of material.

Paula J. Manning
Technical Responsibility

Paula J. Manning
Signature

Group Leader
Position

7/19/2019
Date

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CBR (California Bearing Ratio) of Laboratory Compacted Soil

ASTM D 1883

Quality Assurance

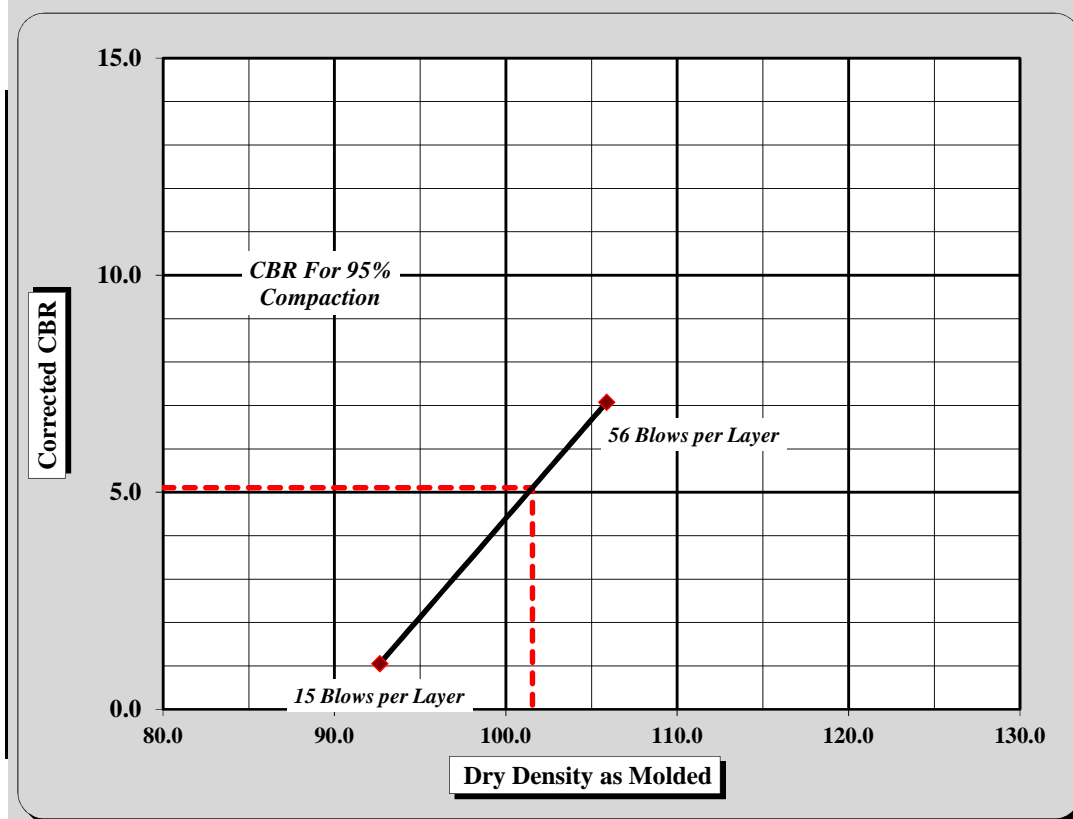


S&ME, Inc. - Dublin 6190 Enterprise Court, Dublin, OH 43016

Project #:	1183-19-024	Report Date:	07/19/19
Project Name:	Burgin Independent Addition	Test Date(s)	7/8-12/2019
Client Name:	Burgin Independent Schools		
Client Address:	440 East Main St., Burgin, KY 40310		
Location:	B-7	Sample No:	Bulk
		Sample Date:	06/03/19

Sample Description: LEAN CLAY (CL)

Dry Unit Weight vs. Corrected CBR Values



Series 1	
Dry Wt. PCF	CBR
92.6	1.1
105.9	7.1
Series 2: Design CBR	
80.0	5.1
101.6	5.1
101.6	0.0

Notes / Deviations / References: Interpolated CBR value at 95% is: 5.1

Jacob Folsom

Technical Responsibility

Project Professional

Position

Date

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LABORATORY TESTING 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), color and texture. These classification descriptions are included on our "Test Boring Records."

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 D 2487). 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.

Compaction Tests: Compaction tests are run on representative soil samples to determine the dry density obtained by a uniform compactive effort at varying moisture contents. The results of the test are used to determine the moisture content and unit weight desired in the field for similar soils. Proper field compaction is necessary to decrease future settlements, increase the shear strength of the soil and decrease the permeability of the soil.

The two most commonly used compaction tests are the Standard Proctor test and the Modified Proctor test. They are performed in accordance with ASTM D 698 and D 1557, respectively. Generally, the Standard Proctor compaction test is run on samples from building or parking areas where small compaction equipment is anticipated. The Modified compaction test is generally performed for heavy structures, highways, and other areas where large compaction equipment is expected. In both tests a representative soil sample is placed in a mold and compacted with a compaction hammer. Both tests have four alternate methods.

Test	Method	Hammer Wt./Fall	Mold Diam.	Run on Matl. Finer Than	No. of Layers	No. of Blows/Layer
Standard	A	5.5 lb./12"	4"	No. 4 sieve	3	25
D 698	B	5.5 lb./12"	4"	3/8" sieve	3	25
	C	5.5 lb./12"	6"	3/4" sieve	3	56

Test	Method	Hammer Wt./Fall	Mold Diam.	Run on Matl. Finer Than	No. of Layers	No. of Blows/Layer
Modified	A	10 lb./18"	4"	No. 4 sieve	5	25
D 1557	B	10 lb./18"	4"	3/8" sieve	5	25
	C	10 lb./18"	6"	3/4" sieve	5	56

The moisture content and unit weight of each compacted sample is determined. Usually 4 to 5 such tests are run at different moisture contents. Test results are presented in the form of a dry unit weight versus moisture content curve. The compaction method used and any deviations from the recommended procedures are noted 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 D 4318.

Moisture Content: The Moisture Content is determined according to ASTM D 2216.



Appendix IV – ACI 302.1R-96 “GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION”

ADDENDUM
GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION
(302.1R-96)
Vapor Retarder Location

The report of ACI Committee 302, “Guide for Concrete Floor and Slab Construction (ACI 302.1R-96)” states in section 4.1.5 that “if a vapor barrier or retarder is required due to local conditions, these products should be placed under a minimum of 4 in. (100 mm) of trimable, compactible, granular fill (not sand).” ACI Committee 302 on Construction of Concrete Floors, and Committee 360 on Design of Slabs on Ground have found examples where this approach may have contributed to floor covering problems.

Based on the review of the details of problem installations, it became clear that the fill course above the vapor retarder can take on water from rain, wet-curing, wet-grinding or cutting, and cleaning. Unable to drain, the wet or saturated fill provides an additional source of water that contributes to moisture-vapor emission rates from the slab well in excess of the 3 to 5 lb/1000 ft²/24 h (1.46 to 2.44 kg/100 m²/24 h) recommendation of the floor covering manufacturers.

As a result of these experiences, and the difficulty in adequately protecting the fill course from water during the construction process, caution is advised on the use of the granular fill layer when moisture-sensitive finishes are to be applied to the slab surface.

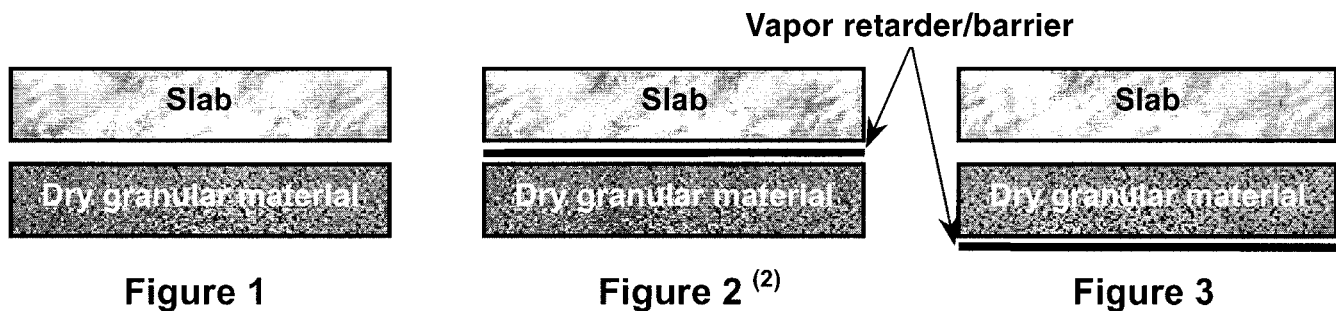
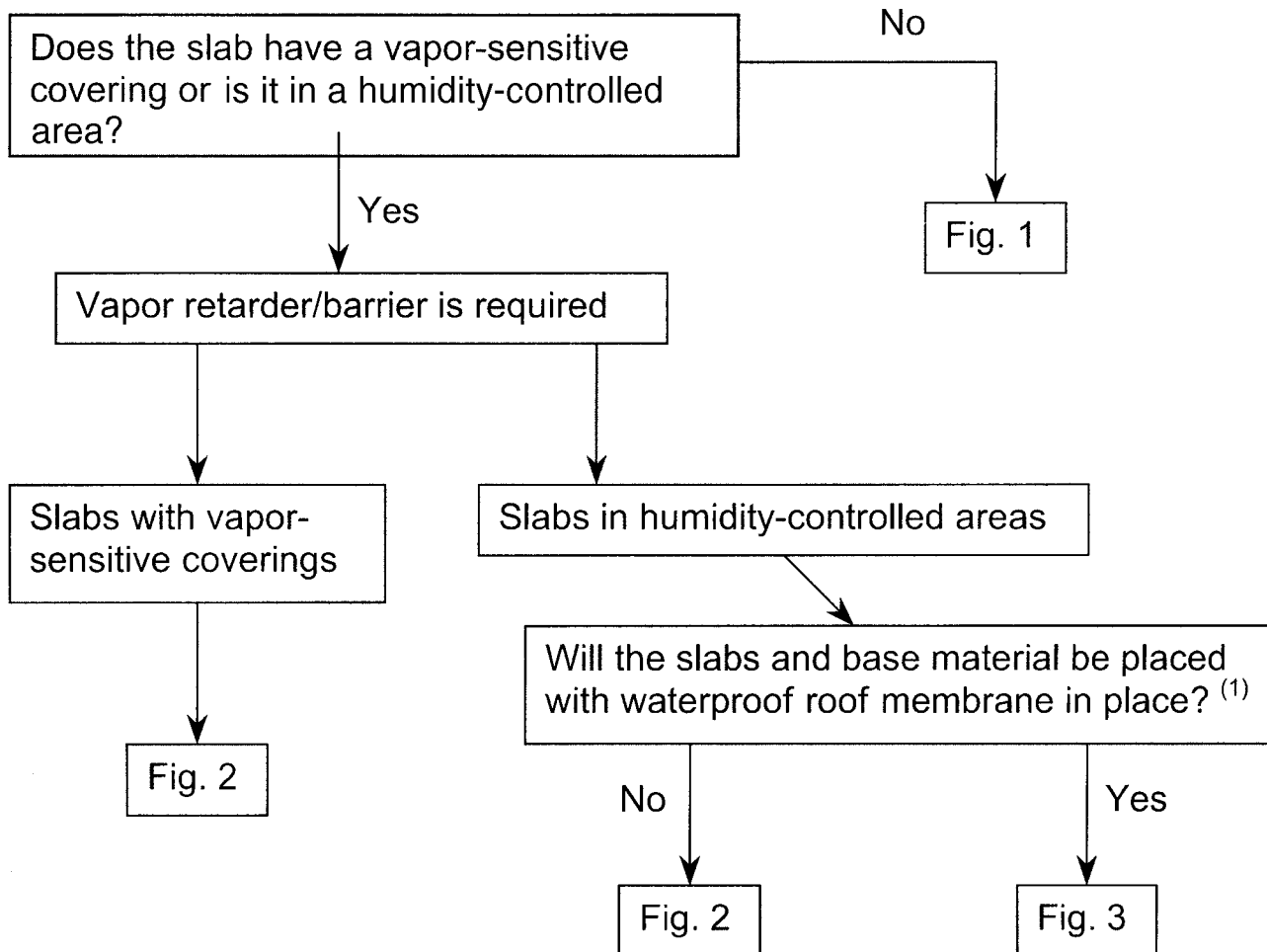
The committees believe that when the use of a vapor retarder or barrier is required, the decision whether to locate the retarder or barrier in direct contact with the slab or beneath a layer of granular fill should be made on a case-by-case basis.

Each proposed installation should be independently evaluated by considering the moisture sensitivity of subsequent floor finishes, anticipated project conditions and the potential effects of slab curling and cracking.

The following chart can be used to assist in deciding where to place the vapor retarder. The anticipated benefits and risks associated with the specified location of the vapor retarder should be reviewed with all appropriate parties before construction.

ADDENDUM
GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION
(302.1R-96)

Flow Chart for Location of Vapor Retarder/Barrier



(1) If granular material is subject to future moisture infiltration, use Fig. 2

(2) If Fig. 2 is used, reduced joint spacing, a concrete with low shrinkage potential, or other measures to minimize slab curling will likely be required.

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electronic document submittal service.
- B. Preconstruction meeting.
- C. Pre-Installation meetings.
- D. Progress meetings.
- E. Preconstruction and construction photographs.
- F. Coordination drawings.

1.02 RELATED REQUIREMENTS

- A. General Conditions
- B. Document 00 7300 - Supplementary Conditions
- C. Section 01 1000 - Summary Stages of the Work, Work covered by each contract, occupancy, .
- D. Section 017000 - Execution and Closeout Requirements: Additional coordination requirements.
- E. Section 017800 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.03 PROJECT COORDINATION

- A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend upon each other for proper installation, connection and operation.
 - 1. Where installation of one part of the Work is dependent upon installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
 - 2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1. Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.

5. Project close-out activities.
- D. Coordination Drawings: Prepare coordination drawings where careful coordination is needed for installation of products and materials fabricated by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of difference components.
1. Show the relationship of components shown on separate shop drawings.
 2. Indicate required installation sequences.
 3. Comply with requirements for submittals.
 4. Contractor shall prepare coordination drawings of sprinkler, HVAC and electrical work. Work shall not begin until all subcontractors have signed off on drawings.
- E. Staff Names: Within 15 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers.
1. Post copies of the list in the project field office meeting room, the temporary field office, and at each temporary telephone.
- F. General Coordination Provisions:
1. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
 2. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
 3. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
 4. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
 5. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
 6. Recheck measurements and dimensions, before starting each installation.
 7. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
 8. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
 9. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word or MS Excel) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
 - 1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
 - 2. Contractor and Architect are required to use this service.
 - 3. It is Contractor's responsibility to submit documents in allowable format.
 - 4. Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
 - 5. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
 - 6. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.
- B. Cost: The services will be provided to the Contractor at no cost.
- C. Submittal Service: The selected service is: Newforma
- D. Training: One, one-hour, web-based training session will be arranged for all participants, with representatives of Architect and Contractor participating; further training is the responsibility of the user of the service.

3.02 PRECONSTRUCTION MEETING

- A. Attendance Required:
 - 1. Owner.
 - 2. Architect.
 - 3. Contractor.
 - 4. Special Inspections & Testing Agency.

3.03 PRE-INSTALLATION MEETINGS

- A. Schedule preinstallation meetings at the project site before each construction activity that requires coordination with other construction.
- B. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
- C. Record significant conference discussions, agreements, and disagreements.
- D. Do not proceed with installation if the meeting cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the meeting at earliest feasible date.

3.04 PROGRESS MEETINGS

- A. Architect will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- B. Contractor shall provide a written Monthly Progress Report at each meeting, including the following:
 - 1. Construction activities and items completed within the last 30 days.
 - 2. Construction activities and items planned within the next 30 days.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, as appropriate to agenda topics for each meeting.

3.05 PRECONSTRUCTION AND CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Preconstruction Photographs: Before starting construction, take color, digital photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.
- C. Construction Photographs: Record the Work with periodic construction photographs.
- D. Final Completion Photographs: After completing construction, take color, digital photographs of Project.
- E. Maintain one set of all digital photographs at project site for reference; same copies as submitted, identified as such.
- F. Photography Type: Digital; electronic files.
- G. In addition to periodic, recurring views, take photographs of each of the following events:
 - 1. Completion of site clearing.
 - 2. Excavations in progress.
 - 3. Foundations in progress and upon completion.
 - 4. Structural framing in progress and upon completion.
 - 5. Enclosure of building, upon completion.
 - 6. Final completion, minimum of ten (10) photos.
- H. Views:
 - 1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
 - 2. Consult with Architect for instructions on views required.
 - 3. Provide factual presentation.
 - 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
 - 5. Provide view from outer stadium at same location once monthly.
- I. Digital Photographs: Provide images produced by a digital camera with minimum sensor size of 4.0 megapixels, and at an image resolution of not less than 1600 x 1200, in JPG format; provide files unaltered by photo editing software.
 - 1. File Naming: Include project identification, date and time of view, and view identification.

3.06 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
 - 1. Retained samples will not be returned to Contractor unless specifically so stated.

END OF SECTION

SECTION 013216 - CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

1.02 RELATED SECTIONS

- A. Section 011000 - Summary: Work sequence.

1.03 REFERENCE STANDARDS

- A. AGC (CPSM) - Construction Planning and Scheduling Manual 2004.
- B. M-H (CPM) - CPM in Construction Management - Project Management with CPM 2015.

1.04 SUBMITTALS

- A. Within 10 days after date of Agreement, submit preliminary schedule.
- B. Within 10 days after joint review, submit complete schedule.
- C. Submit updated schedule with each Application for Payment.
- D. Submit to Architect.

1.05 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.02 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 to define critical portions of the entire schedule.
- E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- F. Provide legend for symbols and abbreviations used.

3.03 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.
- B. Identify the first work day of each week.

3.04 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Architect at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.

- C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.05 **UPDATING SCHEDULE**

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.

3.06 **DISTRIBUTION OF SCHEDULE**

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION

SECTION 013217 - CONSTRUCTION PROGRESS REPORTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Daily construction reports.
 - 2. Material location reports.
 - 3. Field condition reports.
 - 4. Special reports.

1.02 RELATED SECTIONS

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

1.03 DAILY CONSTRUCTION REPORTS

- A. Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at project site.
 - 2. List of separate contractors at project site.
 - 3. Approximate count of personnel at project site.
 - 4. High and low temperatures and general weather conditions.
 - 5. Accidents.
 - 6. Meetings and significant decisions.
 - 7. Unusual events (refer to Special Reports).
 - 8. Stoppages, delays, shortages and losses.
 - 9. Meter readings and similar recordings.
 - 10. Emergency procedures.
 - 11. Orders and requests of authorities having jurisdiction.
 - 12. Change orders received and implemented.
 - 13. Construction change directives received.
 - 14. Services connected and disconnected.
 - 15. Equipment or system tests and startups.
 - 16. Partial completions and occupancies.
 - 17. Substantial completions authorized.
- B. Submit 1 copy at weekly intervals to project team members.

1.04 MATERIAL LOCATION REPORTS

- A. At weekly intervals, prepare a comprehensive list of materials delivered to and stored at project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from project site.

1.05 FIELD CONDITION REPORTS

- A. Immediately on discovery of a difference between field conditions and the contract documents, prepare a detailed report. Submit with a request for information. Include a detailed description of the differing conditions, together with recommendations for changing the contract documents.

1.06 SPECIAL REPORTS

- A. Submit special reports directly to Architect within one day of occurrence. Distribute copies of report to parties affected by the occurrence.
- B. When an event of an unusual and significant nature occurs at project site, whether or not related directly to the work, prepare and submit a special report. List chain of events, persons participating, response by contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Architect in advance when these events are known or predictable.

PART 2 PRODUCTS**PART 3 EXECUTION****3.01 REPORT PREPARATION**

- A. Submit all reports in typed, legible format through electronic document management system.

END OF SECTION

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.03 RELATED SECTIONS

- A. Division 1 Sections for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
- B. Division 1 Sections for submitting test and inspection reports and for mockup requirements.
- C. Division 1 Sections for submitting warranties.
- D. Division 1 Sections for submitting Record Drawings, Record Specifications, and Record Product Data.
- E. Division 1 Sections for submitting operation and maintenance manuals.
- F. Divisions 2 through 33 Sections for specific requirements for submittals in those Sections.

1.04 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's responsive action.
- B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.05 SUBMITTAL PROCEDURES

- A. General: Electronic copies of CAD Drawings of the Contract Drawings may be provided by Architect for Contractor's use in preparing submittals. Contractor will provide Architect with a waiver of liability and with a fee for electronic copies.
- B. Electronic Submission: Comply with instructions in Section 013000 Administrative Requirements for electronic submission of all submittals.
- C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- D. Submittals Schedule: Comply with requirements in Division 1 Sections for list of submittals and time requirements for scheduled performance of related construction activities.
- E. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract

Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow a minimum of 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - a. Material color selections: Submittals for all interior finish colors shall be coordinated by the Contractor to be submitted in one interior finish color selection package.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow a minimum of 15 days for review of each resubmittal.
 4. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow a minimum of 21 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
 5. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the work to permit processing.
- F. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- G. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittals.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked indicating final unrestricted release or final-but-restricted release.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.
- J. Use for Construction: Use only final submittals with mark indicating final unrestricted release or final-but-restricted release.
- K. Each and every shop drawings, setting drawings, etc., submitted to the Architect shall bear a stamp certified over the Contractor's signature indicating the drawings have been thoroughly pre-checked and approved by the Contractor. Drawings which do not bear such certification will be returned for pre-checking. Any delay in securing final approval of such drawings shall be adjudged to the fault of the Contractor. By reviewing, approving and submitting shop drawings, the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, member sizes catalog numbers, and similar data and that he has checked and coordinated shop drawings with the requirements of the project and of the contract documents.
- L. Work requiring shop drawings, whether called for by the contract documents or requested by the Contractor, shall not commence until the submission has been reviewed by the Architect/Engineer. Work shall be in accordance with and performed from the reviewed drawings and the Contractor of

his Subcontractor shall make certain that proper shop drawings are at the site of the work.

PART 2 - PRODUCTS

2.01 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Standard product operation and maintenance manuals.
 - k. Compliance with specified reference standards.
 - l. Testing by recognized testing agency.
 - m. Application of testing agency labels and seals.
 - n. Notation of coordination requirements.
 - o. Manufacturer recommended maintenance procedures.
 - p. Maintenance schedule.
 - q. Parts and spare parts list.
 - r. Troubleshooting guide.
 - s. Single line diagrams.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.

- e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shopwork manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Design calculations.
 - j. Compliance with specified standards.
 - k. Notation of coordination requirements.
 - l. Notation of dimensions established by field measurement.
 - m. Relationship to adjoining construction clearly indicated.
 - n. Seal and signature of professional engineer if specified.
 - o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings sized as pdf format electronic documents at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
- 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.
 - 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set
 - 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit two full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected
 - 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

- a. Number of Samples:
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 - 1. Type of product. Include unique identifier for each product.
 - 2. Number and name of room or space.
 - 3. Location within room or space.
- F. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- G. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."
- H. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."
- I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

2.02 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 - 1. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - 2. Test and Inspection Reports: Comply with requirements specified in Division 1 Sections.
 - 3. All reports should be typewritten. The Architect reserves the right to reject submission of hand-written materials.
- B. Coordination Drawings: Comply with requirements specified in Division 1 Sections.
- C. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Sections.
- D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS)

and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

- F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- H. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- J. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- K. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- L. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- M. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 and individual technical Sections.
- N. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- O. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- P. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

- Q. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Sections.
- R. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- S. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
 - 1. Preparation of substrates.
 - 2. Required substrate tolerances.
 - 3. Sequence of installation or erection.
 - 4. Required installation tolerances.
 - 5. Required adjustments.
 - 6. Recommendations for cleaning and protection.
- T. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
 - 1. Name, address, and telephone number of factory-authorized service representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.
 - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 6. Statement whether conditions, products, and installation will affect warranty.
 - 7. Other required items indicated in individual Specification Sections.
- U. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

PART 3 - EXECUTION

3.01 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.02 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
 - 1. Final Unrestricted Release: Where submittals are marked "Reviewed" or "Approved," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
 - 2. Final-But-Restricted Release: When submittals are marked "Corrections as Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
 - 3. Returned for Resubmittal: When submittal is marked "Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked "Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.
 - b. On resubmitted drawings, the Contractor shall direct specific attention in writing or on the submitted drawings to revisions other than requested by the Architect/Engineer or previous submission.
 - 4. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required".
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION

SECTION 014000 - QUALITY REQUIREMENTS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. References and standards.
- B. Submittals.
- C. References and standards.
- D. Control of installation.
- E. Testing and inspection agencies and services.
- F. Control of installation.
- G. Manufacturers' field services.
- H. Defect Assessment.

1.02 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants 2008 (Reapproved 2014).
- B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation 2017.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry 2015a, with Editorial Revision (2016).
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction 2012a.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection 2018.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing 2015.
- G. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components 2016.
- H. IAS AC89 - Accreditation Criteria for Testing Laboratories 2010.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Testing Agency Qualifications:
 - 1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
- C. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
- D. Test Reports: After each test/inspection, promptly submit {CH#259583} copies of report to Architect and to Contractor.

1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.
 - j. Conformance with Contract Documents.
 - k. When requested by Architect, provide interpretation of results.
 2. All test reports shall be typewritten. The Architect reserves the right to reject handwritten reports.
- E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- F. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- G. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- H. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
 2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.04 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.05 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Owner will employ services of an independent testing agency to perform certain specified testing as outlined in Chapter 17 - Structural Test and Special Inspections of the Kentucky Building Code. The independent testing agency will also be responsible for the following:
 - 1. All inspections and testing items as identified in Division 31 of the specifications.
 - 2. All inspections for Stone Base and Concrete Pavements as identified in Division 32 of the specifications.
 - 3. All Subdrainage installation including drainage panels and piping for subgrade and retaining walls.
 - 4. Excavation and Backfill work for Utilities as identified in Division 33 of the specifications.
 - 5. Fluid-Applied Waterproofing of Sub-Grade walls as identified in Division 07 of the specifications.
- B. Contractor shall employ services of an independent testing agency to perform all other specified testing.
 - 1. Should any of these tests fail, the Contractor shall be responsible for correction and for the cost of retesting.
- C. Contractor shall employ and pay for services of an independent testing agency to perform all other specified testing.
- D. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- E. Contractor Employed Agency:
 - 1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093 and ASTM D3740.
 - 2. Laboratory Qualifications: Accredited by IAS according to IAS AC89.
 - 3. Laboratory: Authorized to operate in the State in which the Project is located.
 - 4. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
 - 5. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-control services required by Architect, Owner or authorities having jurisdiction are not limited by provisions of this Section.
- B. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- C. Comply with manufacturers' instructions, including each step in sequence.
- D. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- E. 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.
- F. Have Work performed by persons qualified to produce required and specified quality.
- G. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- H. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TESTING AND INSPECTION

- A. See individual specification sections for testing required.
- B. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
 - 5. Perform additional tests and inspections required by Architect.
 - 6. Attend preconstruction meetings and progress meetings.
 - 7. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:

1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect. Payment for re testing will be charged to the Contractor by deducting testing charges from the Contract Price.

3.03 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 equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect 30 days in advance of required observations.
 1. Observer subject to approval of Architect.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.04 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.
- B. If, in the opinion of Architect or Owner, it is not practical to remove and replace the work, Architect or Owner will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Temporary utilities, support, security and protection facilities include, but are not limited to, the following:
- B. Temporary utilities.
- C. Temporary telecommunications services.
- D. Temporary sanitary facilities.
- E. Temporary Controls: Barriers, enclosures and fencing.
- F. Temporary electric and lighting.
- G. Temporary HVAC for construction activities.
- H. Temporary water service and distribution.
- I. Security requirements.
- J. Vehicular access and parking.
- K. Waste removal facilities and services.
- L. Project identification signs.
- M. Temporary and additional required signs.
- N. Field offices.
- O. Storage and fabrication sheds.
- P. Fire extinguishers.
- Q. Sewers, drainage and stormwater control.
- R. Environmental protection.
- S. Lifts and hoists.
- T. Construction aids and miscellaneous services and facilities.

1.02 RELATED REQUIREMENTS

- A. Section 015713 - Temporary Erosion and Sediment Control: Erosion controls during construction.
- B. Section 024119 - Selective Structure Demolition.
- C. Divisions 2 through 22 for temporary heat, ventilation, and humidity requirements for products in those Sections.
- D. Section 311500 - Protection of Existing and New Trees: Plant protection during construction.
- E. Section 312319 - Dewatering: Dewatering of site during construction.
- F. Section 312513 - Permanent Erosion Controls: Erosion control to remain after construction is complete.

1.03 DEFINITIONS

- A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight: exterior walls are insulated and weathertight: and all openings are closed with permanent construction or substantial temporary closures.

1.04 TEMPORARY UTILITIES

- A. Contractor may use the Owner's existing water and electric utilities at the site (except phone/internet, water specific to lightweight insulating concrete applications for the roof and utilities for field office(s)) as required for the renovation, addition and new portions of this project. However, if the privilege of using the Owner's utilities are abused, then the Contractor shall reimburse the Owner any amount over a normal monthly bill amount.
1. Conditions of Use of Owner's Utilities: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.
 2. Engage appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
 3. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
 4. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner, Architect, testing agencies and authorities having jurisdiction.
 5. Contractor to pay all fees, taps, certifications, permits, and etc. that comply with all Federal, State and local regulations and utility company requirements. Arrange for authorities having jurisdiction to test and inspect each temporary utility before use.
 6. Provide adequate capacity at each stage of construction. before temporary utility is available, provide trucked-in services.
 7. All required temporary work shall provide for safe and proper performance of the work. The Contractor shall be responsible for adequate design and construction of all temporary work used in construction of Contract Work.
 8. Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
 9. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
 10. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed facilities.
 11. At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.

1.05 ELECTRICAL SERVICE

- A. Owner will not provide power distribution service to specific areas of construction, that is the responsibility of the Contractor.
- B. Provide, weatherproof, grounded electric power service and distribution system of size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnection means, automatic ground-fault, and main distribution switchgear.
1. Electrical service to comply with NECA, NEMA, UL and NFPA for temporary electrical needs.

2. Electrical outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light. Provide receptacle outlets adequate for connection of power tools and equipment.
 3. Power distribution system circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.
 4. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
 5. Provide warning signs at power outlets other than 110 to 120 V.
- C. Temporary Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.
1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

1.06 HEATING AND COOLING

- A. Heating and cooling equipment: Unless Owner authorizes use of permanent heating or cooling system, provide vented, self-contained, liquid propane gas or fuel oil heaters with individual space thermostatic control.
1. Use of gasoline burning space heaters, open flame heaters, or salamander type heating units is prohibited.
 2. Fuel needed to power portable, non-permanent heating or cooling equipment is to be paid for by the Contractor.
 3. Heating and cooling to be provided as required by construction activities for curing and drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity.
 - a. Maintain a minimum temperature of 50 degrees F in permanently enclosed portions of building for normal construction activities, and 65 degrees F for finishing activities and areas where finished work has been installed.
 - b. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

1.07 WATER SERVICE

- A. Owner will not provide water distribution service to specific areas of construction, that is the responsibility of the Contractor.
- B. Contractor to provide temporary water and distribution service as required by construction activities. .
1. Use trigger-operated nozzles for water hoses, to avoid waste of water.
- C. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- D. Provide water at gravel wash pit(s), where indicated and, at construction exits of the site.
1. Provide water, with pressure necessary, to clean vehicles and tires of mud and debris prior to exiting construction site.

- E. General Contractor/Construction Manager to coordinate with the lightweight insulating concrete installer for the payment, provision and inclusion of all water required for the installation of the lightweight insulating concrete.

1.08 VENTILATION AND HUMIDITY CONTROL

- A. Contractor to provide temporary ventilation as required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed. coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

1.09 TELECOMMUNICATIONS SERVICES

- A. Provide, maintain, and pay for telephone and internet service to field office at time of project mobilization.
- B. Phone service shall be for use by all personnel engaged in construction activities, throughout the construction period.
 - 1. At each telephone, post a list of important telephone numbers.
 - 2. Cellular telephone service may be substituted for use by the Contractor's superintendent.
 - 3. Internet service with an e-mail address for the Contractor's superintendent is to be provided.
 - 4. Contractor required to have personnel on site with smartphone(s), laptop and/or a tablet with internet access/connections.
 - a. Internet service with an e-mail address for the Contractor's superintendent is to be provided.
 - 5. Wireless (WiFi) internet service is to be provided in the construction trailer.
 - a. WiFi access to be provided for Owner, Architect, and Owner and Architects Consultants.

1.10 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization. Comply with regulations and health codes for type, number, location, operation and maintenance of fixtures and facilities.
 - 1. Single occupant units of chemical, aerated recirculation, or combustion type; fully vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar material.
 - 2. Provide containerized, tap-dispenser, bottled-water drinking-water units, including paper cup supply.
- B. Maintain daily in clean and sanitary condition.
- C. Owner's existing restroom facilities in the building are not to be used under any circumstances.

1.11 ENVIRONMENTAL PROTECTION

- A. Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or other entities near Project site.
 - 1. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Do not use water when it may damage existing construction or create hazardous or

objectionable conditions, such as ice, flooding, and pollution.

- B. Stormwater Control: Refer to stormwater control requirements of specification section 015713 Temporary Erosion and Sediment Control.
- C. Tree and Plant Protection: Refer to tree and plant protection requirements of specification section 311500 Protection of Existing and New Trees.

1.12 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
 - 1. Refer also to 2015 IBC with Kentucky Amendments, Chapter 33 for additional protection requirements.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Barricades, warning signs and lights shall comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.
 - 1. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8 inch thick exterior plywood.

1.13 FENCING

- A. Contractor to fence construction, staging and fabrication areas.
 - 1. Site Enclosure Fence: Before construction operations begin, install chain-link enclosure fence with lockable entrance gates. Locate where indicated on drawings to accommodate construction operations. Install in a timely manner that will prevent people, dogs, and other animals from easily entering site except by entrance gates.
 - 2. Construction: Commercial grade chain link fence.
 - 3. Provide minimum 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.
 - a. Maintain security by limiting the number of keys and restricting distribution to authorized personnel.
 - b. Used fencing is acceptable for use.
 - c. Fencing to be permanent or portable type. Metal stands, or solid concrete blocks made to accept fencing panels are acceptable.
- B. Refer to staging or site plan for area to be fenced during construction.

1.14 EXTERIOR ENCLOSURES

- A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.
 - 1. Tarpaulins shall be fire-resistive labeled with flame-spread rating of 15 or less. Secure with fire-retardent-treated wood framing or other materials.

2. Where temporary wood or plywood exceeds 100 sq. ft. in area use fire--treated material for framing and sheathing.
 3. Close openings in floor or roof decks and other horizontal surfaces with load-bearing, wood framed construction.
 4. Close openings in walls or other vertical surfaces of 25 sq. ft. or less with plywood or similar materials.
- B. Roofing Membrane:
1. Areas of the existing or new roof, where work is in progress, or completed, shall not be used for storage without the written agreement of the Architect. Do not place "pallets" on new insulation or roofing material.
 2. Remove no more existing roofing than can be covered in one day by new roofing.
 3. Coordinate removal of existing roofing with installation of new and existing to remain roof insulation and/or roofing to ensure that existing to remain and new insulation and roof deck are not exposed to precipitation or left exposed overnight.
 4. Provide water cut-offs at the end of each day's work.
 5. Provide temporary walkways, as required, to protect existing substrates from damage by roofing operations.
 6. See applicable Division 7 Section for new roofing requirements.
- C. General Contractor may provide new or used materials for temporary exterior enclosure. Undamaged, previously used materials in serviceable condition may be used if approved by the Architect. Provide materials suitable for use intended.

1.15 INTERIOR ENCLOSURES

- A. Provide temporary partitions as indicated on the Phasing/Staging Plan to separate work areas from Owner-occupied areas, to prevent penetration of dust, fumes and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
1. Construct dustproof partitions of not less than nominal 4-inch wood studs, 5/8-inch gypsum wallboard with joints taped on occupied side, and 1/2-inch fire-retardant plywood on the demolition side.
 2. Insulate partition to provide noise protection to occupied areas.
 3. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
 4. Protect air-handling equipment.
 5. Close openings in floor or roof decks and other horizontal surfaces with load-bearing, wood framed construction.
 6. Close openings in walls or other vertical surfaces of 25 sq. ft. or less with plywood or similar materials.
- B. Openings: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:
- C. General Contractor may provide new or used materials for temporary interior enclosure. Undamaged, previously used materials in serviceable condition may be used if approved by the Architect. Provide materials suitable for use intended.

1.16 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
 - 1. Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances.

1.17 LIFTS AND HOISTS

- A. Provide facilities for hoisting materials and personnel. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

1.18 TEMPORARY FIRE PROTECTION

- A. Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with Section 3309 of the 2015 International Building Code with Kentucky Amendments.
- B. Fire extinguishers: Hand carried portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA recommended classes for exposures.
 - 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
 - 2. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
- C. Store combustible materials in containers in fire-safe locations.
- D. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

1.19 VEHICULAR ACCESS AND PARKING

- A. All employee, and project related, vehicles shall park inside the fenced construction area. No parking permits will be provided by the Owner for parking outside the fenced construction area.
- B. Coordinate access and haul routes with governing authorities and Owner.
- C. Provide and maintain fire department access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets. Streets used as access to and from the site shall be kept free of mud and debris.
- E. Existing on-site roads and parking areas shall not be used for construction traffic, staging and storage, unless specifically addressed on the staging plan.
- F. Fire Truck Access: Access to the building site and surrounding buildings must be maintained during construction for local fire truck access. Phase construction as required to maintain access to new, existing, or temporarily relocated standpipe, fire hydrant connections, the requirements of Section 3311 and 3312 of the 2015 International Building Code with Kentucky Amendments, and fire alarm annunciator panels. Coordinate with the local fire department that would respond to an alarm during the initial start up of construction to ensure a complete understanding of their requirements.

1.20 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition. All exitways, walks, drives, grass areas, and landscaping must be kept free from debris at all times.
- B. Provide adequate trash containers of proper size.

- C. Provide containers with lids. Collect waste from construction areas and elsewhere daily. Remove trash from site per following.
 - 1. Dispose of all material in a lawful manner.
 - 2. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 degrees F.
- D. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- E. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Comply with NFPA 241 for removal of combustible waste material and debris.
- F. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.
- G. Failure to comply with the above requirements shall be cause for stopping work until the condition is corrected.

1.21 PROJECT IDENTIFICATION

- A. Provide project identification sign of design and construction indicated in this section.
 - 1. Do not permit installation of unauthorized signs.
 - 2. Engage an experienced sign company to produce the signs required.
- B. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.
- C. Project Sign: Contractor to provide and install project sign of size, style, composition and color as described. Installation shall include all supporting framing and setting materials required to make the sign weather resistant and capable of withstanding normal environmental forces including rain, snow, ice and wind.
 - 1. Sign can be digitally printed on pressure sensitive vinyl with UV resistant inks and mounted on a 1/2 inch MDO board or printed directly on the MDO board using UV resistant inks.
 - 2. Architect will provide camera ready artwork to the Contractor.
 - 3. The sign shall be no larger than 4 foot x 8 foot, or dimensions for a maximum sign square footage of 32 sf.
 - 4. All wood framing and supporting members shall be pressure treated lumber. Sign posts shall be 4" x 4" posts set in 1' diameter holes 3'-6" deep filled with concrete.
- D. Additional Required Signs: Contractor to provide sign or signs in a location or locations clearly visible to all Contractors, not less than 2' x 4' in dimension, with the following wording "Unlawful possession of a weapon on school property in Kentucky is a felony punishable by a maximum of five (5) years in prison and a ten thousand dollar (\$10,000) fine." Installation shall include all supporting framing and setting materials required.
 - 1. Sign can be digitally printed on pressure sensitive vinyl with UV resistant inks and mounted on a 1/2 inch MDO board or 10 mm PVC board or printed directly on the MDO or PVC board with UV resistant inks.
- E. Erect on site at location established by Architect.
- F. No other signs are allowed without Owner permission except those required by law.
- G. Owner reserves the right to take possession of Project Identification Signs.

1.22 FIELD OFFICES

- A. Contractor's to provide a field office on site.
 - 1. Field office to be on site, with functioning utilities, minimum one week prior to the first scheduled progress meeting.
 - 2. Field office(s) utilities are to be metered separately from construction related utilities. Field office utilities are to be paid for by the contractor.
- B. Office: Provide weathertight, insulated, with lockable entrances, operable windows and serviceable finishes; lighting, electrical outlets, heating, cooling and ventilating equipment; on foundations adequate for normal loading and equipped with sturdy furniture, drawing rack and drawing display table.
- C. Provide space for Project meetings, with table and chairs to accommodate 10 persons.
- D. Locate offices a minimum distance of 30 feet from existing and new structures.

1.23 STORAGE AND FABRICATION SHEDS

- A. Provide sheds sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility services. Sheds may be open shelters or fully enclosed spaces within building or elsewhere on-site.
 - 1. Locate for easy access to the Project.
 - 2. Construct framing, sheathing, and siding using fire-retardant-treated lumber and plywood.
 - 3. Paint exposed lumber and plywood with exterior-grade acrylic-latex emulsion over exterior primer.

1.24 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove each temporary when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion.
- B. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- C. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- D. Clean and repair damage caused by installation or use of temporary work.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION - NOT USED****END OF SECTION**

SECTION 015713 - TEMPORARY EROSION AND SEDIMENT CONTROL**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Prevention of erosion due to construction activities.
- B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- C. Restoration of areas eroded due to insufficient preventive measures.
- D. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

- A. Section 311000 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.
- B. Section 312200 - Grading: Temporary and permanent grade changes for erosion control.
- C. Section 321123 - Aggregate Base Courses: Temporary and permanent roadways.
- D. Section 329219 - Seeding: Permanent turf for erosion control.

1.03 REFERENCE STANDARDS

- A. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus 2014.
- B. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity. 1999a (Reapproved 2014).
- C. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles 2011.
- D. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles 2015a.
- E. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile 2012.
- F. ASTM D4873 - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples 2002 (Reapproved 2009).
- G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit Current Edition.
- H. FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control 1995.
- I. USDA TR-55 - Urban Hydrology for Small Watersheds; USDA Natural Resources Conservation Service 2009.

1.04 PERFORMANCE REQUIREMENTS

- A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.
- B. Also comply with all more stringent requirements of State of Kentucky Erosion and Sedimentation Control Manual.
- C. Develop and follow an Erosion and Sedimentation Prevention Plan and submit periodic inspection reports.

- D. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
 - 1. Obtain and pay for permits and provide security required by authority having jurisdiction.
 - 2. Owner will withhold payment to Contractor equivalent to all fines resulting from non-compliance with applicable regulations.
- E. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
- F. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
 - 1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
 - 2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.
- G. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
 - 1. Control movement of sediment and soil from temporary stockpiles of soil.
 - 2. Prevent development of ruts due to equipment and vehicular traffic.
 - 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- H. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
 - 1. Prevent windblown soil from leaving the project site.
 - 2. Prevent tracking of mud onto public roads outside site.
 - 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 - 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- I. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
 - 2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.
- J. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- K. Open Water: Prevent standing water that could become stagnant.

- L. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.05 SUBMITTALS

- A. See Division 1 for submittal procedures.
- B. Erosion and Sedimentation Control Plan:
 - 1. Submit within 2 weeks after Notice to Proceed.
 - 2. Include:
 - a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
 - b. Site plan showing grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed preventive measures.
 - c. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed preventive measures.
 - d. Schedule of temporary preventive measures, in relation to ground disturbing activities.
 - e. Other information required by law.
 - f. Format required by law is acceptable, provided any additional information specified is also included.
 - 3. Obtain the approval of the Plan by authorities having jurisdiction.
 - 4. Obtain the approval of the Plan by Owner.
- C. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.
- D. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.
- E. Maintenance Instructions: Provide instructions covering inspection and maintenance for temporary measures used during construction and temporary measures that must remain after Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Mulch: Use one of the following:
 - 1. Straw. Do not use hay.
 - 2. Wood waste, chips, or bark.
 - 3. Erosion control matting or netting.
- B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.
- C. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:

1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D4751.
2. Permittivity: 0.05 sec^{-1} , minimum, when tested in accordance with ASTM D4491.
3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355/D4355M after 500 hours exposure.
4. Tensile Strength: 100 pounds-force, minimum, in cross-machine direction; 124 pounds-force, minimum, in machine direction; when tested in accordance with ASTM D4632/D4632M.
5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632/D4632M.
6. Tear Strength: 55 pounds-force, minimum, when tested in accordance with ASTM D4533.
7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.
8. Manufacturers: subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - a. TenCate: www.tencate.com/#sle.
 - b. North American Green: www.nagreen.com/#sle.
 - c. Propex Geosynthetics: www.geotextile.com/#sle.
- D. Silt Fence Posts: One of the following, minimum 5 feet long:
 1. Steel U- or T-section, with minimum mass of 1.33 pound per linear foot.
 2. Hardwood, 2 by 2 inches in cross section.
- E. Gravel: See Section 321123 for aggregate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

- A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.
- B. Construction Entrances: Traffic-bearing aggregate surface.
 1. Width: As required; 20 feet, minimum.
 2. Length: 50 feet, minimum.
 3. Provide at each construction entrance from public right-of-way.
 4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.
- C. Linear Sediment Barriers: Made of silt fences.
 1. Provide linear sediment barriers:
 - a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.

- b. Along the top of the slope or top bank of drainage channels and swales that traverse disturbed areas.
 - c. Along the toe of cut slopes and fill slopes.
 - d. Perpendicular to flow across the bottom of existing and new drainage channels and swales that traverse disturbed areas or carry runoff from disturbed areas; space at maximum of 200 feet apart.
 - e. Across the entrances to culverts that receive runoff from disturbed areas.
- 2. Space sediment barriers with the following maximum slope length upslope from barrier:
 - a. Slope of Less Than 2 Percent: 100 feet..
 - b. Slope Between 2 and 5 Percent: 75 feet.
 - c. Slope Between 5 and 10 Percent: 50 feet.
 - d. Slope Between 10 and 20 Percent: 25 feet.
 - e. Slope Over 20 Percent: 15 feet.
- D. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.
- E. Crushed Stone Silt Checks: Stone check dams located along drainage swales and above headwalls. Silt checks are to be installed as required to reduce the sediment load of the runoff to local, State and Federal requirements. Construction is to be in accordance with the contract documents and KTC requirements.
- F. Soil Stockpiles: Protect using one of the following measures:
 - 1. Cover with polyethylene film, secured by placing soil on outer edges.
 - 2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw; do not use hay.
- G. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
 - 1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.
- H. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

- A. Traffic-Bearing Aggregate Surface:
 - 1. Excavate minimum of 6 inches.
 - 2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
 - 3. Place and compact at least 6 inches of 1 1/2 to 3 1/2 inch diameter stone.
- B. Silt Fences:
 - 1. Store and handle fabric in accordance with ASTM D4873.
 - 2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch high barriers with minimum 36 inch long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.
 - 3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch high barriers, minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.

4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet, use nominal 32 inch high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.
 5. Install with top of fabric at nominal height and embedment as specified.
 6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
 7. Fasten fabric to wood posts using one of the following:
 - a. Four nails per post with 3/4 inch diameter flat or button head, 1 inch long, and 14 gage, 0.083 inch shank diameter.
 - b. Five staples per post with at least 17 gage, 0.0453 inch wire, 3/4 inch crown width and 1/2 inch long legs.
 8. Fasten fabric to steel posts using wire, nylon cord, or integral pockets.
 9. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.
- C. Mulching Over Large Areas:
1. Dry Straw: Apply 2-1/2 tons per acre; anchor using dull disc harrow or emulsified asphalt applied using same spraying machine at 100 gallons of water per ton of mulch.
 2. Wood Waste: Apply 6 to 9 tons per acre.
 3. Erosion Control Matting: Comply with manufacturer's instructions.
- D. Mulching Over Small and Medium Areas:
1. Dry Straw: Apply 4 to 6 inches depth.
 2. Wood Waste: Apply 2 to 3 inches depth.
 3. Erosion Control Matting: Comply with manufacturer's instructions.
- E. Temporary Seeding:
1. When hydraulic seeder is used, seedbed preparation is not required.
 2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
 3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
 4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
 5. Incorporate fertilizer into soil before seeding.
 6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
 7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
 8. Repeat irrigation as required until grass is established.

3.05 MAINTENANCE

- A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.
- B. Repair deficiencies immediately.
- C. Silt Fences:
 - 1. Promptly replace fabric that deteriorates unless need for fence has passed.
 - 2. Remove silt deposits that exceed one-third of the height of the fence.
 - 3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- D. Stone Silt Checks: Remove accumulated sediment when it reaches 1/3 of the height of the check.
- E. Clean out temporary sediment control structures weekly and relocate soil on site.
- F. Place sediment in appropriate locations on site; do not remove from site.

3.06 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Re-use of existing products.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Section 014000 - Quality Requirements: Product quality monitoring.

1.03 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.

2.02 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.

2.03 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
- D. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully

in similar situations on other projects.

3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products

E. Product Selection Procedures: Procedures for product selection include the following:

1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the product named.
2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.
3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
4. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
5. Available Manufacturers: Where Specification paragraphs or subparagraphs titled "Available Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed.
6. Product Options: Where Specification paragraphs titled "Product Options" indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specific product or system indicated.
7. Visual Matching Specification: Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches satisfactorily.
8. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.
 - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.
9. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division 1 for allowances that control product selection and for procedures required for processing such selections.

2.04 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

- A. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work, including changes in the work of other contracts that incorporation of the proposed substitution would require, shall be included. 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.
 - 1. Substitutions merely for convenience are not permissible.
- B. Conditions: Written approval shall be obtained from the Architect covering any substitution. Substitutions are permitted in the following instances:
 - 1. Failure to meet quality and intent of specifications.
 - 2. Failure of the supplier or manufacturer to meet delivery schedules or other conditions of the contract.
 - 3. Written release by the supplier or manufacturer listed in the contract documents and the Contractor's Form of Proposal.
- C. Documentation: Provide evidence of the following:
 - 1. Requested substitution does not require extensive revisions to the Contract Documents.
 - 2. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - 3. Substitution request is fully documented and properly submitted.
 - 4. Requested substitution will not adversely affect Contractor's Construction Schedule.
 - 5. In the case of failure of the supplier or manufacturer to meet delivery schedules or other conditions of the contract, provide comprehensive written evidence to support this failure.
 - 6. Substitution request includes a release from the supplier/manufacturer listed in the contract documents and the Contractor's Form of Proposal.
- D. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- E. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.

- 5. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
- F. The Contractor's request for substitution and accompanying information in no way limits the Architect's responsibility to review the proposed substitution for compliance with the contract documents.
- G. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

3.02 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.
- I. If any material or piece of equipment is damaged during transportation and handling, the Owner has the right to reject this material or equipment and require a new, undamaged replacement.

3.03 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturer's warranty conditions, if any.
- H. Do not store products directly on the ground.
- I. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

- J. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- K. Prevent contact with material that may cause corrosion, discoloration, or staining.
- L. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- M. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.
- N. If any material or piece of equipment is damaged during storage or after installation but before occupancy, the Owner has the right to reject this material or equipment and require a new, undamaged replacement.

END OF SECTION

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Examination, preparation, and general installation procedures.
- B. Pre-installation meetings.
- C. Surveying for laying out the work.
- D. Cleaning and protection.
- E. Starting of systems and equipment.
- F. Demonstration and instruction of Owner personnel.
- G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- H. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 013000 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
- C. Section 014000 - Quality Requirements: Testing and inspection procedures.
- D. Section 015000 - Temporary Facilities and Controls: Temporary exterior enclosures.
- E. Section 017800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- D. Perform dewatering activities, as required, for the duration of the project.
- E. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- F. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
 - 2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.

- G. Erosion and Sediment Control: Comply with all project requirements.
- H. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
- I. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
- J. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.05 COORDINATION

- A. See Section 011000 for occupancy-related requirements.
- B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- C. Notify affected utility companies and comply with their requirements.
- D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Coordinate completion and clean-up of work of separate sections.
- H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

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.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect 10 days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.

3.04 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Architect of any discrepancies discovered.
- C. Contractor shall locate and protect survey control and reference points.
- D. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- E. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- G. Utilize recognized engineering survey practices.
- H. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
- I. Periodically verify layouts by same means.
- J. Maintain a complete and accurate log of control and survey work as it progresses.
- K. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

3.05 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 PROGRESS CLEANING

- 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 trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.
- G. 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.
- H. Prohibit traffic from landscaped areas.
- I. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.08 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.
- E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.09 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.10 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.

1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.
- B. Use cleaning materials that are nonhazardous.
- C. 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.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Clean filters of operating equipment.
- G. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains and drainage systems.
- H. Clean site; sweep paved areas, rake clean landscaped surfaces.
- I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.11 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 1. Provide copies to Architect.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Substantial Completion:
 1. Notify Architect when work is considered ready for Substantial Completion.
 2. Before requesting field observation for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - a. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete. All items on the list relating to commissioned systems must be complete before a certificate of Substantial Completion is issued.
 - b. Responses to and status of all open Corrective Action Log items.
 - c. Completion and approval of all scheduled Start-up and Checkout Plans for commissioned systems.
 - d. Completion and approval of all scheduled Functional Tests for commissioned systems, if applicable.
 - e. Completion of all scheduled Owner training sessions.
 - f. Advise Owner of pending insurance changeover requirements.
 - g. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - h. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

- i. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - j. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 - k. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - l. Complete startup testing of non-commissioned systems.
 - m. Submit test/adjust/balance records.
 - n. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 - o. Advise Owner of changeover in heat and other utilities.
 - p. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 - q. Complete final cleaning requirements, including touchup painting.
 - r. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
3. Field Observation: Submit a written request for field observation for Substantial Completion. On receipt of request, Architect will either proceed with field observation or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after field observation or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
4. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
5. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
6. Complete items of work determined by Architect's final field observation.
- D. Final Completion
- 1. Preliminary Procedures: Before requesting final field observation for determining date of Final Completion, complete the following:
 - a. Submit a final Application for Payment.
 - b. Submit certified copy of Architect's Substantial Completion field observation list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - c. Completion of all Owner training scheduled after Substantial Completion.
 - d. Completion and approval of all Functional Tests for commissioned systems scheduled after Substantial Completion.
 - e. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

- f. Submit pest-control final inspection report and warranty.
 - g. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.
 - 2. Final Field Observation: Submit a written request for final field observation for acceptance. On receipt of request, Architect will either proceed or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after field observation or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
- E. List of Incomplete Items (Punch List):
 - 1. Preparation: Submit preliminary list to Architect. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - a. Organize list of spaces in sequential order.
 - b. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 - c. Include the following information at the top of each page:
 - 1) Project name.
 - 2) Date.
 - 3) Page number.
- F. Warranties:
 - 1. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
 - 2. Provide additional copies of each warranty to include in operation and maintenance manuals.

3.12 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 017300 - CUTTING AND PATCHING**PART 1 GENERAL****1.01 RELATED DOCUMENTS**

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

1.02 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
- B. Related Sections include the following:
 - 1. Division 1 Section "Coordination" for demolition of selected portions of the building for alterations.
 - 2. Division 2 Section " Selective Structure Demolition" for cutting and patching procedures for selective demolition operations.
 - 3. Divisions 2 through 28 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - a. Requirements in this Section apply to mechanical and electrical installations. Refer to Divisions 20 and 28 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.03 DEFINITIONS

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.04 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - 1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
 - 2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
 - 3. Products: List products to be used and firms or entities that will perform the Work.
 - 4. Dates: Indicate when cutting and patching will be performed.
 - 5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
 - 6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
 - 7. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of

unsatisfactory work.

1.05 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
- C. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- D. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas..

3.03 PATCHING AND REPAIRS

- A. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.
- B. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
 - 1. Fill holes and depressions in existing masonry walls to remain with an approved masonry patching material, applied according to manufacturer's printed recommendations.

- C. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.
- D. Patch and repair floor and wall surfaces in the new space where demolished walls or partitions extend from one finished area into another. Provide a flush and even surface of uniform color and appearance.
 - 1. Closely match texture and finish of existing adjacent surface.
 - 2. Patch with durable seams that are as invisible as possible. Comply with tolerances.
 - 3. Where patching smooth painted surfaces, extend final paint coat over entire unbroken surface containing the patch after the surface has received primer and second coat.
 - 4. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - 5. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.
- E. Existing penetrations and openings due to the removal of existing communications, data, life safety, electrical, HVAC, sprinkler, or plumbing systems are to be filled and patched as follows:
 - 1. Above New Ceiling Heights:
 - a. Existing through-wall penetrations above new ceiling height 4" diameter/square or less, patch with solid, permanent fill material flush with adjacent wall surface.
 - b. Existing through-wall penetrations above new ceiling height from 4" diameter/square to approximately 1'-0" x 1'-0" diameter/square. Fill opening with sound attenuation blankets and attach 5/8" gypsum board to both sides of the adjacent wall surface to close opening.
 - c. Existing through-wall penetrations above new ceiling height 1'-0" x 1'-0" diameter/square or larger in an existing framed wall. Frame opening with metal studs @ 12" on center. Fill space between studs with sound attenuation blankets and attach 5/8" gypsum board to both sides of the adjacent wall surface to close opening.
 - d. Existing penetrations located above new ceiling height 1'-0" x 1'-0" diameter/square or larger in an existing CMU, or structural clay tile wall. Infill existing opening with CMU. Tothing into existing bond pattern is not required at above ceiling locations.
 - 2. Below New Ceiling Heights:
 - a. Existing through-wall penetrations below new ceiling height 4" diameter/square or less. Patch with solid, permanent fill material. New plaster finish to match existing plaster surface texture, if applicable.
 - b. Existing through-wall penetrations below new ceiling height 4" diameter/square to approximately 1'-0" x 1'-0" diameter/square. Fill opening with sound attenuation blankets and inset 5/8" gypsum board on both sides of the wall to close opening. New plaster finish to match existing plaster surface texture, if applicable.
 - c. Existing through-wall penetrations below new ceiling height 1'-0" x 1'-0" diameter/square or larger in an existing framed wall. Frame opening with metal studs @ 12" on center. Fill space between studs with sound attenuation blankets and attach 5/8" gypsum board to both sides of the adjacent wall surface to close opening. New plaster finish to match existing plaster surface texture, if applicable.
 - d. Existing through-wall penetrations located below new ceiling height 1'-0" x 1'-0" diameter/square or larger in an existing CMU or structural clay tile wall. Infill

existing opening with CMU, or structural clay tile set back from the existing wall surface to allow new plaster finish to be installed in specified thickness and to match existing surface texture, if applicable.

- e. Existing through-wall penetrations located below new ceiling height 1 inch diameter/square or larger in walls with exposed CMU, or glazed structural tile units. Infill existing opening with CMU, or glazed structural tile unit, to match existing surface texture and bond pattern. Remove whole masonry unit(s) and tooth-in to match existing bond pattern.
 - f. Existing through-wall penetrations in rated wall assemblies to receive fire rated gypsum board, fire blankets and fire resistant caulk at the intersection of the existing wall and fire rated gypsum or rated CMU wall construction. Provide new plaster finish to match existing plaster surface texture if applicable.
3. Partial Wall Openings/Non-Through-Wall Penetrations Below New Ceiling Heights:
- a. Wall openings left behind after demolition of fully or partially recessed electrical panels and other electrical items, communications, data, life safety, HVAC, sprinkler, or plumbing are to receive infill materials to match the surface of the wall.
 - 1) Existing CMU/Glazed Structural Clay Tile Walls: Toothing into existing CMU, or glazed structural tile, matching bond pattern is required at below ceiling locations.
 - (a) Tooth-in with whole units.
 - 2) Existing Framed Walls: Frame opening with metal studs @ 12" on center. Fill space between studs with sound attenuation blankets and attach 5/8" gypsum board to exposed side of the adjacent wall surface to close opening.
 - b. Set back infill material as necessary to provide new plaster finish to match existing plaster surface texture if applicable.

3.04 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

END OF SECTION 017300

SECTION 017800 - CLOSEOUT SUBMITTALS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. Section 013300 - Submittal Procedures: Submittals procedures, shop drawings, product data, and samples.
- B. Section 017000 - Execution and Closeout Requirements: Contract closeout procedures.
- C. Individual Product Sections: Specific requirements for operation and maintenance data.
- D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 2. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.
- D. **Special Note: Coordinate submission of all close-out documents with Architect. Architect and Owner may prefer that all submissions be provided electronically.**

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION****3.01 PROJECT RECORD DOCUMENTS**

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.

- 5. Reviewed shop drawings, product data, and samples.
- 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- 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.

3.02 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- E. Include all training videos and digital photographs on CD Rom with the O & M submittal.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 - 1. Product data, with catalog number, size, composition, and color and texture designations.
 - 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- F. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - 1. Description of unit or system, and component parts.

2. Identify function, normal operating characteristics, and limiting conditions.
 3. Include performance curves, with engineering data and tests.
 4. Complete nomenclature and model number of replaceable parts.
 5. System set points.
 6. As-delivered performance data.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
 - C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
 - D. Include color coded wiring diagrams as installed.
 - E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
 - F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
 - G. Provide servicing and lubrication schedule, and list of lubricants required.
 - H. Include manufacturer's printed operation and maintenance instructions.
 - I. Include sequence of operation by controls manufacturer.
 - J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
 - K. Provide control diagrams by controls manufacturer as installed.
 - L. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
 - M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
 - N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
 - O. Include test and balancing reports.
 - P. Additional Requirements: As specified in individual product specification sections.

3.05 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Manual: Bind in commercial quality 8-1/2 by 11 inch (216 by 279 mm) three D side ring binders with durable plastic covers.

- F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Selective demolition of built site elements.
- B. Selective demolition of building elements for alterations purposes.
- C. Selective demolition of existing utilities and utility structures.
- D. Demolition of the existing roofing and associated roof items.
- E. Patching and repairs of existing elements to remain.

1.02 RELATED SECTIONS

- A. Section 011000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 011000 - Summary: Sequencing and staging requirements.
- C. Section 013000 - Administrative Requirements: Preconstruction photographs taken prior to building demolition.
- D. Section 015000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- E. Section 017000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
- F. Section 017300 - Cutting and Patching: Repairs to existing surfaces.
- G. Section 311000 - Site Clearing: Vegetation and existing debris removal.
- H. Section 312200 - Grading: Topsoil removal.
- I. Divisions 21 through 28 Sections for or relocating of site mechanical and electrical items.

1.03 REFERENCES

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2004.

1.04 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or recycled.
- B. Remove and salvage: Detach items from existing construction and deliver them to Owner.
- C. Remove and reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.
- D. Existing to remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or recycled. Protect construction indicated to remain against damage and soiling during selective demolition.

1.05 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

1.06 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Site Plan: Showing:
 - 1. Areas for temporary construction and field offices.
- C. Selective Demolition Plan: Submit selective demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of selective demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
 - 2. Indicate starting and ending dates for each activity.
 - 3. Identify demolition firm and submit qualifications.
 - 4. Include a summary of safety procedures.
 - 5. Coordination for shutoff, capping, and continuation of utility services.
 - 6. Locations of temporary protection and means of egress.
 - 7. Use of stairs.
 - 8. Detailed sequence of selective demolition and removal work to ensure Owner's uninterrupted continuing occupancy of adjacent buildings and partial use of premises.
- D. Salvage Inventory: After building demolition is complete, Construction Manager/General Contractor to maintain a list of items that have been removed and salvaged to the Owner. Refer to the form at the end of this specification section.
- E. Reinstallation Inventory: After building demolition is complete, Construction Manager/General Contractor to maintain a list of items that have been removed and stored for reinstallation. Refer to the form at the end of this specification section.
- F. Proposed Dust-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed location, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
- G. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before work begins.
- H. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.07 **QUALITY ASSURANCE**

- A. Conference: Conduct conference at Project site to comply with requirements in Division 1 sections. Review methods and procedures related to building demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structures.
 - 3. Review and finalize selective demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review and finalize protection requirements.

1.08 **PROJECT CONDITIONS**

- A. Conditions existing at time of inspection for bidding purposes will be maintained by Owner as far as practical.

- B. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- C. Storage or sale of removed items or materials on-site is not permitted.
- D. Comply with other requirements specified in Section 017000.

1.09 HAZARDOUS MATERIALS

- A. Hazardous Materials: It is not expected that hazardous material will be encountered in the work.
 - 1. If material suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fill Material: As specified in Section 312200 - Grading
- B. Repair Materials: Use repair materials identical to existing materials.
 - 1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 2. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3 EXECUTION

3.01 SCOPE

- A. Remove portions of existing building as indicated on the drawings.
- B. Area of building(s) to be selectively demolished will be vacated and their use discontinued before start of Work.
- C. Owner will occupy another area immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
 - 1. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
 - 2. Maintain access to existing walkways, exits, and other adjacent occupied or used facilities.
 - a. Do not close or obstruct walkways, exits, or other occupied or used facilities without written permission from authorities having jurisdiction.
- D. Remove other items indicated, for salvage and relocation.
- E. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

3.02 EXAMINATION

- A. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- B. Review Project Record Documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are the same as those indicated in Project Record Documents.
- C. Inventory and record the condition of items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element. Promptly submit a written report to the Architect.

- E. Survey the condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.

3.03 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Use of explosives is not permitted.
 - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - a. Maintain adequate ventilation when using cutting torches.
 - 4. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the lower level.
 - 5. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 6. Cut or drill from the exposed surface or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 7. Buildings over one story remove debris from elevated portions by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - a. Remove structural framing members and lower to ground by method suitable to minimize ground impact or dust generation.
 - 8. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - a. Locate selective demolition equipment throughout the structure and remove debris and materials so as to not impose excessive loads on supporting walls, floors, or framing.
 - 9. Provide, erect, and maintain temporary barriers and security devices.
 - a. Comply with requirements in Division 1 Temporary Facilities and Controls.
 - 10. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 11. Do not close or obstruct roadways or sidewalks without permit.
 - 12. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 - 13. Obtain written permission from owners of adjacent properties when selective demolition equipment will traverse, infringe upon or limit access to their property.

- B. Do not begin removal until receipt of notification to proceed from {GT#0}.
- C. Protect existing structures and other elements that are not to be removed.
 - 1. Provide bracing and shoring.
 - 2. Prevent movement or settlement of adjacent structures.
 - 3. Stop work immediately if adjacent structures appear to be in danger.
- D. Below-Grade Construction:
 - 1. Remove below-grade construction, including basements, foundation walls and footings completely.
- E. Site Restoration:
 - 1. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials according to backfill requirements in Division 31 Sections.
 - 2. Staging, Parking and Storage: Restore lawn areas used for staging and storage of construction materials or parking during the project back to their original condition.

3.04 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to the Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to the Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- H. Prepare selective demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.
 - 1. Refer to Divisions 21 through 28 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.05 SELECTIVE DEMOLITION

- A. Drawings showing existing construction and utilities are based on field observation and existing record documents only.
- B. Separate areas in which selective demolition is being conducted from other areas that are still occupied or are to remain.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.

- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage to structure or interior areas.
- D. Protect walls, ceilings, floors, and other existing finish work that are to remain and are exposed during selective demolition operations.
- E. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete and promptly remove off-site.
 - 2. Concrete: Cut concrete, in small sections, full depth at junctures with construction indicated to remain, using power-driven saw, then remove concrete between saw cuts. Do not use power-driven impact tools.
 - 3. Masonry: Cut masonry, in small sections, at junctures with construction indicated to remain, using power-driven saw, then remove masonry between saw cuts. Do not use power-driven impact tools.
 - 4. Concrete Slabs-on Grade: Saw-cut perimeter of area to be demolished at junctures with construction indicated to remain, then break up and remove, unless otherwise shown to remain.
 - 5. Steel: Dismantle field connections without bending or damaging steel members. Do not use flame cutting torches unless otherwise authorized.
 - a. Steel trusses and joists as whole units without dismantling them further.
 - 6. Ceramic, Porcelain and Quarry Floor Tile and Base: Remove tile, grout, mastic, mudset bed, spacers, mesh and lathe in its entirety to leave remaining subfloor and wall surface in clean, smooth condition ready for new flooring material.
 - a. Mud/Thick set tile: Remove mud/thickset in its entirety to leave remaining subfloor and wall surface in clean, smooth condition ready for new flooring and fill material.
 - 7. Ceramic, Porcelain Quarry Wall Tile and Base: Remove tile, grout, mastic, spacers, mesh and lathe in its entirety to leave remaining CMU wall surface in clean, smooth condition ready for new wall material.
 - 8. Ceramic, Porcelain Quarry Wall Tile and Base: Remove tile, grout, mastic, spacers, mesh and lathe and backer board in its entirety ready for new backer board installation.
 - 9. Carpet: Remove in large pieces and roll tightly after removing demolition debris, trash, adhesive, tack strips, pad. Remove all adhesives, staples and other carpet securement items in their entirety to leave remaining subfloor in clean, smooth condition ready for new flooring material.
 - 10. Resilient Floor Covering: Remove resilient floor coverings and adhesive according to recommendations of the Resilient Floor Covering Institutes (RFCI) "Recommended Work Practices for the Removal of Resilient Floor Coverings" and Addendum.
 - a. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.
 - 11. Gypsum/Drywall Board Ceilings, Soffits and Bulkheads: Remove gypsum/drywall board, suspension hangers, clips, suspension grid system, furring or other stud support system in its entirety so existing ceiling area is ready to receive new ceiling system.
 - 12. HVAC Equipment: Disconnect equipment at nearest fitting connection to services, complete with service valves. Remove as whole units, complete with controls.

13. Remove items indicated on drawings.
- F. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical and Telecommunications): Remove existing systems and equipment as indicated.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 3. See Section 011000 for other limitations on outages and required notifications.
 4. Verify that abandoned services serve only abandoned facilities before removal.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- G. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
 4. Patch as specified for patching new work.
 - a. Patching is specified in Division 1 Section "Cutting and Patching".
- H. Roofing Demolition:
1. Remove no more existing roofing than can be covered in one day by new temporary roofing.
 2. Coordinate removal of existing roofing with installation of new temporary roofing and existing roof drains to remain. Coordinate repairs of existing roof deck with installation of temporary roofing.
 3. Provide water cut-offs, that do not create a water dam, at the end of each day's work.
 4. Remove existing roofing material by method to avoid damage to existing substrates.
 5. Remove debris from the roof by chute, hoist, or other device that will convey debris to grade level in a controlled descent. Do not throw materials from the roof.
 6. Do not traverse re-roofed areas to carry removed materials to chutes; where possible, relocate chutes to areas where demolition is occurring.
 7. Provide temporary walkways, as required, to protect existing substrates from damage by roofing operations.
 8. See applicable Division 7 Section for new roofing requirements.

3.06 DEBRIS AND WASTE REMOVAL

- A. Except for items or materials indicated to be reused, salvaged and reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

- B. Transport demolished materials from Owner's property and legally dispose of them..
- C. Transport demolished materials approved for fill and dispose of at designated spoils areas on Owner's property.
- D. Do not burn demolished materials on site.
- E. Leave site in clean condition, ready for subsequent work.
- F. Clean up spillage and wind-blown debris from public and private lands.
- G. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return to condition existing before start of selective demolition.
- H. Change filters on air-handling equipment on completion of selective demolition operations.

END OF SECTION

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES**PART 1 GENERAL****1.1 RELATED SECTIONS**

- A. Division 01 Sections
- B. Section 032000 - Concrete Reinforcing.
- C. Section 033000 - Cast-in-Place Concrete.

1.2 REFERENCES

ACI 117 – Standard Specifications for Tolerances for Concrete Construction and Materials.

ACI 301 – Standard Specifications for Structural Concrete.

ACI 318 – Building Code Requirements for Structural Concrete.

ACI 347 – Guide to Formwork for Concrete.

ASTM D1751 – Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

1.3 DEFINITIONS

- A. Architectural Concrete: All concrete members exposed to public view are classified as Architectural Concrete and shall comply with the Architectural Concrete provisions in this specification and ACI 301.

1.4 SUBMITTALS

- A. Submit locations of construction joints in framed construction for approval.
- B. Submit manufacturer's data for:
 - 1. Expansion/Isolation Joint Filler.
 - 2. Waterstops.

1.5 DESIGN OF FORMWORK

- A. Design of formwork, shoring, and reshoring and its removal is the Contractor's responsibility.
- B. Design of formwork, shoring, and reshoring shall conform to ACI 117, ACI 301, ACI 318, and ACI 347.
- C. Design formwork in a manner such that existing or new construction is not overloaded.

1.6 ARCHITECTURAL CONCRETE MOCK-UP

- A. Provide a mock-up as shown in the Drawings using the products and practices specified for Architectural Concrete to be reviewed and approved by the Architect.
- B. Mock-up shall be protected for the duration of the construction and will be used as the basis of acceptance for constructed work.

PART 2 PRODUCTS

2.1 FORM MATERIALS

- A. Form Material: Wood, plywood, metal, fiberglass or a combination of these, with sufficient strength to prevent distortion.
- B. Form Definitions
 - 1. Standard Forms: No form-facing material required. Standard forms are acceptable everywhere except for Architectural Concrete elements.
 - 2. Architectural Concrete Forms: Form-facing material shall be plywood, tempered concrete-form-grade hardboard, metal (unrusted) or plastic that will produce a smooth, uniform texture on the concrete. Do not use form-facing material with raised grain, torn edges, worn edges, patches, dents, or other defects that will impair the texture of the exposed concrete surfaces. Intent is that when the forms are removed, the exposed concrete surfaces will be free from all blemishes. Architectural concrete forms are required for all concrete elements indicated as Architectural Concrete.

2.2 FORMWORK ACCESSORIES

- A. Formwork Accessories: Commercially manufactured products, including ties and hangers. Do not use nonfabricated wire form ties.

2.3 FORM RELEASE AGENT

- A. Form release agent shall not bond with, stain, nor adversely affect concrete surfaces.

2.4 EXPANSION / ISOLATION JOINT FILLER

- A. Expansion / Isolation Joint Filler: ASTM D1751, asphalt impregnated premolded fiberboard, 1/4-inch thick by full thickness of slab or joint, unless indicated otherwise in the Structural Drawings.

2.5 CONSTRUCTION JOINTS

- A. Slabs-On-Grade: Steel plate dowel such as manufactured by PNA Construction Technologies, Inc., Greenstreak Group, Inc., or approved equal.
 - 1. Plate Thickness: 1/4-inch thick for slabs up to 6 inches in thickness; 3/8-inch for slabs over 6 inches and up to 8 inches in thickness; 3/4-inch thick for slabs over 8 inches in thickness and up to 12 inches in thickness.

2.6 WATERSTOPS

- A. Waterstops at construction joints and contraction joints indicated in the Structural Drawings shall be sized to suit the joints.
- B. Waterstops: Preformed, non-expansive, plastic adhesive waterstops such as Synko-Flex, manufactured by Henry Company, or approved equal.

PART 3 EXECUTION

3.1 GENERAL

- A. Erect formwork in accordance with ACI 301 and ACI 347.

- B. Finished work shall comply with tolerances of ACI 117.
- C. Provide 3/4-inch chamfer at all formed corners.

3.2 FOUNDATION ELEMENTS

- A. Form foundation elements if soil or other conditions are such that earth trench forms are unsuitable.
- B. Sides of perimeter grade beams, foundation walls, and turned-down slabs shall be formed.
- C. Maintain minimum coverage of reinforcing steel as indicated in Structural Drawings.

3.3 FORM PREPARATION

- A. Seal form joints to prevent leakage.
- B. Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed.
- C. Before reinforcement is placed, coat contact surfaces of form with form release agent in accordance with manufacturer's recommendations. Do not allow excess form release agent to accumulate in forms or come in contact with concrete surfaces against which fresh concrete will be placed.

3.4 INSERTS AND EMBEDMENT ITEMS

- A. Install and secure in position required inserts, embeds, hangers, sleeves, anchors, and nailers.
- B. Locate anchor bolts/rods in position in accordance with approved setting drawings and secure to prevent displacement during concrete placement.

3.5 PROVISIONS FOR OTHER TRADES

- A. Install openings in concrete formwork to accommodate work of other trades. Determine size and location of openings and recesses from trades requiring such items. Obtain approval from Structural Engineer for openings not shown in Structural Drawings.
- B. Accurately place and securely support items built into forms.

3.6 CONSTRUCTION JOINTS

- A. Slabs-On-Grade: Install steel plate dowels in accordance with manufacturer's recommendations. Place plate dowels at mid-depth of slab (+/-1/4-inch), unless noted otherwise in the Structural Drawings.

3.7 WATERSTOPS

- A. Prepare surface and install strip applied waterstops in accordance with manufacturer's recommendations.

3.9 FORMWORK REMOVAL

- A. Remove formwork carefully in such manner and at such time as to ensure complete safety of structure. Do not remove formwork, shoring, or reshoring until members have acquired sufficient strength to support their weight and the load thereon safely.

- B. For conventionally reinforced framed slabs, formwork shall remain in place for a minimum of 5 days after concrete placement.
- C. For Architectural Concrete elements, remove forms as early as permissible and in such a manner as to not damage exposed surfaces.

3.10 FINISHES OF FORMED SURFACES

- A. Standard Form Finish: Patch tie holes and defects. Chip or rub off fins exceeding $\frac{1}{4}$ inch in height. Leave surface with the texture imparted by the forms.
- B. Architectural Concrete Finish: Patch tie holes and defects. Remove all fins completely. Produce finish on newly hardened concrete no later than the day following formwork removal. Wet the surface and rub it with carborundum or other abrasive until uniform color and texture are produced. Use no cement grout other than cement paste drawn from the concrete itself by the rubbing process.

END OF SECTION

SECTION 032000 - CONCRETE REINFORCING**PART 1 GENERAL****1.1 RELATED SECTIONS**

- A. Division 1 Sections
- B. Section 031000 – Concrete Forming and Accessories.
- C. Section 033000 – Cast-in-Place Concrete.

1.2 REFERENCES

ACI 117 – Standard Specifications for Tolerances for Concrete Construction and Materials.

ACI 301 – Standard Specifications for Structural Concrete.

ACI 315 – Details and Detailing of Concrete Reinforcement.

ACI 318 – Building Code Requirements for Structural Concrete.

ASTM A185 – Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete Reinforcement.

ASTM A615 – Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

ASTM A706 – Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.

AWS D1.4 – Structural Weld Code - Reinforcing Steel.

AWS D12.1 – Recommended Practices for Welding Reinforcing Steel Metal Inserts, and Connections in Reinforced Concrete Construction.

CRSI – Manual of Standard Practice.

1.3 SUBMITTALS

- A. Refer to Structural Quality Assurance Plan in the Structural Drawings for additional submittal requirements.
- B. Shop Drawings:
 - 1. Notify Structural Engineer prior to detailing reinforcing steel shop drawings.
 - 2. Indicate size, spacing, location and quantities of reinforcing steel and wire fabric, bending and cutting schedules, splice lengths, stirrup spacing, supporting and spacing devices. Detail reinforcing steel in accordance with ACI 315 and CRSI Standards.
 - 3. Written description of reinforcement without adequate sections, elevations, and details is not acceptable.
 - 4. Reproduction of Structural Drawings for shop drawings is not permitted. Electronic drawing files will not be provided to the Contractor.
- C. Submit manufacturer's data for tension and compression splicers.

1.4 QUALITY ASSURANCE

- A. Refer to the Structural Quality Assurance Plan in the Structural Drawings.

1.5 STORAGE AND PROTECTING

- A. Store reinforcing steel above ground so that it remains clean. Maintain steel surfaces free from materials and coatings that might impair bond.

PART 2 PRODUCTS**2.1 MATERIALS**

- A. Deformed Reinforcing Steel: ASTM A615, refer to Structural Drawings for grade (Grade 60 minimum).
- B. Welded Steel Wire Fabric: ASTM A185.

2.2 ACCESSORY MATERIALS

- A. Annealed Steel Tie Wire: 16½ gage minimum.
- B. Bar Supports: Plastic-tipped steel Class I bar supports conforming to CRSI Specifications. Concrete brick may be used to support reinforcement to obtain proper clearance from earth.

2.3 DOWEL ADHESIVE

- A. Dowel Adhesive: EPCON System Ceramic 6 Epoxy adhesive supplied by ITW Ramset/Red Head, HIT HY150 injection adhesive supplied by Hilti Fastening Systems, Power-Fast epoxy injection gel or AC100 Plus supplied by Powers Fasteners, SET High Strength Epoxy supplied by Simpson, or approved equal.

PART 3 EXECUTION**3.1 FABRICATION**

- A. Fabricate reinforcing steel in accordance with ACI 318 and CRSI standards.
- B. Bend bars cold. Do not heat or flame cut bars. No field bending of bars partially embedded in concrete is permitted, unless specifically approved Structural Engineer and checked by Testing and Inspection Agency for cracks.
- C. Weld only as indicated. Perform welding in accordance with AWS D1.4 and AWS D12.1.
- D. Tag reinforcing steel for easy identification.

3.2 INSTALLATION

- A. Before placing concrete, clean reinforcement of foreign particles and coatings.
- B. Place, support, and secure reinforcement against displacement in accordance with ACI 318 and CRSI standards. Do not deviate from alignment or measurement.
- C. Place concrete beam reinforcement support parallel to main reinforcement.

- D. Locate welded wire reinforcement in the top third of slabs. Overlap mesh one lap plus two inches at side and end joints.
- E. Furnish and install dowels or mechanical splices at intersections of walls, columns and piers to permit continuous reinforcement or development lengths at such intersections.
- F. Maintain cover and tolerances in accordance with ACI and CRSI Specifications, unless indicated otherwise on Structural Drawings.

3.3 SPLICES

- A. Do not splice reinforcement except as indicated on Structural Drawings.
- B. Tension couplers may be used and installed in accordance with manufacturer's recommendations.

3.4 DOWELS IN EXISTING CONCRETE

- A. Install dowels with approved adhesive in existing concrete as shown on the Drawings. Dowels to be installed with adhesive at locations not specifically shown on the Drawings shall be approved by the Structural Engineer.
- B. Minimum embedment length into the existing concrete shall be 12 bar diameters, unless noted otherwise.

END OF SECTION

SECTION 033000 - CAST-IN-PLACE CONCRETE**PART 1 GENERAL****1.1 RELATED SECTIONS**

- A. Division 1 Sections
- B. Section 031000 – Concrete Forming and Accessories.
- C. Section 032000 – Concrete Reinforcing.
- D. Section 036200 – Non-shrink Grouting.

1.2 REFERENCES

ACI 117 – Standard Specifications for Tolerances for Concrete Construction and Materials.

ACI 214 – Recommended Practice for Evaluation of Strength Test Results of Concrete.

ACI 301 – Specifications for Structural Concrete.

ACI 302.1 – Guide for Concrete Floor and Slab Construction.

ACI 304 – Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

ACI 305 – Hot Weather Concreting.

ACI 306 – Cold Weather Concreting.

ACI 308 – Guide to Concrete Curing.

ACI 309 – Recommended Practice for Consolidation of Concrete.

ACI 318 – Building Code Requirements for Reinforced Concrete.

ASTM C31 – Standard Practice for Making and Curing Concrete Test Specimens in the Field.

ASTM C33 – Standard Specification for Concrete Aggregates.

ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

ASTM C94 – Standard Specification for Ready-Mixed Concrete.

ASTM C138 – Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.

ASTM C143 – Standard Test Method for Slump of Hydraulic-Cement Concrete.

ASTM C150 – Standard Specification for Portland Cement.

ASTM C172 – Standard Practice for Sampling Freshly Mixed Concrete.

ASTM C173 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

ASTM C230 – Standard Specification for Flow Table for Use in Tests of Hydraulic Cement.

ASTM C260 – Standard Specification for Air-Entraining Admixtures for Concrete.

ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

ASTM C494 – Standard Specification for Chemical Admixtures for Concrete.

ASTM C618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

ASTM E1155 – Standard Test Method for Determining F_F Floor Flatness and F_L Floor Levelness Numbers.

1.3 SUBMITTALS

- A. Refer to Structural Quality Assurance Plan in the Structural Drawings for additional submittal requirements.
- B. Submit three copies of the concrete mix designs. Include the following:
 - 1. Documentation of mix design proportions complying with ACI 318, Chapter 5.
 - 2. Type and quantities of materials including admixtures
 - 3. Slump
 - 4. Air content
 - 5. Water/cement ratio
 - 6. Fresh unit weight
 - 7. Aggregates sieve analysis
 - 8. Design compressive strength
 - 9. Location of placement in structure
 - 10. Method of placement
 - 11. Method of curing
 - 12. Seven-day and 28-day compressive strengths
 Mix design submittals not conforming to the above will be rejected.

1.4 QUALITY ASSURANCE

- A. The ready-mixed concrete plant shall be certified for conformance with the requirements of the National Ready Mix Concrete Association.
- B. Refer to the Structural Quality Assurance Plan in the Structural Drawings.

1.5 MOCK-UP

- A. Provide concrete as necessary (including temporary wall base or foundation) to accommodate project mock-up requirements as shown in architectural drawings and specifications.
- B. Mock-up shall be protected for the duration of the construction and will be used as the basis of acceptance for constructed work.

PART 2 PRODUCTS

2.1 CONCRETE MIX DESIGN

- A. Establish concrete mix design proportions in accordance with ACI 318, Chapter 5.
- B. Concrete Strength: See Structural Notes in Structural Drawings.
- C. Slump
 - 1. Design concrete with a slump between four and ten inches.
 - 2. If a slump greater than five inches is desired, use a mid-range or high-range water reducer.
- D. Water/Cementitious Materials Ratio (w/cm): See Structural Notes in Structural Drawings.
- E. Entrained Air Content: See Structural Notes in Structural Drawings.
- F. Fresh Unit Weight
 - 1. Normal weight concrete: Fresh unit weight of 137 to 148 pcf.

2.2 MATERIALS

- A. Materials designated by specific manufacturer's trade names are approved, subject to compliance with the quality and performance indicated by the manufacturer. Instructions and recommendations, published by the manufacturer of such materials are included in and are a part of these Specifications.

2.3 CEMENT

- A. Cement: Type I Portland cement complying with ASTM C150, unless noted otherwise. Use one brand only.

2.4 AGGREGATE

- A. Fine Aggregate: Fine aggregate complying with ASTM C33.
- B. Coarse Aggregate: Gravel or crushed stone complying with ASTM C33 for normal weight concrete. Size coarse aggregate in accordance with ACI 318.

2.5 WATER

- A. Water: Potable water free of deleterious substances complying with ACI 318.

2.6 AIR ENTRAINING AGENT

- A. Air Entraining Agent: Air entraining agent complying with ASTM C260.

2.7 WATER REDUCER

- A. Water Reducer: Water reducing agent complying with ASTM C494.

2.8 MID-RANGE/HIGH-RANGE WATER REDUCER

- A. Mid-range/High-range Water Reducer: Mid-range and high-range water reducers (plasticizers) complying with ASTM C494.

2.9 CHLORIDE

- A. Chlorides: Chlorides of any form shall not be used in concrete.

2.10 EVAPORATION RETARDER

- A. Provide an evaporation retarder such as Confilm by BASF, or approved equal during placement and finishing of concrete slabs. This product will aid in reducing plastic shrinkage cracks and surface moisture evaporation caused by high ambient and/or mix temperatures, low humidity, high winds, direct sunlight or work within heated interiors during cold weather.

2.11 CURING COMPOUND – VERTICAL SURFACES

- A. Curing Compound: Vertical Surfaces Only – A water-based, “odorless,” acrylic curing compound with a minimum solid content of 20 percent may be used at the Contractor's option complying with ASTM C309.

2.12 FLY ASH

- A. Fly Ash: Class F fly ash with a loss on ignition of less than five percent or Class C fly ash with a loss on ignition of less than one percent complying with ASTM C618.

2.13 ACCELERATORS

- A. Accelerators: Non-chloride accelerators complying with ASTM C494.

2.14 RETARDERS

- A. Retarders: Retarders complying with ASTM C494.

2.15 CONTRACTION JOINT SEALANT

- A. Contraction Joint Sealant: Semi-rigid, epoxy joint filler.

PART 3 EXECUTION

3.1 GENERAL

- A. Prepare place of deposit, mix, convey, and place in accordance with ACI 301 and ACI 304.
- B. Wet forms before placing concrete.
- C. Deposit concrete as near as practical to final position.
- D. Do no flowing of concrete with vibrators.
- E. Place slabs in accordance with ACI 302.
- F. Place and finish concrete members to comply with tolerances in ACI 117.
- G. Do not use aluminum equipment in placing and finishing concrete.

3.2 SLABS-ON-GRADE

- A. Place concrete for slabs-on-grade on properly prepared granular subbase with vapor barrier.
- B. Place thickened slabs for partitions integral with floor slabs.

3.3 MID-RANGE / HIGH-RANGE WATER REDUCERS

- A. Mid-range or high-range water reducers are to be added at dosage recommended by the manufacturer. The slump of the concrete shall be one to four inches at the time the water reducers are added. Do not permit fresh concrete containing superplasticizers to come in contact with fresh concrete not containing superplasticizers.

3.4 ADDITION OF WATER AT JOB SITE

- A. Water may be added at the jobsite if neither the maximum permissible water/cement ratio nor the maximum slump is exceeded. All concrete delivery trucks will have actual batch weight tickets available that clearly indicate the quantity of water that may be added at the jobsite that will not exceed the maximum water/cement ratio.

3.5 TIME LIMIT

- A. Deposit concrete within one and one-half hours after batching.

3.6 EVAPORATION RETARDER

- A. Apply with a constant pressure or industrial type sprayer in accordance with manufacturer's recommendations.

3.7 VIBRATION

- A. Consolidate concrete in accordance with ACI 301 and ACI 309.

3.8 CURING

- A. Begin curing procedures immediately following the commencement of the finishing operation.
- B. Cure concrete in accordance with ACI 308. Keep the concrete surface moist. Place burlap, burlene, or similar vapor barrier on the surface. Maintain moist concrete surface for a minimum three days.
- C. If an acrylic curing compound is used *for vertical surfaces*, apply in accordance with manufacturer's recommendations, to the surfaces of concrete not protected (for five days) by formwork.

3.9 WEATHER PROVISIONS

- A. Perform cold weather concreting in accordance with ACI 306.
- B. Perform hot weather concreting in accordance with ACI 305.
- C. Protect concrete from drying and excessive temperature for the first seven days.
- D. Protect fresh concrete from wind.

3.10 CONTRACTION JOINTS

- A. Obtain Architect/Structural Engineer's approval for location of contraction joints. Do not use contraction joints in framed floors or composite slabs, unless noted in Structural Drawings.
- B. Provide contraction joints in slabs-on-grade to form a regular grid with a maximum spacing as noted in the Structural Drawings. The long dimension of the grid shall not exceed 1.5 times the short dimension of the grid. Contraction joints may be saw cut if cut within 24 hours after placement of concrete. Saw cuts shall be a depth equal to one-fourth the slab thickness by one-eighth inch wide. Alternately, contraction joints may be provided by preformed plastic strip inserts.

3.11 CUTTING CONCRETE

- A. Obtain Architect/Structural Engineer's written approval prior to cutting concrete for installation of other work.

3.12 PATCHWORK AND REPAIRS

- A. Notify Architect/Structural Engineer of any defective areas in concrete to be patched or repaired. Repair and patch defective areas with non-shrink grout. Cut out defective areas over 2 inches in diameter to solid concrete but not less than a depth of one inch. Make edges of cuts perpendicular to the concrete surface.

3.13 CONCRETE FINISHES

- A. Finish Concrete in accordance with ACI 301.
- B. All slabs shall be troweled finish, unless noted otherwise.
- C. Finish slabs to the following flatness and levelness tolerances:
 1. F_F25/F_L20 minimum overall for composite of all measured values and F_F17/F_L12 minimum for any individual floor section.
 2. Architect/Structural Engineer will identify which sections of slabs are to be tested for flatness and levelness.
 - a. F_L values are applicable only if testing is performed within 72 hours of concrete placement, before tensioning of tendons, and before removal of formwork.
 - b. F_F values are applicable to all types of slab construction and are not subject to any time constraints.
- D. Exterior slabs such as loading docks shall receive a light broom finish and slope away from building.

3.14 CONTRACTION JOINT AND CRACK SEALANT

- A. Remove dirt and debris from joints. Joints shall be dry and free from all substances that inhibit bond. Install sealant to prevent three-sided bonding.
- B. Coordinate filling contraction joints and cracks with Architectural flooring specifications.

END OF SECTION

SECTION 035216 - LIGHTWEIGHT INSULATING CONCRETE**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Cast-in-place cellular type lightweight insulating concrete fill over new structural metal roof decking.
 - 1. Metal deck is vented.
- B. Perimeter joint filler.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal Requirements.
- B. Section 053100 - Steel Decking: Roof deck requirements.
- C. Section 075400 - Thermoplastic Membrane Roofing: Roof membrane and warranty information.
- D. Section 075700 - Coated Foam Roofing: Roof membrane and warranty information.
- E. Section 076200 - Sheet Metal Flashing and Trim: Brake metal trim.
- F. Section 077100 - Roof Specialties: Installation of roof specialties.
- G. Section 077200 - Roof Accessories: Installation of roof accessories
- H. Refer to plumbing, mechanical and electrical specifications and drawings for roof drains, pipe, conduit and HVAC penetrations.

1.03 REFERENCE STANDARDS

- A. ASTM C150/C150M - Standard Specification for Portland Cement 2015.
- B. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete 2012.
- C. ASTM C 177/04 - Standard Test method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
- D. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a.

1.04 TESTING REQUIREMENTS

- A. ASTM C 495 - Standard Test Method for Compressive Strength of Lightweight Insulating Concrete.
- B. ASTM C 796 /80 - Standard Method of Testing for Foaming Agents for use in Producing Cellular Concrete Using Preformed Foam, 1986.
- C. ASTM C 869/91 - Standard Specification for Foaming Agents Used in Making Preformed Foam for Cellular Concrete, 1999.

1.05 SUBMITTALS

- A. Shop Drawings: Indicate layout of slopes, drain locations, interruptions, terminations, insulation thickness, plans, sections, details, roof penetrations and roof perimeter.
- B. Product Data: Provide physical characteristics, thermal values, product limitations.
 - 1. Provide mixing and application instructions.
 - 2. Submit independent laboratory test results for the following performance criteria:
 - a. Thermal insulation value per ASTM C 177.
 - b. Mix design compressive strength per ASTM C 796.
 - c. Mix design wet and dry density range per ASTM C 796.

- d. Expanded polystyrene (EPS) density per ASTM C 578.
- C. Certificates: Certify that products of this section meet or exceed specified requirements and that densities, indicated thicknesses and thermal values have been achieved.
- D. Design mixes for each lightweight insulating concrete mix, including as-cast unit weight, oven-dry unit weight, and compressive strength.
- E. Submit documentation, from the manufacturer of the proposed lightweight insulating concrete system, confirming that the expanded polystyrene used as a component in the lightweight insulating concrete system is approved for use in the proposed lightweight insulating concrete system.
- F. Additional material certificates by lightweight insulating concrete manufacturer certifying that all other material items comply with requirements of the system specified.
- G. Research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction that evidence lightweight insulating concrete's compliance with building code in effect for Project.
- H. Manufacturer certificate, located in the FOP and to be submitted with the bid, for the proposed lightweight insulating concrete system confirming that the lightweight insulating concrete installer is approved to install the proposed lightweight insulating concrete system meeting the roof warranty specified.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Lightweight insulating concrete manufacturer is to have an indemnity arrangement with the selected roofing membrane manufacturer such that the lightweight insulating concrete can be included within the single source, 20 year, No Dollar Limit (NDL) warranty per the requirements of the Special Project Full System Roof Warranty in the roof specification section 075400.
- B. Installer Qualifications: Company specializing in placing lightweight insulating concrete of the type specified in this section with minimum 10 years of experience prior to the bid.
- C. Installer Qualifications: Engage an experienced Installer who has completed lightweight insulating concrete work similar in material, design, and extent to that indicated for this Project and who is approved or certified prior to bid by the manufacturer of the lightweight insulating concrete system to be a part of the single source, 20 year, No Dollar Limit (NDL) warranty per the requirements of the Special Project Full System Roof Warranty in the roof specification section 075400 and 075700 and signed by the roof membrane manufacturer.
- D. Testing Agency Qualifications: To qualify for approval, an independent testing agency must demonstrate to Architect's satisfaction, based on evaluation of agency-submitted criteria conforming to ASTM C 1077 and ASTM E 329, that it has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.
- E. Fire-Test-Response Characteristics: Where indicated, provide lightweight insulating concrete identical to that tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Fire-Resistance Ratings: As indicated by design designations in UL "Fire Resistance Directory" or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.
- F. FM Listing: Provide lightweight insulating concrete evaluated by Factory Mutual as part of a roof assembly and listed in FM Research Corp.'s "Approval Guide" for Class 1 fire rating and Class 1-90 windstorm ratings.

1.07 PRE-INSTALLATION MEETING

- A. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at project site. Meet with Installer (Roofer), installers of substrate construction (roof decks) and other work adjoining roof system including penetrating work and roof accessories, Architect, Owner, and representatives of other entities directly concerned with performance of roofing system including (as applicable) Owner's insurers and test agencies. This meeting must be attended by the on-site Foreman overseeing the work.
 - 1. Review requirements (Contract Documents), submittals, status of coordinating work, availability of materials, and installation facilities and establish preliminary installation schedule. Review requirements for inspections, testing, certifications, forecasted weather conditions, governing regulations, insurance requirements, and proposed installation procedures.
 - 2. Discuss roofing system protection requirements for construction period extending beyond roofing installation. Discuss possible need for temporary roofing.
 - 3. Discuss water required for installation of the lightweight insulated concrete. Discuss local/regional water company regulations, metering, or permits required.
 - 4. Record discussion, including agreement or disagreement on matters of significance; furnish copy of recorded discussions to each participant. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.

1.08 FIELD CONDITIONS

- A. Do not place insulating concrete mix at ambient temperatures lower than 40 degrees F and rising without heating mix water to 90 to 110 degrees F.
- B. Do not place lightweight insulating concrete during rain snow or on surfaces covered with standing water, snow or ice.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original undamaged packages or acceptable bulk containers.
- B. Store packaged materials to protect them from elements or physical damage.
- C. Do not use cement that shows indications of moisture damage, caking or other deterioration.

1.10 WARRANTY

- A. Lightweight insulating concrete warranty to be provided within the Special Project Full System Roof Warranty as required under Section 075400 and 075700. Lightweight insulating concrete warranty is not to be a separate pass-thru warranty attached to the roof warranty.
 - 1. The roofing subcontractor shall not offer the LWIC/roofing warranty cost as a deduct to their bid price.
 - 2. The roofing and lightweight insulated concrete warranty is to be provided by the roofing contractor and is not to be obtained at a later date by the General Contractor/ Construction Manager.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include:

1. Lightweight Insulating Concrete:
 - a. Celcore, Inc. : www.celcoreinc.com
 - b. Elastizell Corporation of America : www.elastizell.com
 - c. Siplast Inc: www.siplast.com
 - d. Aerix Industries (formerly Cellular Concrete Solutions); Mearlcrete Division: www.aerixindustries.com

2.02 MATERIALS

- A. Cement: ASTM C 150, Portland Type I, Type II or Type III gray color.
- B. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.
- C. Foaming Agent; ASTM C 869
- D. Molded Polystyrene Insulation Board: ASTM Type C 578, Type 1, 0.90-lb/cu. ft. minimum density. Provide units with keying slots of approximately 3 percent of board gross surface area.

2.03 ACCESSORIES

- A. Roof Deck Gap and Hole Filler:
 1. Expandable sealant and other materials and methods of sealing gaps, holes and penetrations are acceptable, provided that they are approved by the lightweight insulating concrete manufacturer.

2.04 CONCRETE MIX

- A. Test for compressive strength in accordance with ASTM C 796, for wet density and for dry density after air drying.
- B. Provide concrete mix with the following properties:
 1. Compressive strength of 200 psi for nailed base sheet roofing membrane.(Coated Foam Roofing)
 2. Compressive strength of 250 psi for fully adhered roofing membrane. (Thermoplastic Membrane Roofing)
 - a. As-cast unit weight of 34 to 48 lb/cu. ft. at point of placement, when tested according to ASTM C796.
 - b. Dry weight of 27 to 36 lb/cu. ft., when tested according to ASTM C 796.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify joints in metal deck roof members are grouted or taped to prevent seepage of wet insulating concrete.
- B. Verify installation of metal deck is completed and acceptable to receive lightweight insulating concrete.

3.02 PREPARATION

- A. Interior of the Building: Prior to installation of the slurry coat, on the vented metal deck, the Lightweight Concrete Contractor is to coordinate with the General Contractor to provide and install sheet plastic, drop cloths or tarps to protect all items installed below roof deck such as ductwork, conduit and floor surfaces from lightweight concrete material excess.

- B. Exterior/Roof Area: Prior to installation of the lightweight insulating concrete material the Lightweight Concrete Contractor is to coordinate with the General Contractor to provide and install sheet plastic, drop cloths or tarps to protect all roof items, roof penetration blocking and installed parapet wall surfaces from lightweight concrete material excess.
- C. Installation of non-vented and vented deck install gap and hole fill material at:
 - 1. Perimeter of roof decking.
 - 2. Around penetrations through deck.
 - 3. Each change of deck direction on metal roof deck surfaces.
- D. Install appropriate fill material at all perimeter gaps, field gaps and small holes in the metal deck less than 1" in size.
- E. Excessive weld burn holes in the metal deck are to be filled by the metal deck installer.
 - 1. Any gap or hole determined to require additional structural support by the structural engineer shall be filled by the metal deck installer.
- F. General Contractor to coordinate with Lightweight Concrete Contractor to provide lightweight material barriers at areas of construction that will be completed at a later sequence/phase of the project.
- G. Prior to the installation of the insulating concrete material, the contractor shall plug/protect drain or other pipe openings to keep lines free of all concrete material.
- H. After installation of the lightweight concrete is complete, and prior to the permanent roof membrane being installed, the General Contractor is to coordinate with the Roofing Contractor and Lightweight Insulating Concrete Contractor to provide a temporary, watertight material over the entire roof drain sump to allow moisture to drain into the roof drain piping. This temporary, watertight material is to be installed to prevent moisture from penetrating below the lightweight material, at all roof drain sumps.

3.03 INSTALLATION

- A. Slurry deck surface; place insulation; use mix to fill holes and breaks.
- B. Place insulating concrete and screed surface to achieve minimum 2 inch thickness.
- C. Slope top surface to 1/4 inch/foot for roof surface drainage.

3.04 MIXING AND PLACING

- A. Mix and place lightweight insulating concrete according to manufacturer's instructions, using equipment and procedures to avoid segregation of mix and loss of air content.
- B. Install insulation according to lightweight insulating concrete manufacturer's recommendations. Place insulation in wet slurry poured a minimum of 1/8 inch (3 mm) above the structural substrate. Ensure full contact of insulation with slurry so that the slurry fills the locking and keying openings in the insulation. Stagger joints and tightly butt insulation boards.
 - 1. Install insulation in a stair-step configuration with maximum steps of 1" to provide slope for the roofing system.
- C. Deposit and screed lightweight insulating concrete in a continuous operation until an entire panel or section of roof area is completed. Do not vibrate or work mix except for screeding or floating. Place to depths and slopes indicated. Provide a minimum thickness of two inches (2") over the top of the insulation board. Place insulating concrete within four (4) hours of placement of insulation boards.
- D. Finish top surface smooth, free of ridges and depressions, and maintain surface in acceptable condition to receive subsequent roofing application. Provide a uniform smooth trowel finish at slopes

as indicated on the drawings, within plus or minus 1/4 inch in 10'-0".

- E. Monitor installation, checking below roof deck for lightweight concrete leaking onto CMU walls or floors. Remove lightweight before it adheres to CMU or floor to avoid filling cells of CMU surface, altering surface to receive paint or new flooring material. Remove all light weight from structural steel members or joists to remain exposed or be painted.
- F. Begin curing operations immediately after placement, and air cure for not less than 3 days according to manufacturer's recommendations.

3.05 CURING

- A. Cure in accordance with lightweight aggregate manufacturer's instructions and in conjunction with the roofing membrane manufacturer's substrate requirements for compatibility of curing compounds and roofing adhesives.
- B. Protect insulating concrete from excess evaporation of surface moisture.
- C. During low humidity conditions, sprinkle water over concrete surface to aid hydration and curing.

3.06 FIELD QUALITY CONTROL

- A. Contractor to engage a qualified, independent testing agency, acceptable to the Architect as specified in Section 014000, that will perform field inspection and testing for wet and dry density. Do not use same testing agency that provided initial mix designs.
 - 1. Take compressive strength and wet/dry density samples according to ASTM C 495 and C 796
 - 2. Testing Agency: Take three test samples from each 75 cu yd of insulating concrete placed.
 - 3. Testing Agency: Take one additional test sample during cold weather concreting.
 - 4. Report test results to Architect and lightweight insulating concrete producer within 24 hours of completion of each test.
 - 5. Mechanically Fastened Membrane - Fastener Withdrawal Testing: Conduct a base ply fastener pull test three or more days following the application of the lightweight insulating concrete to ensure minimum withdrawal resistance of 40 pounds per fastener, fastening pattern required by the membrane manufacturer.

3.07 DEFECTIVE WORK

- A. Refinish or remove and replace, lightweight insulating concrete surfaces that are excessively scaled or too rough to receive roofing, according to current published requirements of the roofing manufacturer.
- B. Lightweight insulating concrete that fails to meet the compressive strength requirements: Perform additional pull out tests prior to removing the installed roof membrane and removing and replacing the defective lightweight insulating concrete material.

3.08 CLEAN-UP

- A. Excessive lightweight concrete material on structural steel and joists, metal deck, walls, floor surfaces and other surfaces inside the building are to be removed by the lightweight concrete installer.
- B. Excessive lightweight concrete material on parapet walls, roof penetration blocking, and other exterior or roof surfaces are to be removed by the lightweight concrete installer.

END OF SECTION

SECTION 036200 - NON-SHRINK GROUTING**PART 1 GENERAL****1.1 RELATED SECTIONS**

- A. Division 1 Sections

1.2 REFERENCES

CRD-C621 – Specification for Non Shrink Grout Packaged Dry, Hydraulic-Cement Grout.

ASTM C109 – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens).

ASTM C1107 – Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

1.3 QUALITY ASSURANCE

- A. Refer to the Structural Quality Assurance Plan in the Structural Drawings.

1.4 SUBMITTALS

- A. Refer to Structural Quality Assurance Plan in the Structural Drawings for additional submittal requirements.

PART 2 PRODUCTS**2.1 GROUT**

- A. Grout: Flowable, non-shrink, non-metallic in accordance with CRD-C-621 and ASTM C1107.
- B. Compressive Strength: 5,000 psi minimum at 28 days.

2.2 WATER

- A. Water: Clean, potable water.

PART 3 EXECUTION**3.1 HANDLING**

- A. Store and protect from moisture and contamination.

3.2 PREPARATION

- A. Remove foreign materials including mud and dirt from areas to be grouted.
- B. Use forms to contain grout. Forms shall be a minimum 1½ inch larger on all sides than the item grouted.

3.3 MIXING

- A. Mix grout to its fluid, self-leveling consistency in accordance with manufacturer's recommendations. Mix grout in a paddle-type mortar mixer; do not mix by hand.

- B. Do not retemper grout. Do not exceed manufacturer's maximum limit on water content or use at a consistency that produces free bleeding.

3.4 PLACEMENT

- A. Consolidate to provide grout uniformity. Do not vibrate grout.

3.5 PROTECTION

- A. Protect grout and areas to be grouted from excessive heat and cold in accordance with manufacturer's Specifications. Protect grout from excessive drying shrinkage resulting from wind or direct sunlight. Protect areas grouted from excessive vibrations.

END OF SECTION

SECTION 042000 - UNIT MASONRY**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Concrete block.
- B. Split Face Concrete Masonry Units.
- C. Clay facing brick.
- D. Mortar and grout.
- E. Reinforcement and anchorage.
- F. Flashings.
- G. Accessories.
- H. Installation of embedded items not specified in this section.
- I. Installation of natural stone units.
- J. Masonry Cleaners.
- K. Products furnished, but not installed, under this Section include the following:
 - 1. Anchor section of adjustable masonry anchors for connecting to structural steel frame, installed under Division 5 Section "Structural Steel".
- L. Products installed, but not furnished, under this Section include the following:
 - 1. Steel lintels for unit masonry, furnished under Division 5 Section "Structural Steel Framing".
 - 2. Sheet metal flashings and manufactured reglets in masonry joints for metal flashing, furnished under Division 7 Section " Sheet Metal Flashing and Trim" and "Roof Specialties".
 - 3. Hollow-metal frames in unit masonry openings, furnished under Division 8 Section " Steel Doors and Frames".
 - 4. Wood nailers and blocking built into unit masonry are specified in Division 6 " Rough Carpentry".

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 044200 - Exterior Stone Cladding: Stone laid as veneer units.
- C. Section 061000 - Rough Carpentry: Nailing strips built into masonry.
- D. Section 070810 - Exterior Building Enclosure Air Barrier Requirements: Requirements for an airtight building enclosure.
- E. Section 071113 - Bituminous Dampproofing: Dampproofing parged masonry surfaces.
- F. Section 072100 - Thermal Insulation: Insulation for cavity spaces.
- G. Section 078400 - Firestopping: Firestopping at penetrations of fire-rated masonry and at top of fire-rated walls.
- H. Section 079005 - Joint Sealers: Backing rod and sealant at control and expansion joints.
- I. Section 081113 - Hollow Metal Doors and Frames: Frame anchoring requirements.

1.03 REFERENCE STANDARDS

- A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2016.

- B. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; 2008.
- C. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2009.
- E. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement 2015.
- F. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire 2009a (Reapproved 2014).
- G. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.
- H. ASTM C56 - Standard Specification for Structural Clay Nonloadbearing Tile 2013.
- I. ASTM C67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile 2014.
- J. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units 2014.
- K. ASTM C91/C91M - Standard Specification for Masonry Cement 2012.
- L. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units 2011.
- M. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar 2011.
- N. ASTM C150/C150M - Standard Specification for Portland Cement 2015.
- O. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes 2006 (Reapproved 2011).
- P. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale) 2014.
- Q. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2014a.
- R. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2014.
- S. ASTM C 1019 - Standard Test Method for Sampling and Testing Grout; 2009.
- T. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing 2017.
- U. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls 2005.
- V. BIA Technical Notes No. 46 - Maintenance of Brick Masonry 2017.
- W. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2016.
- X. BIA Technical Notes No. 7 - Water Penetration Resistance - Design and Detailing; 2005.
- Y. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls; 2005.
- Z. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2005.
- AA. ASTM E 119 - Standard Test Methods for Fire tests of Building Construction and materials.
- BB. Brick Industry Association: Technical Notes on Brick Construction; Current Edition.
- CC. IMIABC (CW) - Recommended Practices & Guide Specifications for Cold Weather Masonry Construction; International Masonry Industry All-Weather Council; 1993.
- DD. IMIABC (HW) - Recommended Practices & Guide Specifications for Hot Weather Masonry Construction; International Masonry Industry All-Weather Council; current edition.
- EE. UL (FRD) - Fire Resistance Directory Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.
- B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings" and adhere to the following specifics regarding masonry pre-installation conference guidelines.
 - 1. The General Contractor/Construction Manager should organize and hold a meeting with the Owner, Architect, General Contractor/Construction Manager, site superintendent, masonry company owner, masonry foreman, all bricklayers, carriers and any other personnel from the masonry company that will be working at the project site. Also include testing and inspection agency representative, installers of cavity wall insulation, storefront, curtain wall, door and window, installers of steel, joist and deck, installers of mechanical, electrical and plumbing items, installers of other work in and around the masonry that must precede or follow masonry work.
 - 2. Review foreseeable methods and procedures related to masonry work, including but not necessarily limited to the following:
 - a. Sample and Mock-up Wall Sections:
 - 1) Size and Location
 - 2) Products and Detail required
 - 3) Protection Methods of Sample and Mock-up Wall Sections
 - 4) Approval Authority and Notification
 - b. Site Inspection:
 - 1) Identity of Responsible Person
 - 2) Frequency of Inspection
 - c. Materials:
 - 1) Storage & Protection
 - 2) Delivery Process
 - d. Submittals:
 - 1) Product Certification
 - 2) Shop Drawing Requirements
 - 3) Time Expectation
 - 4) Testing and Inspection Requirements
 - e. Construction Means and Methods:
 - 1) Hot & Cold Weather Protection
 - 2) Protection of Work in Process
 - 3) Material Handling Process
 - 4) Cleaning Process
 - f. Schedule:
 - 1) Product Availability

- 2) Review of Associated Trades Responsibility
- g. Project Closeout:
 - 1) Punch List Procedure
- 3. Record (Contractor) discussions of conference, including decisions and agreements (or disagreements) reached, and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.

1.05 FIELD REQUIREMENTS

- A. Protection of Masonry: During construction, cover tops of walls, projections and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
 - 2. Where one wythe of multiwythe masonry is completed in advance of other wythes, secure cover a of 24 inches down face next to unobstructed wythe and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and mortar splatter by coverings spread on the ground and over wall surface.
 - 2. Protect sills, ledges and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602 and as specified herein.
 - 1. Cold Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
 - 2. Hot Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required.
 - a. When ambient temperature exceeds 100 deg F, or 90 deg F with a wind velocity greater than 8 mph, do not spread mortar beds more than 48 inches ahead of masonry. Set masonry units within one minute of spreading mortar.
 - 3. Cold Weather Construction: When the ambient temperature is within the limits indicated, perform the following construction procedures. Temperature ranges indicated below apply to air temperatures existing at time of installation except for grout. For grout, temperature ranges apply to anticipated minimum night temperatures. In heating mortar and grout materials, maintain mixing temperature selected within 10o F.

- a. 40o F to 32o F:
 - 1) Mortar: Heat sand or mixing water to produce mortar temperature between 40o F and 120o F at time of mixing.
 - 2) Grout: Grout does not require heated materials, unless the temperature of materials is below 32o F.
 - 3) 32o F to 25o F:
 - (a) Mortar: Heat mixing water and sand to produce mortar temperatures between 40o F and 120o F; maintain temperature of mortar on boards above freezing.
 - (b) Grout: Heat grout materials to produce grout temperature between 70oF and 120o F. Maintain grout above 70oF until used in masonry.
 - 4) 25o F to 20o F:
 - (a) Mortar: Heat mixing water and sand to produce mortar temperatures between 40o F and 120o F; maintain temperature of mortar on boards above freezing.
 - (b) Grout: Heat grout materials to produce grout temperature between 40 and 120o F. Maintain grout above freezing until used in masonry. Heat masonry units to 40o F (4o C) prior to grouting.
 - (c) Heat both sides of walls under construction to 40oF..
 - (d) Use windbreaks or enclosures when wind is in excess of 15 mph.
 - 5) 20o F and below:
 - (a) Mortar: Heat mixing water and sand to produce mortar temperatures between 40o F and 120o F.
 - (b) Grout: Heat grout materials to produce grout temperature between 70oF and 120o F. Maintain grout above 70oF until used in masonry.
 - (c) Masonry Units: heat masonry units to 40o F.
 - (d) Provide enclosure and auxiliary heat on both sides of walls under construction to maintain temperatures within the enclosures above 32o F for a period until mortar sets and water is evaporated from mix to a point that mortar will not spall or lose effective strength due to freezing.
4. Cold-Weather Protection: When the mean daily temperature is within the limits indicated, provide the following protection:
 - a. 40o F to 25o F: Completely cover masonry with weather-resistant membrane for at least 24 hours after construction. Extend coverage time period to 48 hours for grouted masonry.
 - b. 25o F to 20o F: Completely cover masonry with weather-resistive insulating blankets or provide enclosure and heat for 24 hours after construction to prevent freezing. Extend coverage time period to 48 hours for grouted masonry. Install wind breaks when wind velocity exceeds 15 mph.

- c. 20o F and below: Provide enclosure and heat to maintain temperatures above 32o F within the enclosure for 24 hours after construction. Extend coverage time period to 48 hours for grouted masonry.
- 5. For clay masonry units with initial rates of absorption (suction) which require them to be wetted before laying, comply with the following requirements:
 - a. For units with surface temperatures above 32o F, wet with water heated to above 70 o F .
 - 1) For units with surface temperatures below 32o F, wet with water heated to above 130o F.

1.06 SUBMITTALS

- A. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar and masonry accessories.
- B. Samples: Submit one sample of decorative block and facing brick units to illustrate color, texture, and extremes of color range.
- C. Samples for Verification: For the following:
 - 1. Weep holes/vents in color to match mortar color.
 - 2. Accessories embedded in the masonry.
- D. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
 - 1. Each type of masonry unit required.
 - a. Include size-variation data for brick, verifying that actual range of sizes falls within specified tolerances.
 - 2. Each cement product required for mortar and grout, including name of manufacturer, brand, type, and weight slips at time of delivery.
 - 3. Each material and grade indicated for reinforcing bars.
 - 4. Each type and size of joint reinforcement.
 - 5. Each type and size of anchor, tie, and metal accessory.

1.07 QUALITY ASSURANCE

- A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of Contract Documents.
- B. Fire Rated Assemblies: Comply with applicable code for all requirements for fire rated masonry construction.
- C. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.
- D. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.
- E. Testing Agency Qualifications:
 - 1. The Owner will employ an independent agency qualified to perform the testing indicated to verify that the masonry meets the required specification per Chapter 17 of the 2015 International Building Code with KY Amendments. The Owner will be responsible to pay for testing during normal hours of business operation or non-overtime hours. Any testing

expense incurred due to overtime work will be paid for by the installing Contractor. The installing Contractor shall notify the testing agency at least 24 hours prior to beginning any work that requires testing. Copies of all reports shall be forwarded to the Owner and Architect.

2. Provide continuous inspection to verify compliance of the following:
 - a. Cleanliness of grout space prior to grouting.
 - b. Placement of grout in reinforced cells.
 - c. Preparation of required grout and mortar specimens.
 3. Provide periodic inspection to verify compliance of the following:
 - a. Proportions of site-prepared mortar or grout.
 - b. Construction of mortar joints.
 - c. Quantity, size, location, and support of reinforcing steel.
 - d. Quantity, size, and placement of horizontal joint reinforcement.
 - e. Type, size and location of anchors.
 - f. Protection of masonry during cold or hot weather
 4. Verify compressive strength of concrete masonry units, mortar, and coarse grout for every 5,000 sq. ft. of surface area as follows:
 - a. Three (3) concrete masonry units shall be tested in accordance with ASTM C140.
 - b. Six (6) mortar cube specimens shall be tested, three (3) at 7-days and three (3) at 28-days, in accordance with ASTM C109.
 - c. Four (4) coarse grout specimens shall be tested, two (2) at 7-days and two (2) at 28-days, in accordance with ASTM C1019.
 - d. In lieu of individual tests of masonry units, mortar, and grout, perform one (1) prism test (which consists of three prisms) in accordance with ASTM E447.
- F. Fire Rated Assemblies: Conform to applicable code for UL Assembly No. located on the drawings.
- G. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.
- H. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.
- I. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by another means, as acceptable to authorities having jurisdiction.

1.08 **MOCK-UP**

- A. Construct a masonry wall as a mock-up panel size as provided on the drawing at the end of this Section, mock-up to include mortar and accessories, structural backup, flashings, and wall insulation.
1. Mockups: Before installing unit masonry, build mockups to verify selections made under sample Submittals and to demonstrate aesthetic effects. Build mockups to comply with the following requirements, using materials indicated for the completed Work.

- a. Construct mock-up panel as indicated on the drawing following this section of the specifications.
- b. Locate panels in the locations indicated or, if not indicated, as directed by Architect.
- c. Clean exposed faces of panels with masonry cleaner indicated.
- d. Where masonry is to match existing, erect panels adjacent and parallel to existing surface.
- e. Protect approved mockup panels from the elements with weather-resistant membrane.
- f. Maintain sample panels during construction in an undisturbed condition as a standard for judging the completed Work.
- g. Approval of mockup panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by Architect in writing.
 - 1) Approval of mock-up panel does not constitute approval of deviations from the Contract Documents contained in sample panels, unless such deviations are specifically approved by Architect in writing.
- h. Demolish and remove mockup panels when directed.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.
- B. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- E. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.
- F. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.10 MASONRY PROJECT FORMAN/SUPERINTENDENT CERTIFICATION

- A. Both the Masonry Subcontractor Project Foremen and the General Contractor Superintendent shall provide a sworn notarized statement to the Owner and the Architect that the through wall flashing has been fully and installed following industry standards for a permanent watertight integrated system. All means, methods, and labor to perform this integration is fully part of this contract.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:

1. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges, [] and other detailed conditions.
 - a. Provide bullnose units for outside corners, unless otherwise indicated.
 - b. Provide solid units at 45 degree angled corners.
2. Size (Width): Manufactured to the following dimensions:
 - a. 4 inches, 3 5/8" actual.
 - b. 6 inches, 5 5/8" actual.
 - c. 8 inches, 7 5/8" actual.
 - d. 12 inches, 11 5/8" actual.
 - e. Standard units to have nominal face dimension of 8" x 16" unless otherwise indicated.
3. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi, but as required to achieve the compressive strength of masonry specified in the structural drawings.
4. Non-Load-Bearing and Load-Bearing Units: ASTM C 90, lightweight.
 - a. Hollow block, as indicated.
 - b. Exposed Faces: Manufacturer's standard color and texture where indicated.
5. Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - a. A. C. Krebs Company
 - b. Lee Brick and Block; www.leebrickandblock.com
 - c. Reading Rock; www.readingrock.com
 - d. Boyle Block/L. Thorn Company; www.boyleblock.com
 - e. Meade Block and Stone; www.meadeconcreteproducts.com
 - f. Oberfields LLC; www.oberfields.com
 - g. Wright Concrete and Construction: www.wrightconcrete.com

2.02 EXTERIOR CONCRETE MASONRY VENEER UNITS - GENERAL

- A. General: Provide shapes indicated and as follows for each form of exterior concrete masonry veneer unit required:
 1. Provide units without cores or frogs and with exposed surfaces finished for ends of sills and caps and for similar applications that would otherwise expose unfinished concrete masonry surfaces.
- B. Provide special shapes for applications requiring concrete masonry units of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
 1. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, and turn-backs at window and door sills, jambs, heads and lintels.
 - a. Single wythe walls with splitface units at the head of openings shall have special made bond beam units.

2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
3. Provide architectural quality concrete masonry units with finished ends to match face at exposed exterior corners.

2.03 EXTERIOR CONCRETE MASONRY VENEER UNITS

A. Split Face Masonry Units

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi (13.1 Mpa).
2. Weight Classification: Normal weight, lightweight if available.
3. Size: Manufactured to nominal dimensions indicated for repetitive ashlar pattern.
 - a. Consisting of:
 - 1) 2 - 4 x 4 x 16
 - 2) 2 - 4 x 8 x 16
 - 3) 1 - 4 x 8 x 8
 - 4) 1 - 4 x 4 x 8
 - b. Corner units, opening jamb units: manufacturer unit to match field unit with splitface corner to provide turnback dimension at openings as detailed on the drawings.
 - c. Special shapes: Molded units as required by conditions indicated on drawings, see details in drawings for exact dimensions, unless standard units can be sawn to produce equivalent effect.
 - d. Refer to Exterior Concrete Masonry Veneer Unit general information listed above.
4. Finish: Exposed faces of the following general description matching color, pattern and texture of Architect's samples.
5. Color: Provide or match one of the following:
 - a. Grand Blanc Cement Products: THS
 - b. Lee Building Products: Ivory
 - c. York Building Products: Buff
6. Integral Water Repellant: Provide split face CMU units made with liquid polymeric, integral water-repellant admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested as a wall assembly made with mortar containing integral water-repellent manufacturers's mortar additive according to ASTM E 514, with test period extended to 24 hours, show no visible water or leaks on the back of the test specimen.
 - a. Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - 1) W.R. Grace & Co., Construction Products Division; Dry-Block: www.na.graceconstruction.com
 - 2) BASF Construction Chemicals ; Rheopel Plus: www.masterbuilders.com
 - 3) RussTech Admixtures, Inc; Russtech Waterpel-S: www.russtech.net

7. Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - a. A. C. Krebs Company
 - b. Lee Brick and Block; www.leebrickandblock.com
 - c. Trenwyth; www.trenwyth.com
 - d. York Building Products; www.yorkbuilding.com
 - e. Reading Rock; www.readingrock.com
 - f. Boyle Block; www.boyleblock.com
 - g. Meade Block and Stone; www.meadeconcreteproducts.com
 - h. Grand Blanc Cement Products: www.grandblancement.com

2.04 CLAY MASONRY UNITS - GENERAL

- A. General: Provide shapes indicated and as follows for each form of brick required:
 1. Provide units without cores or frogs and with exposed surfaces finished for ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces.
- B. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
 1. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, soldier and sailor courses, and turn-backs at window and door sills, jambs, heads and lintels.
 2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
 3. Provide architectural quality brick with finished ends to match face at exposed exterior corners.

2.05 FACE BRICK

- A. Manufacturers: Subject to compliance with requirements, provide one of the following:
 1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Field Brick:
 - 1) Belden Brick: Modular Ind. SM/ROY SM/ROY BLD 78-55384.
 - 2) Redland Brick: Lawrenceville Smooth Face Full Range
 - 3) Sioux City: Cambridge Velour
 - b. Accent Brick
 - 1) Belden Brick: Graystone Smooth.
 - 2) Redland Brick: #879 Modular Shadow Gray Smooth
 - 3) Sioux City: Revere Pewter Velour
- B. Products by other manufacturers (listed below) may be considered provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. Additional acceptable manufacturers provided existing brick can be matched include:

1. Equivalent brick matches to the basis of design selection are required to be submitted to Architect for review prior to last addendum for approval.
 - a. Boral Bricks, Inc: www.boralbricks.com.
 - b. Endicott Clay Products Co: www.endicott.com.
 - c. General Shale Brick: www.generalshale.com.
 - d. Forterra (formerly Hanson Brick): www.forterrabrick.com.
 - e. Sioux City Brick :www.siouxcitybrick.com
 - f. Belden Brick:beldenbrick.com
 - g. Glen-Gery Brick: www.glengerybrick.com
 - h. McAvoy Brick: www.mcavoybrick.com
 - i. Redland Brick: www.redlandbrick.com
 - j. Substitutions: See section Division 0; Supplemental Instructions to Bidders; Substitution Request During Bidding form.
- C. Facing Brick: ASTM C216, Type FBS Smooth, Grade SW.
 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 8000 psi.
 2. Initial rate of Absorption: Less than 20g/30 sq. in. per minute when tested per ASTM C 67.
 3. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
 4. All bricks supplied are to be through the body color.
 5. Nominal Size: Modular; Field Brick - 3 1/2 to 3 5/8 inches (89 to 92 mm) wide by 2 1/4 inches (57 mm) high by 7 1/2 to 7 5/8 inches (190 to 194 mm) long.

2.06 MORTAR AND GROUT MATERIALS

- A. Manufacturer: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 1. Standard mortars:
 - a. The Quikrete Companies/Spec Mix Inc.: www.specmix.com
 - b. Cemex; Kosmos Cement: www.cemex.com
 - c. Heidelberg Cement Group; Lehigh Hanson/Essroc; Brixment:: www.lehighhanson.com
 2. Moisture-Resistant Admixture: Use for all exterior mortars listed above. Water repellent compound designed to reduce capillarity. Admixture for use in mortar at all exterior concrete masonry, brick facing units or any combination included in the project. Concrete masonry products containing integral water repellent by same and/or different manufacturer listed below is acceptable.
 - a. Manufacturer: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - 1) W.R. Grace & Co., Construction Products Division; Dry-Block: www.na.graceconstruction.com
 - 2) BASF Construction Chemicals; Rheopel Plus: www.masterbuilders.com

3) RussTech Admixtures, Inc; Russtech Mortar-pel-S: www.russtechnet.com

- B. Portland Cement: ASTM C 150, Type I or Type II, except Type III may be used for cold-weather construction; color as required to produce approved color sample.
 - 1. Not more than 0.60 percent alkali.
 - 2. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207.
- D. Ready-Mixed Mortar: Materials, water and aggregate complying with requirements specified in this article, combined with set controlling admixtures to produce a ready-mixed mortar complying with ASTM C 270.
- E. Mortar Aggregate: ASTM C 144; except for joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 - 1. Type as required for mortar to match color mortar selected.
- F. Water: Clean and potable.

2.07 GROUT MATERIALS

- A. Aggregate for Grout: ASTM C 404.
- B. Grout: ASTM C 476. Consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
 - 1. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143.
- C. Refer to structural sheets for additional grout information.

2.08 REINFORCEMENT AND ANCHORAGE

- A. Manufacturers of Joint Reinforcement and Anchors:
 - 1. Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include:
 - a. Dur-O-Wal: www.dur-o-wal.com.
 - b. Heckmann Building Products: www.heckmannbuildingprods.com
 - c. Hohmann & Barnard, Inc (including Dur-O-Wall and Blok-Lok companies): www.h-b.com.
 - d. WIRE-BOND www.wirebond.com/#sle.
- B. Reinforcing Steel: ASTM A 615/A 615M Grade 60 (420) deformed billet bars; uncoated. Refer to structural drawings for sizes, spacing and placement.
- C. Single Wythe Joint Reinforcement: Truss or ladder type; ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
 - 1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Hohmann & Barnard - #220 Ladder Type.
 - b. Hohmann & Barnard - #120 Truss Type.

- D. Adjustable Multiple Wythe Joint Reinforcement for Veneer With Mixture of Clay and Concrete Veneer Banding: Ladder type; ASTM A 82/A 82M steel wire, hot dip galvanized after fabrication to ASTM A 153/153M, Class B joint reinforcement in walls with clay and concrete masonry veneer unit banding per NCMA TEK 5-2A: 0.1483 inch (9 gage) side and cross rods at 16" O. C..
1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Hohmann & Barnard - #270 or #270-ML Ladder Adjustable Eye-Wire according to total cavity wall thickness.
- E. Adjustable Multiple Wythe Joint Reinforcement: Truss type with adjustable ties or tabs spaced at 16 in on center ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/153M, Class B; 0.1875 inch side rods with 0.1483 inch cross rods and adjustable components of 0.1875 inch wire; width of components as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from each masonry face.
1. Vertical adjustment: Not less than 2 inches. Coordinate with total cavity wall thickness.
 2. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Hohmann & Barnard - #170 Lox-All Truss Adjustable Eye-Wire.
- F. Strap Anchors: Bent steel shapes configured as required for specific situations, 1-1/4 in width, 0.105 in thick, lengths as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face, corrugated for embedment in masonry joint, hot dip galvanized to ASTM A 153/A 153M, Class B.
- G. Partition Anchors: Load Bearing to Load Bearing Wall Connection: Steel, ASTM A 366; ASTM A 36, 3/16 inch or greater, hot dip galvanized after fabrication to ASTM A 153/153M, Class B. Anchor to be 1/4 inch thickness, 1-1/2 inch width.
1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Hohmann & Barnard - #344 Rigid Partition Anchor.
- H. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not less than 5/8 inch of mortar coverage from masonry face.
1. Steel frame: Crimped wire anchors for welding to frame, 0.25 inch thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.
 - a. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.1875 inch diameter, hot dip galvanized steel wire.
 - b. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - 1) Hohmann & Barnard - #359-C Weld-on Tie and 301W Column Web Tie.
 - 2) Hohmann & Barnard - #359-FP Weld-on Tie and 301W Column Web Tie.
- I. Wall Ties: Non-Load Bearing to Non-Load Bearing and Non-Load Bearing to Load Bearing Wall Connection: Steel, ASTM A 366; ASTM A 36, 3/16 inch or greater, hot dip galvanized after fabrication to ASTM A 153/153M, Class B. Mesh to be 1/2 inch square x 16 gage..
1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Hohmann & Barnard - #MWT Mesh Wall Tie.

- J. Chase Wall Veneer Channel Anchor with Continuous Wire: Install at 4 inch CMU walls over 8 feet in height AFF: Steel, ASTM A 366; ASTM A 36, 3/16 inch or greater, hot dip galvanized after fabrication to ASTM A 153/153M, Class B. Anchor length - refer to wall type, 1-1/4 inch width, 9 gauge continuous wire, 12 gauge anchors and channels. Install at maximum 6 foot AFF increments and 24 inch on center horizontally, for length of wall.
1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Hohmann & Barnard - #360 Gripstay Channel and #364-SV Seismic-Notch Gripstay Anchor.
- K. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
1. Single screw veneer tie: Dual diameter barrels with EPDM washers to seal both the insulation face and air/vapor barrier and #12 screw, designed for fastening to structural backup through sheathing.
 2. Wire ties: Trapezoidal shape, 0.1875 inch thick.
 3. Vertical adjustment: Not less than 1 inches.
 4. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Hohmann & Barnard - 2 Seal Ties.
 - b. Heckman Building Products - Pos-I-Tie Brick Veneer Anchoring System
 - c. Wire-Bond - Sure Tie Anchoring System
- L. Joint Stabilizing Anchors: Dur-O-Wal DA2200 or equivalent.
- M. Grout Screen Stop: Dur-O-Wal grout screen stop or equivalent.
- N. Anchor Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C; of diameter and length indicated and in the following configurations: Headed Bolts.

2.09 FLASHINGS

- A. Rubberized Asphalt Flashing: Self-adhering polymer-modified asphalt sheet; 40 mil minimum total thickness; with cross-linked polyethylene top and bottom surfaces, 18 inch wide roll minimum.
1. For flashing not exposed to the exterior.
 2. Due to the UV sensitivity of flexible flashings all flashings, after installation, must be permanently covered within a reasonable amount of time, not to exceed 30 days.
 - a. Product is not to be installed where it would be exposed to sunlight.
 3. Manufacturers: Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include:
 - a. Grace Construction; Product - Perm-A-Barrier.
 - b. Hohmann & Barnard; Product - Textroflash.
 - c. Dayton Superior; Product - Dur-O-Wal.
 - d. IPCO Illinois Products Corporation; Product - Self-Adhesive Rubberized Asphalt Flashing: www.illinoisproducts.com

- e. Mortar-Net USA: www.mortarnet.com
- f. Advanced Building Products; Product - Strip-n- Flash: www.advancedflashing.com
- g. DuPont: Product - Thru-Wall Flashing: www.Construction.Tyvek.com
- h. BASF: Product - Enershield - TWF: www.enershield.basf.com
- i. Wire Bond: Product - Aqua Flash 500: www.wirebond.com
- j. York Flashings: www.yorkmfg.com

B. Additional flashing system components:

- 1. Primer, adhesives and seam tape: Provide materials as required by the manufacturer for proper adhesion on the cmu, bituminous dampproofing, fiberglass faced gypsum sheathing, or other substrate.
- 2. Thru-Wall Flashing Support/Cavity Bridge: "L" shaped, type 304, 27 gauge stainless steel cavity bridge to provide positive support of self-adhered flexible thru-wall flashing across cavity openings. Size to specified cavity wall thickness. Secure to substrate with fasteners through pre-drilled holes.
 - a. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - 1) IPCO Illinois Products Corporation; Product - Type "L" Cavity Bridge: www.illinoisproducts.com

C. Flashing Bracket: Contractor's option to use flashing bracket system above openings at exterior metal stud and sheathing walls to receive sprayed-in-place thermal insulation.

- 1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Flash Track Systems, Inc.: Products - Flash Trac Wall Bracket, Retaining Rod, External & Internal Corner Returns, and Alignment Clips: www.flashttracksystems.com
- 2. After exterior sheathing has been installed, install flashing brackets continuously along all horizontal locations to receive flashing, using self-tapping fasteners compatible with the sheathing/studs.
- 3. Install flexible flashing after all sprayed-in-place thermal insulation has been applied.

2.10 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.

- 1. Manufacturers: Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include:
 - a. Dur-O-Wal: www.dur-o-wal.com.
 - b. Hohmann & Barnard, Inc: www.h-b.com/#sle.
 - c. MasonPro, Inc: www.masonpro.com
 - d. WIRE-BOND: www.wirebond.com/#sle.

B. Compressible Filler: Cut to fit or premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane, EPDM, or PVC.

1. Install at tops of non-rated, non-load-bearing CMU walls running perpendicular or parallel to the metal deck . Place a bead of caulk 1/2 inch back from flute opening and on all sides of flute. Compress plug and slide into place.
 - a. Perpendicular to metal deck: Williams Products Inc. EVA 200G or 3000 Series Closure Flute Plugs or Strips: www.williamsproducts.net.
 - 1) Closed Cell plugs and strips per ASTM D-1171, ASTM D-925, ASTM D-412. Density: 12.8 lbs/ft
- C. Bond Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type 1 (No. 15 asphalt felt.)
- D. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, thickness sized to fit the wall cavity air space, height to be minimum 10 inches, and design to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
 1. Mortar Diverter: Semi-rigid mesh designed for installation at flashing locations.
 - a. Manufacturers: Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include:
 - 1) Advanced Building Products IncMortar Break: www.advancedflashing.com.
 - 2) Hohmann & Barnard, Inc: Mortar Trap : www.h-b.com
 - 3) IPCO Illinois Products Corporation; Product - Mortar Grab: www.illinoisproducts.com
 - 4) Keene Building Envelope Products: KeeneStone Cut: www.keenebuilding.com
 - 5) MasonPro, Inc; ProNet: www.masonpro.com
 - 6) Mortar Net USA, LtdWallDefender: www.mortarnet.com.
 - 7) Archovations,Inc; Cavclear Masonry Mat.
 - 8) Sandell Manufacturing/Hohmann & Barnard Company; Mortar Web: www.h-b.com
 - 9) Mason Pro; ProNet: www.masonpro.com
 - 10) Wire Bond: Cavity Net DT: www.wirebond.com
- E. Weeps: Polyethylene tubing.Contractors option to use either cotton rope or polyethylene tubing.
- F. Type: Molded PVC grilles, insect resistant.
 1. Provide polyester mesh or cellular, honeycomb polypropylene cavity vents.
 - a. Size: 3/8" x 2 1/2" x 3 5/8".
 - b. Vents to be impervious to water and resistant to UV degradation.
 - c. Color: Architect to select from manufacturers standard color choices. Minimum six colors.

2.11 MASONRY CLEANERS

- A. Cleaning Solution: Consult with brick manufacturer for recommended cleaning procedure and products. Masonry Contractor to match the cleaning method and cleaning solution to the type of brick and type of stain.

1. Prepared solutions: Non-acidic, low odor, water-rinsable solution for use in the final clean up of new masonry.
 - a. Manufacturer: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - 1) Carlisle Coatings and Waterproofing: SimpleKleen Heavy Duty: www.carlisleccw.com
 - 2) Diedrich Technologies: 202 New Masonry Detergent: www.diedrichtechnologies.com
 - 3) EaCoChem; NMD 80: www.eacochem.com
 - 4) Miracle Sealants Company: Liquid Poulitice: www.miraclesealants.com
 - 5) Price Research Limited: Price Non-Acidic Masonry Cleaner: www.priceresearchltd.com
 - 6) Prosoco: Safety Klean: www.prosoco.com

2.12 MORTAR AND GROUT MIXING

- A. Mortar for Unit Masonry: ASTM C270, using the Property Specification.
 1. Extended Life Mortar for Unit Masonry: Mortar complying with ASTM C 1142 may be used instead of mortar specified above at contractor's option.
 2. Limit cementitious materials in mortar to portland cement and lime.
 3. Loadbearing concrete masonry units below grade and in contact with earth: Type M.
 4. Loadbearing concrete masonry units above grade: Type S.
 5. Exterior, non-loadbearing masonry veneer units: Type N.
 6. Interior, loadbearing concrete masonry units: Type S.
 7. Interior, non-loadbearing concrete masonry units: Type N.
 8. Interior, non-loadbearing masonry veneer units: Type N.
- B. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

- C. Concrete Masonry Units:
 - 1. Bond: Running.
 - 2. Coursing: One unit and one mortar joint to equal 8 inches.
 - 3. Mortar Joints: Concave.
- D. Brick Units:
 - 1. Bond: Running.
 - 2. Coursing: Three units and three mortar joints to equal 8 inches.
 - 3. Mortar Joints: Concave.
- E. Cut joints flush for masonry walls to be concealed or to receive plaster or other direct applied finishes (other than paint), unless indicated otherwise.
- F. Walls to receive ceramic wall tile shall have flush struck joints. Any wall found to be unacceptable by the ceramic tile installer will be corrected to meet specified tolerances.

3.04 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar and mortar smears as work progresses.
- E. Interlock intersections and external corners.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.
- I. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
- J. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.05 WEEPS AND CAVITY VENTS

- A. Install weeps in vertical head joints in exterior veneer and cavity walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, at bottom of walls and above windows, doors, louvers or any other horizontal obstruction of the cavity wall.
- B. Install cavity vents in vertical head joints in exterior veneer and cavity walls at 24 inches on center horizontally above and below shelf angles, above lintels, near tops of walls (coordinate top of wall location with coping/fascia or other roof edge covering) and above all openings with through-wall flashing. Also install at the bottom of any seat, screen and/or retaining walls without through-wall flashing.
- C. Weeps and cavity vents to be alternated at 24 inches on center.
- D. Depending on weep material used:
 - 1. Install cotton wicking through masonry veneer face and turn 8 to 10 inches up, into the cavity, above the height of any mortar droppings. Secure cotton wicking to substrate without penetrating any through wall flashing membrane. Trim cotton wicking material used in weep

holes flush with outside face of wall after mortar has set.

2. Install plastic tubes at an angle in the head joint mortar. Remove plastic tubes used in weep holes from wall after mortar has set.

3.06 CAVITY MORTAR CONTROL

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
- B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.
- C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.
- D. Coat cavity face of backup wythe to comply with Division 7 Section "Bituminous Dampproofing".

3.07 CAVITY WALL INSULATION

- A. Sprayed-In-Place Insulation: Comply with Division 7 section "Building Insulation".

3.08 REINFORCEMENT AND ANCHORAGE - GENERAL, SINGLE WYTHER MASONRY and CAVITY WALL MASONRY

- A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Reinforce joint corners and intersections with strap anchors 16 inches on center.
- F. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches horizontally and 24 inches vertically.

3.09 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores to support reinforced masonry elements during construction.
 1. Construct formwork to conform to shape, line, and dimensions shown. Make it sufficiently tight to prevent leakage of mortar and grout. Brace, tie and support forms to maintain position and shape during construction and curing of reinforced masonry.
 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Placing reinforcement: Refer to Division 5 sections for requirements.

3.10 REINFORCEMENT AND ANCHORAGE - SINGLE WYTHER MASONRY

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.

3.11 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Masonry Back-Up: Embed anchors to bond veneer at maximum 16 inches on center vertically and 36 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

3.12 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of openings.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches horizontally and 16 inches vertically.

3.13 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY CONSTRUCTION WITH CLAY AND CONCRETE MASONRY VENEER BANDING DETAILS

- A. Two-course concrete masonry veneer unit band in brick veneer; Install horizontal ladder type joint reinforcement in the mortar joint above and below the concrete masonry units.
- B. Concrete masonry veneer units higher than two-courses in brick veneer; Install horizontal joint reinforcement in the mortar joint above and below the concrete masonry unit and every 16" O.C. vertically.
- C. Install joint reinforcement and ties in alternate joints. Refer to NCMA TEK 5-2A.

3.14 MASONRY THROUGH-WALL FLASHINGS

- A. Install through wall flashing above metal step flashings and reglets, shelf angles and lintels, at bottoms of walls, and above windows, doors, louvers or any other horizontal obstruction of the exterior cavity wall.
- B. Whether or not specifically indicated, install masonry through wall flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
 - 1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up flashing ends at least 1 inch, minimum, to form watertight pan at non-masonry construction.
 - 2. Remove or cover protrusions or sharp edges that could puncture flashings.
 - 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- C. Where sprayed-in-place thermal insulation will not be installed, secure through wall flashing to substrate with a continuous termination bar. Install continuous sealant at the intersection of the through wall flashing and termination bar.
- D. Extend flashing to the face of the masonry veneer.
- E. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.

3.15 LINTELS

- A. Refer to structural drawings for lintel sizes and additional requirements.
- B. Install loose steel lintels over openings.
- C. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.
- D. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block size units are shown without structural steel or other supporting lintels.
- E. Provide minimum bearing of 8 inches at each jamb, unless indicated otherwise.

3.16 GROUTED COMPONENTS

- A. Refer to the structural specifications and drawings for additional requirements on grouted masonry.
- B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- C. Place and consolidate grout fill without displacing reinforcing.
- D. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.
- E. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.
 - 1. Comply with requirements of ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

3.17 CONTROL AND EXPANSION JOINTS

- A. Do not continue horizontal joint reinforcement through control or expansion joints.
- B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- C. Form expansion joint as detailed on drawings.

3.18 BUILT-IN WORK

- A. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.
- B. Install built-in items plumb, level, and true to line.
- C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
 - 1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.
- D. Do not build into masonry construction organic materials that are subject to deterioration.
- E. Install reglets and nailers for flashing and other related construction where they are shown to be built in to masonry.

3.19 TOLERANCES

- A. Maximum Variation from Alignment of Columns: 1/4 inch.
- B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

- F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
- G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.
- H. Maximum Variation for exposed head joints thickness: 1/8 inch.
- I. Maximum Variation for vertical alignment of exposed head joints: 1/4 inch in 10 feet.
- J. Maximum Variation for exposed bed joints thickness: 1/8 inch.
- K. Maximum Variation for conspicuous horizontal lines: 1/4 inch in 20 feet.
- L. Maximum Variation for conspicuous vertical lines: 1/4 inch in 20 feet

3.20 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves and grounds. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.21 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 014000 - Quality Requirements.

3.22 REPAIRING AND POINTING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. prepare joints for sealant application.
- C. Damaged or chipped concrete masonry units that do not meet the requirements of ASTM C90 for the concrete masonry unit should not be installed. Repair chips, cracks, and other surface damage when visible as viewed in normal lighting conditions at 20 feet. If units incur damage during installation or by other trades, patching of the units shall be with materials compatible with the concrete mix provided in the concrete masonry unit. Provide a finished patch surface texture similar in texture to the concrete masonry unit face being repaired. Do not provide a smooth texture that will result in highlighting the patch when the final paint coats have cured. Patching and repair should be undetectable. Masonry patching by the general contractor, gypsum drywall, painting, or other subcontractor with an incompatible repair product will not be approved.

3.23 IN-PROGRESS CLEANING

- A. Remove excess mortar and mortar droppings. Clean masonry work as the work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- B. Replace defective mortar. Match adjacent work.

3.24 FINAL CLEANING

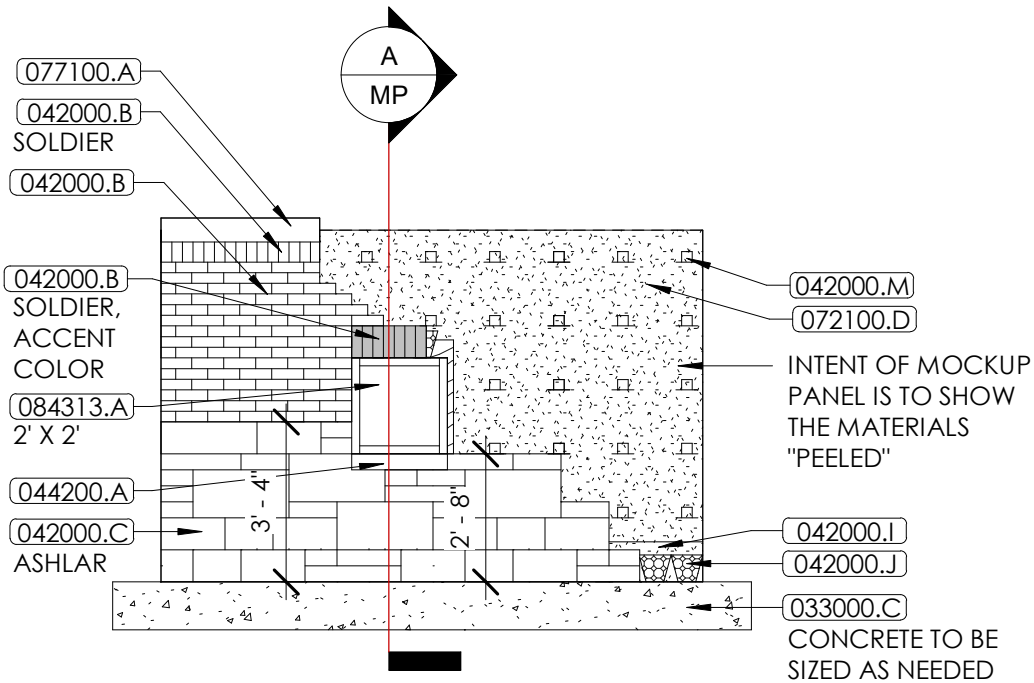
- A. Comply with guidelines in Brick Industry Association - Technical Note #20 - Cleaning Brickwork.
- B. Remove excess mortar and mortar droppings.
- C. Replace defective mortar. Match adjacent work.
- D. Clean soiled surfaces with cleaning solution.

- E. Use non-metallic tools in cleaning operations. Remove large mortar particles by hand with wooden paddles.
- F. Test cleaning methods on mock-up wall panel; leave one half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with final cleaning of masonry.
- G. Protect adjacent non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
- H. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing the surfaces thoroughly with clear water.
- I. Clean brick by bucket and brush hand cleaning method or by pressure sprayer using lowest possible pressure for effective cleaning, as described in BIA Technical Note #20.
- J. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2 applicable to type of stain on exposed surfaces. Dry brush walls at the end of each day's work and after final pointing to remove mortar spots and droppings.

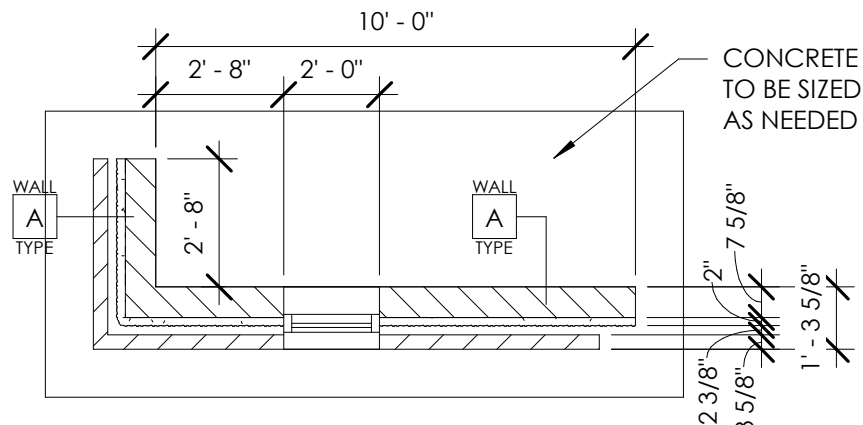
3.25 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

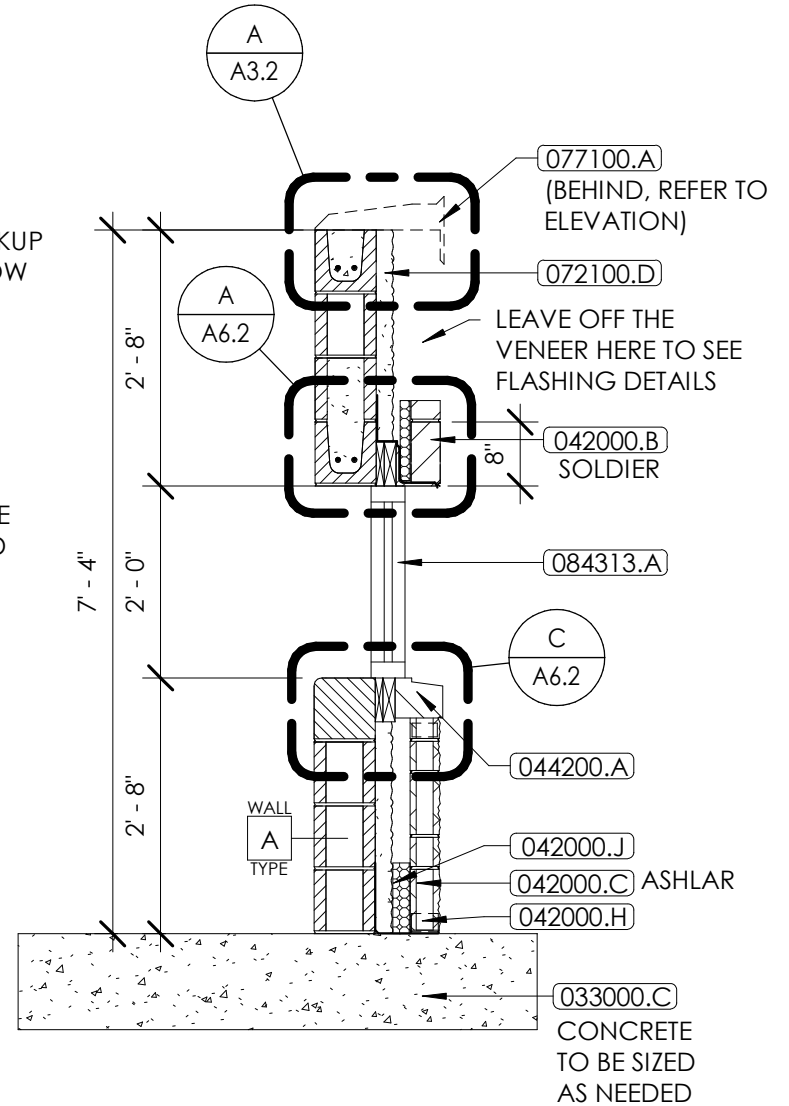
END OF SECTION

**MOCKUP PANEL ELEVATION**

1/4" = 1'-0"

**MOCKUP PANEL PLAN**

1/4" = 1'-0"

**MOCKUP PANEL SECTION**

1/2" = 1'-0"

SECTION 044200 - EXTERIOR STONE CLADDING**□ PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Cut limestone column cap and other items designated as stone
- B. Metal anchors and supports.
- C. Sealing exterior joints.
- D. Pointing interior joints.
- E. Joint sealing and Joint pointing.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 042000 - Unit Masonry: Inserts in masonry to anchor stone.
- C. Section 079005 - Joint Sealers: Sealant for perimeter joints.

1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- C. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications 2018.
- D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.
- E. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2014a.
- F. ASTM C568/C568M - Standard Specification for Limestone Dimension Stone 2015.
- G. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2014.
- H. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants 2008 (Reapproved 2012).
- I. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants 2002 (Reapproved 2013).
- J. ASTM C 880 - Standard Test Method for Flexural Strength of Dimension Stone.
- K. ASTM C 1242-10 - Standard Guide for Selection, Design, and Installation of Dimension Stone Attachment Systems.
- L. ILI (HB) - Indiana Limestone Handbook 2007.

1.04 SYSTEM PERFORMANCE REQUIREMENTS

- A. General: Design stone anchors, anchoring systems, and any required steel supports according to ASTM C 1242 and the Kentucky Building Code.
- B. Control of Corrosion and Staining: Prevent galvanic and other forms of corrosion as well as staining by isolating metals and other materials from direct contact with incompatible materials. Use materials that do not stain exposed surfaces of stone and joint materials.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on each variety of stone, stone accessory, mortar products, and sealant products.
- C. Shop Drawings: Show details of fabrication and installation of dimension stone cladding system, including dimensions and profiles of stone units.
 - 1. Show locations and details of joints both within dimension stone cladding system and between dimension stone cladding system and other construction.
 - 2. Include details of mortar joints, sealant joints, and mortar joints pointed with sealant.
 - 3. Show locations and details of anchors and backup structure.
- D. Sealant Samples for Verification: For each type and color of joint sealant required.
- E. Samples: Submit one stone samples 4 x 4 inch in size, illustrating color range, grade and texture, markings, surface finish .
- F. Samples: Submit mortar color samples.
- G. Installation Instructions: Submit stone fabricator's installation instructions and field erection or setting drawings; indicate panel identifying marks and locations on setting drawings.
- H. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- I. Material Test Reports: From a qualified independent testing agency indicating and interpreting test results of the following for compliance with requirements indicated:
 - 1. Stone Test Reports: For each stone variety proposed for use on Project, provide test data indicating compliance with required physical properties including those specified by reference to ASTM standards. Include test data for flexural strength based on testing according to ASTM C 880, performed on specimens representative of minimum thickness and finish of installed stone, in both wet and dry conditions. Base reports on testing done within previous five years.
 - 2. Anchorage Test Reports: For each combination of anchor type, based on testing according to ASTM C 1354, performed on specimens representative of minimum thickness and finish of installed stone.
 - 3. For metal components, indicate chemical and physical properties of metal.
 - 4. Sealant Compatibility and Adhesion Test Report: From sealant manufacturer complying with requirements in Division 7 Section "Joint Sealants." Include interpretation of test results and recommendations for primers and substrate preparation needed for adhesion.
 - 5. Preconstruction Sealant Field Test Report: From Installer, complying with requirements in Division 7 Section "Joint Sealants."

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed dimension stone cladding systems similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Stone Fabricator: Company specializing in fabricating cut stone with minimum ten years of documented experience.

- C. Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from a single quarry with resources to provide materials of consistent quality in appearance and physical properties.
 - 1. Obtain each variety of stone from a single quarry.
- D. Source Limitations for Mortar Materials: Obtain mortar ingredients of uniform quality for each cementitious component from a single manufacturer and each aggregate from one source or producer.
- E. Source Limitations for Other Materials: Obtain each type of stone accessory, sealant, and other material from a single manufacturer for each product.
- F. Perform work in accordance with ILI Indiana Limestone Handbook.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store stone panels vertically on edge, resting weight on panel edge.
- B. Protect stone from discoloration.
- C. Deliver sealants to project site in original unopened containers labeled with manufacturer's name, product name and designation, color, expiration period, pot life, curing time, and mixing instructions for multi-component materials.
- D. Store and handle stone and related materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, and other causes.
 - 1. Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move stone, if required, using dollies with cushioned wood supports.
 - 2. Store stone on wood skids or pallets with nonstaining, waterproof covers. Arrange to distribute weight evenly and to prevent damage to stone. Ventilate under covers to prevent condensation.
- E. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- F. Store aggregates in locations where grading and other required characteristics can be maintained and where contamination can be avoided.

1.08 PROJECT CONDITIONS

- A. During temporary storage on site, at the end of working day, and during rainy weather, cover stone work exposed to weather with non-staining waterproof coverings, securely anchored.
- B. Cold-Weather Construction: Do not use frozen materials or materials mixed or coated with ice or frost. Remove and replace dimension stone cladding damaged by frost or freezing conditions. When ambient temperature is within limits indicated, use the following procedures:
 - 1. At 40 deg F (4.4 deg C) and below, produce mortar temperatures between 40 and 120 deg F (4.4 and 49 deg C) by heating mixing water and, at temperatures of 32 deg F (0 deg C) and below, sand. In heating mortar materials, maintain mixing temperatures within 10 deg F (6 deg C); do not heat water to above 160 deg F (71 deg C). Maintain temperature of mortar on boards above freezing. Do not apply mortar to stone units or substrates below 32 deg F (0 deg C).
 - 2. At 25 to 20 deg F (minus 4 to minus 7 deg C), heat both sides of walls under construction. Use windbreaks or enclosures when wind velocity exceeds 15 mph (25 km/h).
 - 3. At 20 deg F (minus 7 deg C) and below, provide enclosure and auxiliary heat to maintain air temperature above 32 deg F (0 deg C) within enclosure. Heat stone so it is above 40 deg F (4.4 deg C) at time of installation.

- C. Cold-Weather Protection: When mean daily temperature is within limits indicated, provide the following protection:
1. 40 to 25 Deg F (Plus 4.4 to Minus 4 Deg C): Cover dimension stone cladding with a weather-resistant membrane for 48 hours after construction.
 2. 25 to 20 Deg F (Minus 4 to Minus 7 Deg C): Cover dimension stone cladding with insulating blankets or provide enclosure and heat to maintain air temperature above 32 deg F (0 deg C) within enclosure for 48 hours after construction. Use windbreaks or enclosures when wind velocity exceeds 15 mph (25 km/h).
 3. 20 Deg F (Minus 7 Deg C) and below: Provide enclosure and heat to maintain air temperature above 32 deg F (0 deg C) within enclosure for 48 hours after construction.
- D. Environmental Limitations for Sealants: Do not install sealants when ambient and substrate temperatures are outside limits permitted by sealant manufacturer or below 40 deg F (4.4 deg C) or when joint substrates are wet.

PART 2 PRODUCTS

2.01 STONE TYPES

- A. Limestone: Indiana Oolitic Limestone; complying with ASTM C568/C568M Classification II - Medium Density.
1. Grade: ILI Standard.
 2. Color: Buff
 3. Surface Texture: Smooth.
 4. Variety and Sources: Limestone quarried in Lawrence, Monroe, or Owen Counties, Indiana.

2.02 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, Type I, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
1. Low-Alkali Cement: Portland cement for use with limestone shall contain not more than 0.60 percent total alkali when tested according to ASTM C 114.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207.
- D. Aggregate: ASTM C 144; except for joints narrower than 1/4 inch (6 mm) and, use aggregate graded with 100 percent passing No. 16 (1.18-mm) sieve.
- E. Water: Potable.
- F. Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include:
1. Colored Portland Cement-Lime Mix:
 - a. Essroc Italcementi Group: www.essroc.com
 - b. Glen-Gery Corporation: www.glengerybrick.com
 - c. Holnam, Inc., Holcim US: www.holnam.com
 - d. Heidelberg/Lehigh Cement Co.: www.lehighcement.com
 - e. LaFarge Cement: www.lafargenorthamerica.com

2.03 ANCHORS AND ACCESSORIES

- A. Fabricate anchors, including shelf angles, from stainless steel, ASTM A 666, Type 304 temper as required to support loads imposed without exceeding allowable design stresses.
 - 1. Fasteners for Stainless Steel Anchors: Annealed stainless-steel bolts, nuts, and washers; ASTM F 593 (ASTM F 738M) for bolts and ASTM F 594 (ASTM F 836M) for nuts, Alloy Group 1 (A1).
- B. Fabricate anchors, including shelf angles, from hot-dip galvanized steel, ASTM A 36/A 36M for materials and ASTM A 123/A 123M for galvanizing.
 - 1. Fasteners for Hot-Dip Galvanized Steel Anchors: ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6), for bolts; ASTM A 563 (ASTM A 563M), Grade A, for nuts; and ASTM F 436 (ASTM F 436M) for washers; all either hot-dip or mechanically zinc coated.
- C. Fabricate anchors, including shelf angles, from extruded aluminum, ASTM B 221 (ASTM B 221M), alloy and temper as required to support loads imposed without exceeding allowable design stresses, but not less than strength and durability properties of alloy 6063-T6.
 - 1. Fasteners for Extruded-Aluminum Anchors: Annealed stainless-steel bolts, nuts, and washers; ASTM F 593 (ASTM F 738M) for bolts and ASTM F 594 (ASTM F 836M) for nuts, Alloy Group 1 (A1).
- D. Backup Structure: Fabricate components not in contact with stone from hot-rolled steel shapes complying with ASTM A 36/A 36M or from steel sheet not less than 0.1046 inch (2.7 mm) thick complying with ASTM A 570/A 570M. Hot-dip galvanize after fabrication to comply with ASTM A 123/A 123M. Fabricate components in contact with stone from same material specified for anchors.
- E. Anchors and Other Components in Contact with Stone: Stainless steel ASTM A666 Type 304.
 - 1. Sizes and configurations: As required for vertical and horizontal support of stone and applicable loads.
 - 2. Wire ties are not permitted.
- F. Support Components not in Contact with Stone: Stainless steel ASTM A240/A240M Type 304.
- G. Setting Buttons and Shims: Plastic type.
- H. Joint Sealant: ASTM C920 silicone sealant with movement capability of at least plus/minus 25 percent and non-staining to stone when tested in accordance with ASTM C1248.
- I. Joint Backer Rod: ASTM C1330 open cell polyurethane of size 40 to 50 percent larger in diameter than joint width.
- J. Sealant: See type specified in Section 079005; [] color.
- K. Back Coating: Install per ILI.
- L. Cleaning Solution: Type that will not harm stone, joint materials, or adjacent surfaces.

2.04 STONE ACCESSORIES

- A. Setting Buttons: Lead or resilient plastic buttons, nonstaining to stone, sized to suit joint thicknesses and bed depths of stone units without intruding into required depths of joint sealants or causing third-side adhesion between sealant and setting button.
- B. Setting Shims: Strips of resilient plastic or vulcanized neoprene, 50 to 70 Shore A durometer, nonstaining to stone, sized to suit joint thicknesses and depths of stone supports without intruding into required depths of joint sealants or causing third-side adhesion between sealant and setting shims.

- C. Sealant Products: Provide manufacturer's standard chemically curing, elastomeric sealants that are compatible with joint fillers, joint substrates, and other related materials and that comply with requirements in Division 7 Section "Joint Sealants" for products corresponding to those indicated below:
1. Sealant for Joints in Dimension Stone Cladding: As follows:
 - a. Multicomponent, nonsag, polysulfide sealant.
 - b. Single-component, nonsag, polysulfide sealant.
 - c. Multicomponent, nonsag, urethane sealant.
 - d. Single-component, nonsag, urethane sealant.
 - e. Multicomponent, nonsag, low-modulus, urethane sealant.
 - f. Single-component, nonsag, low-modulus, urethane sealant.
 - g. Low-modulus, neutral-curing silicone sealant.
 2. Sealant for Filling Kerfs: As follows:
 - a. Single-component, nonsag, urethane sealant for Use T.
 - b. High-modulus, neutral-curing silicone sealant.
 3. Colors: Provide colors of exposed sealants to comply with the following requirement:
 - a. Match color of stone. Provide color as selected by Architect from manufacturer's full range.

2.05 STONE FABRICATION

- A. General: Fabricate stone units in sizes and shapes required to comply with requirements indicated, including details on Drawings and Shop Drawings.
1. For limestone, comply with recommendations in ILI's "Indiana Limestone Handbook."
- B. Cut and drill sinkages and holes in stone for anchors, fasteners, supports, and lifting devices as indicated or needed to set stone securely in place; shape beds to fit supports.
- C. Cut stone to produce pieces of thickness, size, and shape indicated and to comply with fabrication and construction tolerances recommended by applicable stone association or, if none, by stone source, for faces, edges, beds, and backs.
1. Minimum Thickness: Provide stone units of not less than the following thickness, unless otherwise indicated:
 - a. Limestone Thickness/Size: 3 inch for quoins and panels. Refer to drawings for sizes of other units.
 2. Control depth of stone and back check to maintain minimum clearances indicated between backs of stone units and surfaces or projections of structural members, fireproofing (if any), backup walls, and other work behind stone.
 - a. Minimum Clearance: 1 inch (25 mm).
 3. Dress joints (bed and vertical) straight and at right angle to face, unless otherwise indicated.
 4. Quirk-miter corners, unless otherwise indicated; provide for cramp anchorage in top and bottom bed joints of corner pieces.
 5. Cut stone to produce joints of uniform width and in locations indicated.
 - a. Joint Width: 3/8 inch (10 mm).

6. Clean backs of stone to remove rust stains, iron particles, and stone dust.
- D. Contiguous Work: Provide chases, reveals, reglets, openings, and similar features as required to accommodate contiguous work.
- E. Fabricate molded work, including washes and drips, to produce stone shapes with a uniform profile throughout entire unit length, with precisely formed arris slightly eased to prevent snipping, and with matching profile at joints between units.
 1. Produce moldings with machines having abrasive shaping wheels made to reverse contour of molding shape; do not sculpt moldings.
- F. Finish exposed faces and edges of stone, except sawed reveals, to comply with requirements indicated for finish and to match approved samples and mockups.
- G. Carefully inspect finished stone units at fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units.
- H. Fabricate units for uniform coloration between adjacent units and over the full area of the installation.
- I. Cut drip slot in bottom surface of work projecting more than 1/2 inch over wall openings and at banding. Size slot not less than 3/8 inch wide and 1/4 inch deep; full width of projection.

2.06 MORTAR MIXES

- A. General: Comply with referenced standards and with manufacturers' written instructions for mix proportions, mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortar of uniform quality and with optimum performance characteristics.
 1. Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated. Do not use calcium chloride.
 2. Combine and thoroughly mix cementitious materials, water, and aggregates in a mechanical batch mixer, unless otherwise indicated. Discard mortar when it has reached initial set.
- B. Portland Cement-Lime Setting Mortar: Comply with ASTM C 270, Proportion Specification, for types of mortar indicated below:
 1. Set limestone with Type N mortar.
- C. Pointing Mortar: Comply with ASTM C 270, Proportion Specification, for types of mortar indicated. Provide pointing mortar mixed to match Architect's sample and complying with the following:
 1. Packaged Portland Cement-Lime Mix Mortar: Use portland cement-lime mix of selected color.
 2. Point limestone with Type N mortar.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that support work and site conditions are ready to receive work of this section.
- B. Verify that items built-in under other sections are properly located and sized.
- C. Examine surfaces to receive dimension stone cladding and conditions under which dimension stone cladding will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of dimension stone cladding.

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

3.02 PREPARATION

- A. Advise installers of other work about specific requirements for placement of inserts, flashing reglets, and similar items to be used by dimension stone cladding Installer for anchoring, supporting, and flashing of dimension stone cladding system. Furnish installers of other work with Drawings or templates showing locations of these items.
- B. Protect dimension stone cladding during erection as follows:
 1. Prevent staining of stone from mortar, grout, sealants, and other sources. Immediately remove such materials without damaging stone.
 2. Protect sills, ledges, and projections from mortar and sealant droppings.
- C. Clean stone surfaces that are dirty or stained by removing soil, stains, and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.
- D. Clean stone prior to erection. Do not use wire brushes or implements that will mark or damage exposed surfaces.
- E. Coat back surfaces with back coating. Allow coating to cure.

3.03 SETTING MECHANICALLY ANCHORED DIMENSION STONE CLADDING

- A. Attach anchors securely to stone and to backup surfaces. Comply with recommendations in ASTM C 1242.
- B. Fill anchor holes with sealant.
 1. Where dowel holes occur at pressure-relieving joints, provide compressible material at ends of dowels.
- C. Set stone supported on clip or continuous angles on resilient setting shims. Use material of thickness required to maintain uniform joint widths. Hold shims back from face of stone a distance at least equal to width of joint.

3.04 JOINT SEALANT INSTALLATION

- A. Prepare joints and apply sealants of type and at locations indicated to comply with applicable requirements in Division 7 Section "Joint Sealants."

3.05 TOLERANCES

- A. Variation from Plumb: For vertical lines and surfaces of walls, do not exceed 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch in 40 feet (12 mm in 12 m) or more. For external corners, corners and jambs within 20 feet (6 m) of an entrance, expansion joints, and other conspicuous lines, do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 3/8 inch in 40 feet (9 mm in 12 m) or more.
- B. Variation from Level: For lintels, sills, water tables, parapets, horizontal bands, horizontal grooves, and other conspicuous lines, do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 3/8 inch (9 mm) maximum.
- C. Variation of Linear Building Line: For positions shown in plan and related portions of walls and partitions, do not exceed 1/4 inch in 20 feet (6 mm in 6 m) or 1/2 inch in 40 feet (12 mm in 12 m) or more.
- D. Variation in Cross-Sectional Dimensions: For thickness of walls from dimensions indicated, do not exceed plus or minus 1/4 inch (6 mm).

- E. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches (3 mm in 900 mm) or a quarter of nominal joint width, whichever is less.
- F. Variation in Plane between Adjacent Stone Units (Lipping): Do not exceed 1/16-inch (1.5-mm) difference between planes of adjacent units.
- G. Positioning of Elements: Maximum 1/4 inch from true position.
- H. Maximum Variation from Plane of Wall: 1/4 inch in 10 feet; 1/2 inch in 50 feet.
- I. Maximum Variation Between Face Plane of Adjacent Panels: 1/16 inch.
- J. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in any two stories.
- K. Maximum Variation from Level Coursing: 1/8 inch in 3 feet; 1/4 inch in 10 feet; 1/2 inch maximum.
- L. Maximum Variation of Joint Thickness: 1/8 inch in 3 feet.

3.06 CUTTING AND FITTING

- A. Obtain approval prior to cutting or fitting any item not so indicated on drawings.
- B. Do not impair appearance or strength of stone work by cutting.

3.07 ADJUSTING AND CLEANING

- A. Remove and replace broken, chipped, stained, or otherwise damaged stone, defective joints, and dimension stone cladding that does not match approved samples and mockups. Damaged stone may be repaired if Architect approves methods and results.
- B. Replace in a manner that results in dimension stone cladding's matching approved samples and mockups, complying with other requirements, and showing no evidence of replacement.
- C. In-Progress Cleaning: Clean dimension stone cladding as work progresses. Remove mortar fins and smears before tooling joints.
- D. Clean dimension stone cladding no fewer than six days after completion of pointing and sealing, using clean water and stiff-bristle fiber brushes. Do not use wire brushes, acid-type cleaning agents, cleaning agents containing caustic compounds or abrasives, or other materials or methods that could damage stone.
- E. Remove excess joint material upon completion of work.
- F. Clean soiled surfaces with cleaning solution.
- G. Use non-metallic tools in cleaning operations.

END OF SECTION

SECTION 047301 - CULTURED STONE VENEER**PART 1 GENERAL****1.01 SUMMARY**

- A. Section includes: Simulated stone veneer and trim.
- B. Related Sections: Section(s) related to this section include:
 - 1. Wall Framing and Sheathing: Division 6 Rough Carpentry Section.
 - 2. Perimeter Sealing at Openings: Division 7 Joint Sealers Section.

1.02 REFERENCES

- A. General: Standards listed by reference, including revisions by issuing authority, form a part of this section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM C67 Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
 - 2. ASTM C177 Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate-Apparatus.
 - 3. ASTM C207 Standard Specification for Hydrated Lime for Masonry Purposes.
 - 4. ASTM C270 Standard Specification for Mortar for Unit Masonry
 - 5. ASTM C 482 Standard Test Method for Bond Strength of Ceramic Tile to Portland cement.
 - 6. ASTM C567 Standard Test Method for Density Structural Lightweight Concrete.
- C. Underwriter's Laboratories, Inc. (UL):
 - 1. UL 723 Standard for Safety for Surface Burning Characteristics of Building Materials.
- D. Uniform Building Code (UBC):
 - 1. UBC Standard No. 14-1 Kraft Waterproof Building Paper.

1.03 SUBMITTALS

- A. Product Data: Submit product data, including manufacturer's specifications sheet, for specified products.
- B. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colors, patterns and textures.
- C. Samples: Submit selection and verification samples for finishes, colors (stone and mortar) and textures.
- D. Quality Assurance Submittals: Submit the following:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 - 2. Manufacturer's Instructions: Manufacturer's installation instructions.
- E. Closeout Submittals: Submit the following:
 - 1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance.

2. Warranty: Warranty documents specified herein.

1.04 QUALITY ASSURANCE

A. Qualifications:

1. Installer Qualifications: Installer experienced in installing simulated stone and has specialized in installation of work similar to that required for this project.
2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and approving application method.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer. Store mortar and other moisture-sensitive materials in protected enclosures; handle by methods that avoid exposure to moisture.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements/Conditions: Ambient air temperature shall be in accordance with manufacturer's requirements.
 1. Maintain materials and surrounding air temperature to minimum 40 degrees prior to, during and for 48 hours after completion of work.
 2. Protect materials from rain, moisture and freezing temperatures prior to, during, and for 48 hours after completion of work.
 3. Allow no construction activity on opposite side of wall during installation and for 48 hours after completion of work.

1.07 WARRANTY

- A. Manufacturer's Warranty: Warranty stating that product will not blister, peel, flake, crack or delaminate.
 1. Warranty Period: Fifty (50) years from date of substantial completion.

PART 2 PRODUCTS

2.01 MANUFACTURED STONE VENEER

- A. Manufacturer: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 1. Basis of Design: The drawings indicate the size, profiles, dimensional requirements and aesthetic effects as manufactured by:
 - a. Eldorado Stone: Stacked Stone - Nantucket.
 2. Cultured stone veneer produced by other manufacturers may be considered provided deviations in and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof is on the proposer.

- a. Eldorado Stone: www.eldoradostone.com
 - b. Landmark Stone Products: www.landmarkstone.com
 - c. Boral Building Products/Owens Corning Cultured Stone: www.culturedstone.com
 - d. Headwaters Company Eldorado Stone: www.eldoradostone.com
 - e. Mountain Stone Products
- B. Products System Testing:
 - 1. Compressive strength: ASTM C 192 and ASTM C 39, 5 sample average: greater than 1,800 psi..
 - 2. Shear (Adhesion) strength: Tested in accordance with ASTM C482 using a unit thickness of approximately the same as the stone unit.
 - 3. Thermal Resistance: K-Factor 2.82 in accordance with ASTM C177. R-factor is 0.355 per 1" (25.4mm) of thickness.
 - 4. Freeze/Thaw: Tested in accordance with ASTM C67
- C. Fire Hazard Test: Flame spread of 0. Smoke development of 0 in accordance with UL723.

2.02 RELATED MATERIALS

- A. Mortar:
 - 1. Portland Cement, ASTM C1329, Type I or masonry cement (Type N).
 - 2. Masonry sand.
 - 3. Lime: ASTM C207
 - 4. Iron Oxide Pigments
- B. Jointless/Dry Stack Mortar:
 - 1. Polymer modified mortar complying with ANSI A118.4.
 - 2. Mortar prepared to comply with ASTM C270. Type S mortar.
- C. Lath:
 - 1. Metal Lath: Minimum 17 gauge galvanized woven wire mesh or 2.5 lb. galvanized expanded metal mesh or 3.4 lb galvanized 3/8 inch rib lath.

2.03 MORTAR MIXES

- A. Mixing: Mix proprietary materials in accordance with manufacturer's instructions including product data and product technical bulletins. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C270, Type N. Do not use antifreeze compounds to lower the freezing point of mortar.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical data, and product installation instructions.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

3.03 PREPARATION

- A. Surface Preparation:
 - 1. Sheathed Surfaces: Apply metal/plastic lath, attach with galvanized nails or staples which penetrate a minimum of 1". Apply 6" on center vertically and 16" on center horizontally. Wrap metal lath a minimum of 16" around all outside and inside corners.
 - 2. Concrete and Masonry Surfaces - New, Clean and Untreated: No preparation needed. Examine newly poured concrete closely to ensure that its finished surface contains no releasing agents (form oil). If it does contain form oil, etch surface with muriatic acid, rinse thoroughly and/or score with a wire brush, or use high pressure water or sandblasting to remove.

3.04 MANUFACTURED STONE VENEER INSTALLATION

- A. Mortar: Apply 1/2" - 3/4" of mortar to [lath] [dampened masonry, stucco, or concrete surfaces], covering a maximum of 10 square feet at one time. Press the units firmly into position in soft mortar bed, wiggle and apply slight pressure to unit to ensure firm bonding, causing mortar to extrude slightly around edges of units.
- B. Joints: Place units with uniform mortar joints. Stone joints should not be over 1/2" - 3/4" in width. When installing stones without a mortar joint, units should be fitted tight against each other with no allowance for mortar joints.
 - 1. Remove excess mortar; do not allow mortar to set up on face of units. Point and tool joints before mortar has set. Clean and finish joints in accordance with manufacturer's instructions.
- C. Setting Units: Press each stone into the mortar setting bed firmly enough to squeeze some mortar out around the stones edges. Apply pressure to the stone to ensure a good bond. Ensure complete coverage between the mortar bed and back surface of the stone. Mortar may also be applied to entire back of the stone.
- D. Cutting: Perform necessary cutting with proper tools to provide uniform edges; take care to prevent breaking unit corners or edges.

3.05 FIELD QUALITY REQUIREMENTS

- A. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.06 CLEANING

- A. Cleaning: Use a strong solution of granulated soap or detergent and water with a bristle brush. Do not use a wire brush as it will cause damage to the surface. Rinse immediately with fresh water. Do not attempt to clean using acid or acid based products. Do not clean with high-pressure power washer.
- B. Salt and De-icing Chemicals: Do not use de-icing chemicals on areas immediately adjacent to a Landmark Stone Products application.
- C. Scuffing: Remove scuff marks by cleaning as specified herein.
- D. Efflorescence: To remove efflorescence, allow stone to dry thoroughly, then scrub vigorously with a stiff brush and clean water. Rinse thoroughly. Do not use a wire brush. For difficult efflorescence problems, scrub thoroughly with a solution of 1 part white household vinegar to 5 parts water. Rinse thoroughly.

3.07 PROTECTION

- A. Protection: Protect installed product and finish surfaces from damage during construction.

END OF SECTION

SECTION 051200 - STRUCTURAL STEEL FRAMING**PART 1 GENERAL****1.1 RELATED SECTIONS**

- A. Division 1 Sections
- B. Section 052100 – Steel Joist Framing.
- C. Section 053100 – Steel Decking.

1.2 REFERENCES

AISC – Steel Construction Manual, 13th Edition.

AISC 303 – Code of Standard Practice for Steel Buildings and Bridges.

AISC 341-05 – Seismic Provisions for Structural Steel Buildings, including Supplement No. 1 dated 2006.

AISC 360-05 – Specification for Structural Steel Buildings.

AISC – Specification for Structural Joints Using ASTM A325 or A490 Bolts prepared by the Research Council on Structural Connections.

AWS D1.1 – Structural Welding Code.

AWS A5.1 – Specification for Carbon Steel Electrodes for Shield Metal Arc Welding.

AWS A5.5 – Specification for Low-Alloy Steel Covered Arc Welding Electrodes.

AWS A5.17 – Specification for Carbon Steel Electrodes and Fluxes for Submerged Arc Welding.

AWS A5.20 – Specification for Carbon Steel Electrodes for Flux Cored Arc Welding.

SSPC – Steel Structures Painting Manual.

ASTM A6 – Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.

ASTM A36 – Standard Specification for Carbon Structural Steel.

ASTM A123 – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

ASTM A307 – Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

ASTM A325 – Standard Specification for Structural Bolts, Heat Treated, 120/105 KSI Minimum Tensile Strength.

ASTM A490 – Standard Specification for Structural Bolts, Alloy Steel, Heat-Treated, 150 KSI Minimum Tensile Strength.

ASTM A500 – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

ASTM A501 – Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

ASTM A563 – Standard Specification for Carbons and Alloy Steel Nuts

ASTM A572 – Standard Specification for High-Strength Low-Alloy Columbium Vanadium Structural Steel.

ASTM A780 – Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

ASTM A992 – Standard Specification for Structural Steel Shapes.

ASTM F436 – Standard Specification for Hardened Steel Washers.

ASTM F844 – Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use.

ASTM F1554 – Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-Ksi Yield Strength.

ASTM F1852 – Standard Specification for “Twist Off” Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

1.3 SUBMITTALS

- A. Refer to Structural Quality Assurance Plan in the Structural Drawings for additional submittal requirements.
- B. Shop Drawings:
 - 1. Contact Structural Engineer’s Construction Administrator prior to detailing structural steel shop drawings.
 - 2. Shop drawings shall be submitted on a 24” x 36” sheet minimum.
 - 3. Shop drawings shall clearly indicate the profiles, sizes, ASTM Grade, spacing and locations of structural steel members, including connections, attachments, anchorages, framed openings, sizes and types of fasteners, method of tightening fasteners, cambers, and the number, type and spacing of the stud shear connectors and headed studs.
 - 4. Beam sizes shall be shown on the erection drawings (plans).
 - 5. Submit shop drawings for review.
 - 6. Reproduction of Structural Drawings for shop drawings is not permitted. Electronic drawing files will not be provided to the Contractor.
- C. Maintain at construction office written welding procedures for each type of welded joint used in accordance with AWS D1.1.
- D. Submit certification that the fabricator meets the required qualifications and ultrasonic testing reports for complete penetration welds. If fabricator has an independent testing agency inspect fabrication as required by these specifications, submit the name and qualifications of the independent testing agency.
- E. Upon request, submit the erection sequence and procedures to be used by the steel erector.
- F. Submit certification that the erector meets the required qualifications.

1.4 QUALITY ASSURANCE

- A. Refer to the Structural Quality Assurance Plan in the Structural Drawings.

1.5 FABRICATOR'S QUALIFICATIONS

- A. Steel fabricator shall meet the requirements in the Structural Quality Assurance Plan in the Structural Drawings.

1.6 ERECTOR'S QUALIFICATIONS

- A. Erector shall be experienced in erecting structural systems similar in complexity to this Project as evidenced by 10 completed projects.
- B. Erector shall have a minimum of 5 years experience in the erection of structural steel or is an AISC Certified Advanced Steel Erector.
- C. For qualification of welders, refer to the Structural Quality Assurance Plan in the Structural Drawings.

1.7 STORAGE

- A. Store materials off ground to permit easy access for inspection and identification. Store steel members and packaged items in a manner that provides protection against contact with deleterious materials.

PART 2 PRODUCTS**2.1 ANCHOR RODS**

- A. Anchor Rods: Headed rod or a threaded rod with a heavy hexagonal nut and plate washer welded to the bottom of the threaded rod conforming to ASTM F1554.
- B. Nuts and Washers: Two hexagonal nuts and two plate washers conforming to ASTM A36 for each anchor rod assembly.

2.2 ROLLED STEEL SHAPES, PLATES, AND BARS

- A. Rolled Steel Shapes, Plates, and Bars: ASTM A36; ASTM A572, Grade 50; or ASTM A992 as indicated by the Structural Drawings. ASTM A572, Grade 50 may be substituted for ASTM A992.

2.3 ROUND STRUCTURAL STEEL TUBING

- A. Round Structural Steel Tubing: ASTM A501, 36 ksi minimum yield strength.

2.4 SHAPED STRUCTURAL STEEL TUBING

- A. Shaped Structural Steel Tubing: ASTM A500, Grade B, 46 ksi minimum yield strength.

2.5 NON-HIGH-STRENGTH FASTENERS

- A. Non-High-Strength Bolts: ASTM A307, Grade A, 60 ksi minimum, where noted on the Structural Drawings.
- B. Hardened Steel Washers: ASTM F436.

2.6 HIGH-STRENGTH FASTENERS

- A. High-Strength Bolts: ASTM A325 or ASTM A490 as noted on the Structural Drawings. 3/4-inch minimum diameter.
- B. Hardened steel washers shall conform to ASTM F436.
- C. Spline-Type Tension Control Bolts: ASTM spline-type tension control bolts with plain hardened washers and suitable nuts are an acceptable alternate design bolt assembly.
- D. Do not use load indicating washers.

2.7 HEADED STUDS

- A. Headed Studs: Comply with AWS D1.1. Provide studs with the diameter shown on the Structural Drawings.

2.8 EXPANSION ANCHORS

- A. Expansion Anchors: See Structural Notes.

2.9 ADHESIVE ANCHORS

- A. Adhesive Anchors: See Structural Notes.

2.10 SCREW ANCHORS

- A. Screw Anchors: See Structural Notes.

2.11 WELD ELECTRODES

- A. Weld Electrodes: AWS A5.1, A5.5, A5.17, or A5.20 E-70 series low hydrogen electrodes.
- B. Provide E-70 series, low hydrogen electrodes with a minimum Charpy V-Notch (CVN) toughness of 20 ft.-lb. at -20 degrees Fahrenheit and 40 ft.-lb. at 70 degrees Fahrenheit for demand critical welds. Refer to the Structural Drawings for locations of demand critical welds.
- C. Properly store electrodes to maintain flux quality.

2.12 PAINT

- A. Oxide Primer: AISC Specifications, Code of Standard Practice, and SSPC Steel Structure Painting Manual, unless indicated otherwise.
- B. Paint Primer: Free of lead and chromate and comply with State and Federal volatile organic compound (VOC) requirements.
- C. Paint Primer: Compatible with finish coating.

2.13 GALVANIZE

- A. Galvanized Coating: ASTM A123.

- B. Galvanize Bolts, Nuts, and Washers: ASTM A153 when used to connect steel members that are specified to be galvanized.
- C. Expansion Anchors, Adhesive Anchors, or Screw Anchors: Where specified to be galvanized, anchors shall be mechanically galvanized in accordance with ASTM B695, Class 65, Type I.

PART 3 EXECUTION

3.1 GENERAL

- A. Fabricate and erect structural steel in accordance with AISC Specifications and Code of Standard Practice.
- B. Notify Architect/Structural Engineer and Structural Testing/Inspection Agency at least 48 hours prior to structural steel fabrication and erection.

3.2 ANCHOR ROD SETTING

- A. Provide templates for setting anchor rods. Position anchor rods by using templates with two nuts to secure in place prior to placement of concrete.
- B. Do not erect steel where anchor rod nuts will not have full threads.

3.3 CONNECTIONS

- A. Provide a minimum of two fasteners at each bolted connection.
- B. Ensure fasteners are lubricated prior to installation.
- C. Provide high-strength bolted connections in accordance with AISC Specifications for Structural Joints using ASTM A325 or A490 Bolts.
- D. Provide connections for expansion and contraction where steel beams connect to concrete walls or concrete columns and at expansion joints. Secure nuts on bolts against loosening. (Dent threads with a chisel.)

3.4 FASTENER INSTALLATION

- A. Bolts shall be installed in holes of the connection and brought to snug tight condition. Tighten connection progressing systematically from the most rigid part to the free edges of the connection to minimize relaxation of the bolts.
- B. High-strength bolts installed shall have a hardened washer under the element turned in tightening.
- C. Installation and tightening of bolts shall conform to the AISC Specifications for Structural Joints.

3.5 HEADED STUDS

- A. Headed studs shall be installed in accordance with AWS D1.1 with the resulting in-place length after burn-off as shown on the Structural Drawings.
- B. Do not locate headed studs closer than 1-1/4 inches from the edge of embedded steel member to the centerline of the stud.
- C. Remove ceramic arc shields after welding studs.

3.6 EXPANSION ANCHOR INSTALLATION

- A. Install in accordance with manufacturer's recommendation and the ICC ESR report for the particular anchor used.
- B. Minimum Embedment: See Structural Notes on Drawings.

3.7 ADHESIVE ANCHOR INSTALLATION

- A. Install in accordance with manufacturer's recommendation and the ICC ESR report for the particular anchor used.
- B. Minimum Embedment: See Structural Notes on Drawings.

3.8 SCREW ANCHOR INSTALLATION

- A. Install in accordance with manufacturer's recommendation and the ICC ESR report for the particular anchor used.
- B. Minimum Embedment: See Structural Notes on Drawings.

3.9 WELDING

- A. Comply with AWS D1.1. Use prequalified weld procedures.
- B. Provide end returns where fillet welds terminate at ends or sides. Returns shall be continuous for a distance of not less than two times the nominal size of the weld.
- C. Complete penetration joints shall be backgouged to sound metal before the second side is welded or have 1/4-inch root opening with 3/16 x 1 inch backing bar. Access holes are required. Filling access holes is not required.
- D. Remove all slag and weld splatter from deposited weld metal.

3.10 SPLICING

- A. Splice members only where indicated unless authorized in writing by Structural Engineer.
- B. Provide shim plates at bottom flange splice at continuous beam splices with different depths.

3.11 CUTTING

- A. Do not use flame cutting to correct errors unless authorized in writing.
- B. Re-entrant corners shall have a minimum radius of one inch and be free of notches. Notches and gouges resulting from flame cutting shall be finished to a smooth appearance.

3.12 MILL SCALE

- A. Remove loose mill scale.

3.13 BOLT HOLES

- A. Cut, drill, or punch holes perpendicular to metal surfaces. Do not enlarge holes by burning. Drill or punch holes in bearing plates. Remove burrs.

3.14 PAINTING

- A. Paint steel that is not encased in concrete, plaster, or sprayed fireproofing. Do not shop paint in areas to be field welded, contact surfaces of slip critical connections, or areas to receive special finishes.
- B. Field paint as required steel that has been welded or that is unpainted after connections have been tightened.

3.15 GALVANIZING

- A. Galvanize shelf angles that support the exterior building veneer, for example brick shelf angles.
- B. Galvanize environmentally exposed steel, for example mechanical equipment supports.
- C. Touch-up welds and abrasions in galvanized members in accordance with ASTM A780.

END OF SECTION

SECTION 052100 - STEEL JOIST FRAMING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Section includes the design, manufacture, and erection of steel joists shown in the Structural Drawings.

1.2 RELATED SECTIONS

- A. Division 1 Sections
- B. Section 051200 – Structural Steel Framing.
- C. Section 053100 – Steel Decking.

1.3 REFERENCES

ASTM A307 – Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

AWS D1.1 – Structural Welding Code.

OSHA – Safety and Health Regulations for Construction, Steel Erection, Open Web Steel Joists, Part 1926.757.

SJI – Standard Specifications for Open Web Steel Joists, K-Series.

SJI – Standard Specifications for Longspan Steel Joists, LH-Series, and Deep Longspan Steel Joists, DLH-Series.

SSPC – Paint 15 Steel Joist Shop Primer.

1.4 DESIGN REQUIREMENTS

- A. Steel joists and bridging shall be designed by a Structural Engineer licensed in the project state in accordance with the Steel Joist Institute (SJI) Standard Specifications.
- B. Refer to Structural Drawings for special design requirements, if any.

1.5 SUBMITTALS

- A. Refer to Structural Quality Assurance Plan in the Structural Drawings for additional submittal requirements.
- B. Shop Drawings:
 - 1. Shall include the following:
 - a. Plan of joist layout showing mark, number, type, location, bracing, and spacing of joists.
 - b. Connection and seat details.
 - c. Bridging requirements.
 - 2. Shall be signed and sealed by an Engineer licensed in the Project state.
- C. Upon request, submit the erection sequence and procedures to be used by the steel erector.

1.6 QUALITY ASSURANCE

- A. Refer to the Structural Quality Assurance Plan in the Structural Drawings.

1.7 QUALIFICATIONS

- A. Manufacturer shall be a member of the Steel Joist Institute.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle joists as recommended in SJI Standard Specifications.

PART 2 PRODUCTS**2.1 ROLLED STEEL PLATES, SHAPES, AND BARS**

- A. Steel: Steel in accordance with SJI Standard Specifications.

2.2 UNFINISHED BOLTS, WASHERS, AND NUTS

- A. Unfinished Bolts: ASTM A307, Grade A, 60 ksi minimum tensile strength. Provide compatible hexagonal nuts and plain washers.

2.3 WELD ELECTRODES

- A. Weld Electrodes: E-70 series low hydrogen electrodes conforming to AWS A5.1 or A5.5, A5.17 or A5.20.
- B. Provide proper storage for electrodes to maintain flux quality.

2.4 PAINT

- A. Primer shall conform to Steel Structures Painting Council Specification SSPC – Paint 15.

PART 3 EXECUTION**3.1 MANUFACTURE AND ERECTION**

- A. Manufacture and erect joists in accordance with SJI Standard Specifications and OSHA Steel Erection Standards.
- B. Members shall have parallel top and bottom chords unless otherwise indicated.
- C. Provide for connections of kickers and hangers to members.
- D. Provide bottom chord extensions at columns and as indicated by the Construction Drawings. Weld bottom chords to members after dead loads have been applied.
- E. Provide ceiling extensions in areas having ceilings attached directly to joist bottom chord (not suspended ceilings). Extend ends to within 1/2 inch of the finished wall surface unless otherwise indicated.
- F. Camber joists according to recommendations in the SJI Standard Specifications, unless noted otherwise on Structural Drawings. Negative camber and bent joists are unacceptable.

- G. Do not erect joists until supporting work is secured.
- H. Provide bridging complying with SJI Standard Specifications. Provide for connections where bridging terminates.

3.2 CONCENTRATED LOADS ON JOISTS

- A. Do not place concentrated loads on the joists that are not shown in the Structural Drawings without receiving written consent from the steel joist manufacturer. Reinforcement required for concentrated loads applied to either the top or bottom chord shall be designed by joist manufacturer.

3.3 HEADER UNITS

- A. Provide header units to support openings in floor or roof system not framed with steel shapes.

3.4 SHOP PAINTING

- A. Remove loose scale, heavy rust, and other foreign materials from joists and accessories before application of shop paint.
- B. Apply one shop coat of steel joist primer paint to joists and accessories, by spray, dipping, or other method to provide a continuous dry paint film thickness of not less than 1.50 mil.

3.5 BEARING

- A. Extend ends of steel joists not less than 4 inches over masonry and concrete supports. Extend ends of joists not less than 2½ inches over steel supports. Positive attachment to support shall be made by welding or bolting. In such cases where a shorter end bearing length must be used, such condition must be designed.
- B. Fabricate sloped bearing seats where indicated on Drawings or where slope of joist exceeds ¼ inch per foot.

3.6 WELDING

- A. Perform welding in accordance with AWS D1.1 "Structural Welding Code". Use AWS Certified Welders.
- B. Weld ends of joists resting on steel supports with the minimum weld specified by the SJI standard specifications, unless otherwise indicated in the Structural Drawings.
- C. Remove all slag and weld splatter from deposited weld material.

3.7 BRIDGING INSTALLATION

- A. Permanently fasten bridging before the application of loads. Secure to steel beams or CMU walls where possible; otherwise terminate bridging with X-bracing to joists top chord.
- B. In areas where joists will be exposed to view, align bridging in straight rows to create uniform appearance.

3.8 PROTECTION

- A. Provide means for adequate distribution of concentrated loads so that carrying capacity of joists is not exceeded during construction.

- B. Provide temporary bridging, bracing, connections, and anchors to ensure lateral stability during construction.
- C. Joists damaged during construction shall be replaced or repaired with procedures submitted by the joist manufacturer.

3.9 CUTTING

- A. Do not field cut or apply heat to joists unless authorized in writing.

3.10 REPAIRS OR MODIFICATIONS

- A. If a steel joist is damaged or its bearing condition must be modified, Contractor shall have the joist supplier provide a sketch showing the required repairs or modifications.

END OF SECTION

SECTION 053100 - STEEL DECKING**PART 1 GENERAL****1.1 RELATED SECTIONS**

- A. Division 1 Sections
- B. Section 051200 – Structural Steel Framing.
- C. Section 052100 – Steel Joist Framing.

1.2 REFERENCES

AISI – Specifications for the Design of Cold-Formed Steel Structural Members.

AWS D1.1 – Structural Welding Code.

AWS A5.5 – Specifications For Low Alloy Steel Covered Arc-Welding.

SDI 31 – Design Manual for Composite Decks, Form Decks, and Roof Decks

SDI RDCH1 – Roof Deck Construction Handbook

SDI DDMO3 – Diaphragm Design Manual, Third Edition

ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

ASTM A1008 – Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.

1.3 SUBMITTALS

- A. Notify the Structural Engineer prior to detailing shop drawings.
- B. Submit detailed shop drawings showing layout and types of deck panels, weld sizes, weld patterns and conditions requiring closure panels, supplementary framing, sump pans, cant strips, cut openings, special jointing or other accessories.
- C. Submit manufacturer's information including section properties, deck gage, material yield strength, etc. for each type of steel deck required. The submittal shall demonstrate that the deck complies with the minimum section and material properties indicated in the structural notes and this Specification.
- D. Submit supporting documentation and manufacturer's information for deck that does not comply with the minimum section and material properties specified. Deck shall be designed for the design criteria outlined herein and the submittal shall be stamped and signed by an Engineer licensed in the project state.
- E. Upon request, submit mill certification that the steel supplied meets these Specifications.
- F. Upon request, submit written welding procedures.

- G. Submit manufacturer's certification of compliance with supplementary framing, sump pans, cant strips, curb openings, special jointing and other accessories.

1.4 QUALITY ASSURANCE

- A. Refer to the Structural Quality Assurance Plan in the Structural Drawings.
- B. Welders shall be certified by AWS for the welding process involved.

1.5 STORAGE

- A. Store materials off ground to permit easy access for inspection and identification. Store steel members and packaged items in a manner that provides protection against contact with deleterious materials.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide steel deck sheets of three spans minimum wherever possible.

2.2 DECK ATTACHMENT

- A. Use E-60 series electrodes conforming to AWS A5.5.
- B. Provide weld washers for material thinner than 22 gage.

2.5 ROOF DECK

- A. Roof Deck: Steel sheets, minimum yield strength of 33,000 pounds per square inch, ASTM A653, Grade 33 or higher, deck types and gages as indicated on Drawings.
- B. Finish: Galvanized, G60 coating.
- C. End and Side Laps: 2-inch flush, nested unless otherwise indicated or specified.
- D. Vented deck: Provide vented deck for the lightweight insulating concrete system.

2.6 ROOF SUMP PANS

- A. Roof Sump Pans: Single piece of 14 gage galvanized sheet steel with level bottoms and sloping sides to direct water flow to drain, when required by Architect. Size to receive roof drains and with bearing flanges not less than 3 inches wide

PART 3 EXECUTION

3.1 GENERAL

- A. Installer must examine the areas and conditions under which metal decking is to be installed and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

- B. Steel deck shall be installed in accordance with the approved shop drawings, requirements of the Steel Deck Institute, the manufacturer's recommendations, and any applicable regulatory, safety guidelines.

3.2 PLACEMENT

- A. Place steel deck units on supporting steel framework and adjust to final position before permanently fastening. Install deck units and accessories in accordance with manufacturer's recommendations and the Drawings, and as specified herein.

3.3 CUTTING

- A. Cut holes in deck indicated by the Drawings. Other holes required shall be supplied by those requiring them. Obtain written authorization for additional holes and cutting not indicated on erection drawings.

3.4 WELDING

- A. Perform welding in accordance with AWS Structural Welding Code.
- B. Install weld washers for deck thinner than 22 gage.

3.5 CONCENTRATED LOADS

- A. Concentrated loads suspended from the steel deck shall not exceed 50 pounds. No more than one suspended load shall be located in the sheet width in any span.

3.6 DECK SUPPORTS

- A. Fasten deck to steel framework at ends and at each intermediate support by welding according to manufacturer's specifications unless indicated otherwise on structural drawings or otherwise specified herein. Do not weld deck in place until all bolted and welded connections for the structural frame are complete. A minimum of one floor over the area to be decked is to be bolted and welded prior to welding deck in place.

3.9 ROOF DECK

- A. Place roof deck in straight alignment. Lap ends of sheets two inches.
- B. Attach side laps of roof deck with screws spaced as shown on the Drawings.
- C. Weld roof deck in place by welding as shown on the Drawings.

3.10 ROOF SUMP PANS

- A. Recess pans not less than 1½ inches below roof deck surface, unless otherwise shown or required by deck configuration. Holes for drains will be cut in the field.

END OF SECTION

SECTION 054100 - COLD-FORMED EXTERIOR STEEL STUD FRAMING**PART 1 GENERAL****1.1 RELATED SECTIONS**

- A. Division 1 Sections.
- B. Section 054000 – Cold-Formed Steel Framing.

1.2 REFERENCES

AISI S100-07 – North American Specification for the Design of Cold-Form Steel Structural Members.

AISI S200-07 – North American Standard for Cold-formed Steel Framing – General Provisions.

ANSI Z49.1 – Safety in Welding, Cutting, and Allied Processes.

ASTM A653 – Standard Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.

ASTM A924 – Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

AWS D1.3 – Structural Welding Code: Sheet Steel.

SSMA – Steel Stud Manufacturers Association Product Technical Information.

1.3 DESIGN REQUIREMENTS

- A. Design of the following is the sole responsibility of the Contractor:
 - 1. Cold-formed exterior steel studs including tracks, bridging, and window or door framing.
 - 2. Any required temporary and permanent restraint/bracing.
- B. Cold-formed exterior steel stud framing shall be designed by a Structural Engineer licensed in the Project state. Design criteria includes, but not limited to, the following:
 - 1. Deflection of steel studs shall not exceed L/360 for EIFS and L/600 for Masonry.
 - 2. Wind pressure for Components and Cladding as indicated in the Structural Notes.
- C. Cold-formed steel design, fabrication and erection shall conform to AISI S100 and AISI S200.
- D. Stud depth, layout and configuration of cold-formed exterior steel studs shall be compatible with the plans, sections, and details of the Construction Documents.

1.4 SUBMITTALS

- A. Refer to Structural Quality Assurance Plan in the Structural Drawings for additional submittal requirements.
- B. Shop Drawings
 - 1. Shall include the following:
 - a. Plans, cross-sections, or elevations as necessary to adequately depict component locations.
 - b. Connection details showing screw types and locations, weld lengths or other fastener requirements.
 - c. Bracing locations and details. Any required bracing to the primary structure that is not shown in the Construction Documents shall be specifically identified.

- 2. Design loads.
- 3. Shall be sealed by an Engineer licensed in the Project state.
- C. Submit manufacturer's product information clearly describing quality, performance and finish for steel studs.
- D. Submit manufacturer and Installer qualifications.

1.5 QUALITY ASSURANCE

- A. Refer to the Structural Quality Assurance Plan in the Structural Drawings.
- B. Manufacturer shall have a minimum of three years documented experience in the manufacturing of products required by the Construction Documents.
- C. Installer shall have a minimum of three years documented experience.

1.6 MOCKUP

- A. Provide a minimum of one mockup of exterior wall framing sufficient in size to illustrate various construction conditions and as directed by the Architect. Construct mock-up to include, but not be limited to, the following components:
 - 1. Stud framing, including runners, bridging, outlet box framing and other farming accessories. Include interior and exterior corner conditions, and intersections with interior rated stud walls.
 - 2. Typical window frame, door frame and expansion joint.
 - 3. Insulation, sheathing and vapor retarder. Install sheathing with veneer anchors to receive subsequent veneer mock-up.
- B. The approved sample will serve as the standard of quality, as well as for coordination with related components.
- C. Leave approved mock-up ready to receive exterior finishes.
- D. Do not place mock-up to remain as a part of the Work.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Studs and accessories which are 12, 14, or 16 gage shall meet the requirements of ASTM A446, Grade D with a minimum yield of 50,000 psi. Studs and accessories which are 18 or 20 gage shall meet the requirements of ASTM A446, Grade A with a minimum yield of 33,000 psi.
- B. Studs and accessories shall have a G60 galvanized coating meeting the requirements of ASTM A525.

2.2 ACCESSORIES

- A. Bridging: 1-1/2-inch deep by 16 gage minimum.
- B. Strap Bracing: Minimum of 1-1/2-inch wide by 18 gage unless noted otherwise.
- C. Tracks: Deep leg type, unpunched, same gage, size, and finish as studs with minimum 18 gage thickness.

- D. Compensation Tracks / Slip Tracks: Deep leg type with a flange width of 2½ inches. Track shall be same nominal depth as stud/track with allowance for slip of standard deep leg track. Minimum 14 gage.
- E. Plates, Gussets, Clip Angles: Minimum 14 gage. Clip angles shall be a minimum of 2 inches x 2 inches.
- F. Self-drilling, Self-tapping Screws: Hot-dip galvanized conforming to values given in the referenced SSMA document.
- G. Anchorage Devices:
 - 1. Powder Actuated Fasteners shall be manufactured from AISI 1062 or AISI 1065 steel austempered to a minimum core hardness of 50-54Rc and possess the following properties:
 - Tensile strength = 270,000 psi
 - Shear strength = 162,000 psi
 - All fasteners shall meet the requirements of ASTM B-633-78.
 - Fasteners shall be a minimum 9/64-inch diameter.
 - Fasteners shall be zinc plated.
 - Fastener minimum design values shall be in accordance with manufacturer's recommendations.
 - 2. Expansion anchors shall be stud type, and shall be zinc plated in accordance with ASTM B633, Type III Fe/Zn 5. Expansion anchors shall be a minimum of 3/8-inch diameter with 2-1/2-inch embedment into concrete unless noted otherwise in the Drawings.
- H. Welding: AWS D1.3-8 Structural Welding Code-Sheet Metal (field welding of material shall not be permitted for 20 gage material or thinner).
- I. Acoustical Sealant: USG, or approved equal.
- J. Sizes and thicknesses are minimum acceptable, regardless of load. Actual sizes shall be determined by Steel Stud manufacturer in accordance with loads given in the Structural Notes. Minimum listed size shall not be construed to be the actual designed component size.

PART 3 EXECUTION

3.1 PREPARATION

- A. Remove dust and other foreign material from concrete slab edge by brooming and wiping to provide a clean surface to receive rubber tape and primer.

3.2 ERECTION

- A. General:
 - 1. Framing components shall be cut squarely for attachment to perpendicular members or, as required, for angular fit against abutting members.
 - 2. Erect framing plumb, level, and square.
 - 3. Studs shall be plumbed, aligned, and securely attached to the flanges or web of both the upper and lower tracks.
 - 4. Fastening of components shall be with self-drilling screws or welds. Wire tying of components shall not be permitted. Touch-up field welds and scratched or damaged finish to studs with zinc rich paint.
 - 5. Splices in framing components shall not be permitted other than in runner tracks.
 - 6. Runner tracks shall be securely anchored to the supporting structure.
- B. Studs Spacing: Stud manufacturer shall determine stud spacing at interior and corner zones to resist Component and Cladding Loads given in the Structural Notes. Stud spacing shall not exceed 16 inches, center-to-center, regardless of design loads.

- C. Stud Tracks: Before installing stud tracks for exterior walls, apply two 1/2- inch round beads of acoustical sealant longitudinally under stud tracks to seal runner to floor.
- D. Door Openings: Install multiple studs each side of door openings as required to resist design loads.
 - 1. Install multiple studs horizontally between door jambs at top of doors as required to resist design loads.
 - 2. On top of headers, install runners to receive bottom ends of studs over door openings.
- E. Window Openings: Install multiple studs each side of window openings as required to resist design loads.
 - 1. Install multiple studs horizontally between window jambs to form sills and headers as required to resist design loads.
 - 2. On top of headers and bottom of sills, install runners to receive short studs.
 - 3. Attach wood blocking to stud framing with 1/2-inch diameter galvanized bolts 12 inches on-center. Coordinate attachment of window system to blocking/stud framing prior to erection of metal stud framing.
 - 4. Where indicated on the Structural Drawings (for example, at windows over 8 feet wide and at cantilevered parapets), attach studs / track to structural steel reinforcement with self-drilling screws.
- F. Corners: Construct using a minimum of three studs designed to resist the design loads.
- G. Between Studs: Install framing for attachment of electrical boxes, mechanical and for other items to be anchored to walls.
- H. At Butting Walls: Place studs not more than 2 inches from walls.
- I. Insulation: In all multiple jamb studs and multiple headers not accessible to insulation contractors, insulation equal to that specified elsewhere shall be provided.

END OF SECTION

SECTION 055000 - METAL FABRICATIONS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Shop fabricated and/or prefabricated steel, and aluminum items, including:
 - 1. loose steel lintels, ships's ladder, walk-through ladder and bollards.
 - 2. Steel framing and supports for: mechanical and electrical equipment.
- B. Manufactured items:
 - 1. Ships ladder safety post at roof hatch access.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 033000 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- C. Section 042000 - UNIT MASONRY: Placement of metal fabrications in masonry.
- D. Section 055213 - Pipe and Tube Railings.
- E. Section 077200 - Roof Accessories: Hatch railing.
- F. Section 099000 - Painting: Final paint finish system for all interior and exterior galvanized and/or prime painted items.

1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2018.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2015.
- D. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates 2018.
- E. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing 2014.
- F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2014.
- G. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric] 2013.
- H. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions 2015a.
- I. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2012.
- J. AWS D1.1/D1.1M - Structural Welding Code - Steel 2015.
- K. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer 1999 (Ed. 2004).
- L. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic") 2002 (Ed. 2004).
- M. SSPC-SP 2 - Hand Tool Cleaning 2018.

1.04 SUBMITTALS

- A. See Section 013300 - Submittal Procedures, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.
- D. Submit painting and coating product data.
- E. Structural Design Data: Where installed metal fabrications are indicated or required to comply with certain design loadings, include structural computations, material properties, and other information needed for review of structural analysis. Computations and analysis shall be stamped by a structural engineer licensed to practice in Kentucky.

1.05 PROJECT CONDITIONS

- A. Field Measurements: Where metal fabrications are indicated to fit walls and other construction, verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions. Allow for trimming and fitting.

PART 2 PRODUCTS**2.01 MATERIALS - STEEL**

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.
 - 1. Additional acceptable materials: ZRC Worldwide - ZRC Galvilite: www.zrcworldwide.com

2.02 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

2.03 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.

- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 SHOP FABRICATED ITEMS

- A. General: Comply with requirements of ANSI A14.3 American National Standard for Ladder-fixed-safety 1992 and OSHA 29 CFR Standard 1910.27.
- B. Ship's Ladders: Steel; in compliance with ANSI A14.3; with mounting brackets and attachments; hot dipped galvanized and prime paint finish. Refer to Div 9 Painting specification section for final paint system requirements.
 - 1. Refer to detail on the drawings for sizes of components and requirements.
 - 2. Refer to "Manufactured Items" section below for ships ladder, at the roof hatch, safety post requirements.
- C. Walk-Through Ladders: Steel; in compliance with ANSI A14.3; with mounting brackets and attachments; hot dipped galvanized and prime paint finish. Refer to Div 9 Painting specification section for final paint system requirements.
 - 1. Location: Roof
 - 2. Refer to detail on the drawings for sizes of components and requirements.
- D. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; galvanized, prime paint finish. Refer to Div 9 Painting specification section for final paint system requirements.
 - 1. Refer to site drawings for locations and detail.
 - 2. Provide pre-fabricated bollard covers. Refer to the pre-fabricated section of this specification for cover information.
- E. Ledge Angles, Shelf Angles, Channels and Plates Not Attached to Structural Framing: For support of metal decking; prime paint finish.
- F. Lintels: As detailed; hot dipped galvanized and prime paint finish. Refer to Div 9 Painting specification section for final paint system requirements.

2.05 PREFABRICATED ITEMS

- A. Aluminum Ladders: Contractors option in lieu of fabricated steel ladders to provide and install equivalent aluminum ladders.
 - 1. General: Comply with requirements of ANSI A14.3 American National Standard for Ladder-Fixed-Safety 1992 and OSHA 29 CFR Standard 1910.27.
 - a. Manufacturers: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - 1) Precision Ladders, LLC.: www.precisionladders.com
 - 2) ACL Industries, Inc.: www.aclindustries.com
 - 3) Cotterman Co.: www.cotterman.com
 - 4) Royalite Manufacturing, Inc. : www.royalite-mfg.com
 - 5) O'Keefe's, Inc.: www.okeeffes.com
 - 6) FixFast USA: www.fixfastusa.com

2. Materials:
 - a. Extruded Aluminum Profiles: ASTM B 221/B 221M, ASTM B 210, ASTM B 308/B 308M, Alloy 6061-T6; standard mill finish.
 - b. Aluminum Sheet and Plate: ASTM B 209/B 209M, Alloy 6061-T6; standard mill finish.
 - c. Fasteners: Aluminum solid aircraft rivets rated at 300 lbs (1335 N) shear strength.
 - d. Cast fittings, connectors and rung ends: Cast Aluminum alloy 356.
 - e. Finish: All components to have a mill finish.
3. Ladders:
 - a. Ships Ladders: Extruded aluminum; Steps shall withstand a 1,000 pound load without deformation or failure.
 - b. Angled Walk-Through Ladders with Parapet Railings and Platform: Aluminum extrusions; extend railings not less than 42 inches (1,067 mm) above landing, 24 in (610 mm) between side rails at step through. Provide non-penetrating rubber base feet for roof systems.
 - 1) Basis of Design: Design concept and the drawings indicate the size, profiled, dimensional requirements and aesthetics of the following:
 - (a) FixFast USA: KATTCLIMB RL22 Angled fixed ladder with parapet railings and platform.
4. Ships Ladder Safety Post at Roof Hatch:
 - a. Manufacturers - Safety Post: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - 1) Basis of Design: Design concept and the drawings indicate the size, profiled, dimensional requirements and aesthetics of the following:
 - (a) Extend-A-Rail for inclined ships ladders:
www.precisionladders.com
 - 2) Products by other manufacturers (listed below) may be considered, provided deviations in dimensions, profiles, and formulations are minor and do not change the design concept as judged by the Architect.
 - (a) Bilco Co.: www.bilco.com
 - (b) Acudor Products Inc.: www.acudoor.com
 - (c) Milcor by Commercial Products Group of Hart & Cooley, Inc:
www.milcorinc.com.
 - (d) Precision Ladders, LLC: www.precisionladders.com
 - (e) SafetyPro LP: www.safeprosafety.com
 - 3) Safety Post: Telescoping post permanently anchored to the top rung(s) of each steel and/or aluminum ships ladder(s) being provided.
 - (a) Post to have adjustable mounting hardware to accommodate ladder rung size and spacing.
 - (b) Post to automatically lock in the fully raised position.

- (c) Post to have release lever for lowering.
- (d) Post to be steel with a safety yellow powder coat finish.

B. Pipe Bollard Covers

1. LDPE or HDPE pipe bollard cover with rounded top, 1/4-inch thick with integral color and adhesive/tape system to anchor cover to bollard. Reflective tape is to be provided but not installed unless requested by the Owner after installation is complete.
2. Size: Sleeve sizes are to be coordinated with pipe bollard sizes and field verified prior to ordering.
3. Color: To be selected from manufacturer's full line of standard colors.
4. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Ideal Shield 1/4" Bollard Cover - Detroit, Michigan, 1-866-825-8659
5. Additional Stock - Provide two (2) covers for additional Owner stock to be used for future replacement. Include adhesive/tape anchor system.

2.06 FINISHES - STEEL

- A. Prepare surfaces to be primed in accordance with SSPC-SP2.
- B. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- C. Prime Painting: One coat.
- D. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements.
- E. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.
- F. All steel items to be installed on the exterior of the building are to be galvanized.
- G. Refer to Div 9 Painting specification section for final paint system requirements for all fabricated steel items.

2.07 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Obtain approval prior to site cutting or making adjustments not scheduled.
- D. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized , except surfaces to be in contact with concrete.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 055213 - PIPE AND TUBE RAILINGS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Exterior stair; railings in aluminum.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 033000 - Cast-in-Place Concrete: Placement of anchors in concrete.

1.03 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2012.
- B. ASTM B211 - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire 2012.
- C. ASTM B241/B241M - Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube 2016.
- D. ASTM B429/B429M - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube 2010e1.
- E. ASTM B483/B483M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Tubes for General Purpose Applications 2013, with Editorial Revision (2014).
- F. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings 2013, with Editorial Revision.
- G. ASTM E985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings 2000 (Reapproved 2006).

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
- C. Submit painting and coating product data.
- D. Structural Design Data: Where installed metal fabrications are indicated or required to comply with certain design loadings, include structural computations, material properties, and other information needed for review of structural analysis. Computations and analysis shall be stamped by a structural engineer licensed to practice in Kentucky.

1.05 QUALITY ASSURANCE

- A. Aluminum Handrails and Railings:
 - 1. Manufacturer's Qualifications: Company specializing in manufacturing the aluminum non-welded pipe railing specified in this section with a minimum five years documented experience.
 - 2. Installer/Fabricator Qualifications: Company specializing in assembling and installing the manufactured aluminum non-welded pipe railing system specified in this section with a minimum five years documented experience.
 - a. Specified aluminum railing is to be provided as a railing system from one of the manufacturers listed, or approved substitution prior to bidding. Fabricated

replication of the specified manufactured railing system will not be accepted.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver railing systems and related components in protective packaging.
 - 1. Upon delivery open cartons and inspect for damage.
 - 2. Maintain material in original packaging until installation.
 - 3. Store components to avoid damage from moisture, abrasion, and other construction activities.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Aluminum Handrails and Railings: Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include:
 - 1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Superior Aluminum Products, Series 500 Aluminum Non-Welded Pipe Railing.
 - 2. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect.
 - a. C. R. Laurence Co., Inc: www.crlaurence.com.
 - b. Hollaender Railing: www.hollaender.com
 - c. Kane Sterling: www.kanescreens.com.
 - d. Superior Aluminum Products: www.superioraluminum.com
 - e. The Wagner Companies; [____]: www.wagnercompanies.com/#sle.

2.02 RAILINGS - GENERAL REQUIREMENTS

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of ASTM E985 and applicable local code.
- B. Design railing assembly, wall rails, and attachments to resist lateral force of 75 lbs at any point without damage or permanent set. Test in accordance with ASTM E 935.
- C. Structural Performance of Handrails and Railings: Provide handrails and railings capable of withstanding the following structural loads without exceeding allowable design working stresses of materials for handrails, railings, anchors, and connections:
 - 1. Top Rail of Guards: Capable of withstanding the following loads applied as indicated:
 - a. Concentrated load of 200 lbf (890 N) applied at any point and in any direction.
 - b. Uniform load of 50 lbf/ft. (730 N/m) applied horizontally and concurrently with uniform load of 100 lbf/ft. (1460 N/m) applied vertically downward.
 - c. Concentrated and uniform loads above need not be assumed to act concurrently.
- D. Allow for expansion and contraction of members and building movement without damage to connections or members.
- E. Dimensions: See drawings for configurations and heights.
 - 1. Top Rails and Wall Rails: 1-1/2 inches diameter, nominal round. (1.900 inches Outside Diameter)

2. Intermediate Rails: 1-1/2 inches diameter, nominal round. (1.900 inches Outside Diameter)
 3. Posts: 1-1/2 inches diameter, nominal round. (1.900 inches Outside Diameter)
- F. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
- G. Exterior Use Grout: Non-shrink Portland cement-based hydraulic grout mixed and applied in accordance with manufacturer's instructions. Gypsum based material is not acceptable.
1. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating.

2.03 ALUMINUM MATERIALS

- A. Primary Horizontal and Support Aluminum Pipe: Schedule 40; ASTM B 429/B 429M, ASTM B 241/B 241M, or ASTM B 483/B 483M.
- B. Aluminum Tube for Rails and Posts: Aluminum extrusions; alloy and temper 6063-T4. Minimum wall thickness of 0.127 inch; ASTM B 429/B 429M, ASTM B 241/B 241M, or ASTM B 483/B 483M.
- C. Base Flanges, Anchors, and Railing Accessories: ASTM B 247. Manufacturer's standard 713 aluminum alloy cast bases or solid aluminum 6063 stock.
- D. Sleeves: ASTM A 120 or ASTM A 53 pipe.
- E. Fasteners: Provide concrete anchorage for fastening in aluminum or stainless steel.
- F. Exposed Fasteners: No exposed bolts or screws.

2.04 FABRICATION - ALUMINUM RAIL

- A. Configuration: Size and space members in compliance with applicable codes. All posts shall be unspliced single pipe length. Lower rails shall be a single unspliced length between posts. All top rails shall be continuous.
 1. Vertical posts spacing not to exceed 6'-0" center-to-center.
 2. Open tube ends or sections are not allowed.
- B. All posts grouted in concrete to have one nominal 1/4 inch diameter weep hole, 1/2 inch nominal above post collar in the plane of the rail.
- C. Provide all posts with a minimum 19 inch hollow rod for internal reinforcing.
- D. Fit, shape and assemble components in largest practical sizes, for delivery to job site. Fabricate components with joints tightly fitted and secured.
 1. All pipe cuts shall be square and accurate for minimum joint-gap. Cuts shall be clean and free of chamfer, from deburring, nicks and burrs.
 2. Drill holes of proper size for a tight fit of rivets and screws.
- E. Expansion Joints: Provide expansion joints for continuous spans in excess of 40 feet. Construct joints by deleting structural adhesive from one end of the spliced joint so that it is free to move in or out of the pipe. If a joint is provided every 30 feet, the width of the gap should allow 1/8 inch expansion for each 40 degrees F of expected temperature rise.

2.05 ALUMINUM FINISHES

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.
- B. Apply one coat of bituminous paint to concealed aluminum surfaces that will be in contact with cementitious or dissimilar materials.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C. Anchor railings securely to structure.
- D. Sleeve Mounting:
 - 1. Arrange for casting of sleeves or core drill insitu concrete to provide holes for railing uprights.
 - 2. After setting, fill holes with hydraulic grout; brace members until grout is cured.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 061000 - ROUGH CARPENTRY**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Sheathing.
- B. Communications and electrical room mounting boards.
- C. Wood nailers and curbs for roofing and items installed on roof.
- D. Concealed wood blocking, nailers, and supports.
- E. Installation of wood doors and hardware.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 092116 - Gypsum Board Assemblies: Fiber -glass faced gypsum-based sheathing.

1.03 REFERENCE STANDARDS

- A. AF & PA - National Design Specification for Wood Construction. Include supplements.
- B. ALSC - American Lumber Standards Committee: Softwood Lumber Standards.
- C. APA PRP-108 - Performance Standards and Qualification Policy for Structural-Use Panels (Form E445); 2001.
- D. ASTM D2559 - Standard Specification for Adhesives
- E. PS 1 - Structural Plywood 2009.
- F. PS 20 - American Softwood Lumber Standard 2010.
- G. SPIB (GR) - Grading Rules 2014.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide technical data on application instructions.
- C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS**2.01 GENERAL REQUIREMENTS**

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - 2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service

for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

- B. Lumber fabricated from old growth timber is not permitted.
- C. Grade Stamps: Provide lumber with each piece factory marked 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.

2.02 DIMENSION LUMBER

- A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: S-dry or MC19.
- D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.

2.03 MISCELLANEOUS LUMBER

- A. General: Provide lumber for support or attachment of other construction including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.
- B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.
- C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.
- D. Grade: "Standard" grade light framing size lumber of any species or board-size lumber as required. "Standard" grade boards per WWPA rules or "No. 2 Boards" per SPIB rules.

2.04 CONCEALED PERFORMANCE-RATED CONSTRUCTION PANELS

- A. General: Where construction panels are indicated for the following concealed type of applications, provide APA Performance-Rated Panels complying with requirements designated under each application for grade designation, span rating, exposure durability classification, edge detail (where applicable) and thickness.
- B. Construction Panel Standards: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood construction panels and, for products not manufactured under PS 1 provisions, with APA PRP-108
- C. Trademark: Furnish construction panels that are factory-marked with APA trademark evidencing compliance with grade requirements.

2.05 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacturer.
 - 1. Where rough carpentry is exposed to weather, in ground contact, in contact with preservative treated lumber, or humidity, provide fasteners with hot dip zinc coating per ASTM A 153 or of AISI Type 304 stainless steel.
 - 2. Nails, Wire, Brads, and Staples: FS FF-N-105.
 - 3. Power Driven Fasteners: National Evaluation Report NER-272.
 - 4. Wood Screws: ANSI B18.6.1.

5. Screws to Cold-Formed Metal Framing: Corrosion-resistant coated, self drilling, self threading steel drill screws with low-profile head.
6. Lag Bolts: ANSI B18.2.1.
7. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and where indicated, flat washers.

2.06 CONSTRUCTION PANELS

- A. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. Discard units of material with defects that impair quality of rough carpentry construction and that are too small to use in fabricating rough carpentry with minimum joints or optimum joint arrangement.
- B. Set rough carpentry to required levels and lines, with members plumb and true to line and cut and fitted.
- C. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.
- D. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated.
- E. Countersink nail heads on exposed carpentry work and fill holes.
- F. Use common wire nails, unless otherwise indicated. Use finishing nails for finishing 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 BLOCKING, NAILERS, AND SUPPORTS

- A. Install solid wood grounds, nailers, blocking, and sleepers as required for support of wall and ceiling mounted items.
 1. Plywood strips and/or metal strapping will not be accepted as suitable blocking material.
- B. Contractor option to use a flexible wood backing plate system in lieu of solid wood blocking as specified in this section.
 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include:
 - a. Clark Dietrich Building Systems - Danback Flexible Wood Backing Plate: www.clarkdietrich.com
 - b. Equivalent submitted to Architect prior to issuance of last addendum.
- C. In metal stud walls, provide continuous solid wood blocking around door and window openings for anchorage of frames, securely attached to stud framing.
- D. In walls, provide solid wood blocking attached to studs as backing and support for wall-mounted items,
- E. Where ceiling-mounting is indicated, provide solid wood blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

- F. Provide the following non-structural framing and solid wood blocking, but not limited to the following locations:
1. Cabinets, shelf, and countertop supports.
 2. Wall mounted cabinets.
 3. Wall brackets.
 4. Handrails and guardrails.
 5. Fire extinguisher cabinets, brackets, and valve cabinets.
 6. Grab bars.
 7. Toilet and bath accessories.
 8. Toilet and urinal partitions.
 9. Wall-mounted door hardware and stops.
 10. Chalkboards, tackboards, and marker boards.
 11. Wall paneling and trim.
 12. Joints of rigid wall coverings that occur between studs.
 13. Locker base and wall attachment.
 14. Interior and exterior wall openings to receive metal frame system; window, door, etc.
 15. Access panels.
 16. Framed openings.
 17. Plumbing fixtures.
 18. Ceiling mounted projection screens and projector mounts.
 19. Wall mounted projection screens and projector mounts.
 20. Wall and ceiling mounted items indicated as N.I.C. and/or Owner provided and Owner installed.

3.03 INSTALLATION OF ACCESSORIES AND MISCELLANEOUS WOOD

- A. Place full width continuous sill flashings under framed walls on cementitious foundations. Lap flashing joints 4 inches and seal.
- B. Place sill gasket directly on sill flashing. Puncture gasket cleanly and fit tightly to protruding foundation anchor bolts.
- C. Curb roof openings except where prefabricated curbs are provided. Form corners by alternating lapping side members.
- D. Coordinate curb installation with installation of decking and support of deck openings.

3.04 INSTALLATION OF CONSTRUCTION PANELS

- A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.

3. Install adjacent boards without gaps.

3.05 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.06 CLEANING

- A. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- B. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 064100 - ARCHITECTURAL WOOD CASEWORK**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. This Section includes the following:
 - 1. Interior standing and running trim and custom self-edged casework
 - 2. Media Center casework; coordinate construction with faux stone installer.
 - 3. Solid surface countertops and window sills
 - 4. Plastic laminate countertops
 - 5. Depressible Book Truck
- B. Related Sections include the following:
 - 1. Section 012300 - Alternates: Refer to Section for additional information
 - 2. Division 4 Section 042000 "Unit Masonry" for faux stone used on the media center circulation desk.
 - 3. Division 6 Section "Miscellaneous Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
 - 4. Division 12 Section 123550 "Institutional Casework" (plastic laminate faced wood cabinets of stock design).
- C. Fabric Covered Tackable Surfaces
- D. Cabinet hardware

1.02 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 1 Specification sections, apply to this Section.
 - 1. Section 012300 - Alternates: Refer to section for additional information.
 - 2. Section 016116 - Volatile Organic Compound (VOC) Content Restrictions
 - 3. Section 061000 - Rough Carpentry: Support framing, grounds, and concealed blocking
 - 4. Division 6 Section "Miscellaneous Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation
 - 5. Section 090050 - Finish Legend
 - 6. Section 123550 - Institutional Casework (plastic laminate-faced wood cabinets of stock design)

1.03 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items, unless concealed within other construction before woodwork installation.
- B. Exposed Portions of Cabinets: Surfaces visible when doors and drawers are closed, including bottoms of cabinets more than 48 inches (1220 mm) above floor, and surfaces visible in open cabinets. The bottom of wall cabinets are considered exposed and will receive **plastic laminate**.

- C. Semiexposed Portions of Cabinets: Surfaces behind opaque doors, such as interiors of cabinets, shelves, dividers, interiors and sides of drawers, and interior faces of doors. Tops of cases 78 inches (1980 mm) or more above floor are defined as semiexposed.
- D. Concealed Portions of Cabinets: Surfaces not usually visible after installation, including sleepers, web frames, dust panels, and ends and backs that are placed directly against walls or other cabinets.

1.04 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards 2014.
- B. AWI (QCP) - Quality Certification Program current edition at www.awiqcp.org.
- C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1 2016, with Errata (2017).
- D. BHMA A156.9 - American National Standard for Cabinet Hardware 2010.
- E. NEMA LD 3 - High-Pressure Decorative Laminates 2005.
- F. ANSI A135.4 - American National Standard for Basic Hardboard 2012.
- G. ANSI A208.1 - American National Standard for Particleboard 2009.
- H. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use 2009.
- I. AWI (QCP) - Quality Certification Program current edition at www.awiqcp.org.
- J. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards 2014.
- K. AWMAC (GIS) - Guarantee and Inspection Services Program current edition at www.awmac.com/gis.php.
- L. BHMA A156.9 - American National Standard for Cabinet Hardware 2010.
- M. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood 2016.
- N. NEMA LD 3 - High-Pressure Decorative Laminates 2005.

1.05 SUBMITTALS

- A. Samples for Verification: 6-inch- (150-mm-) square Samples for each type of finish, including top material and the following:
 - 1. Section of countertop showing top, front edge, and backsplash construction.
- B. Product Data: For each type of product indicated including cabinet hardware and accessories and finishing materials and processes.
- C. Product Data: For each type of product indicated.
- D. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
- E. Samples for Initial Selection: Manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available for each type of material indicated.
 - 1. Plastic laminates.
 - 2. Thermoset decorative overlays.
- F. Samples for Initial Selection: For cabinet finishes and for each type of top material indicated.
- G. Product Certificates: Signed by manufacturers of woodwork certifying that products furnished comply with requirements.

- H. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed architectural woodwork similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Fabricator Qualifications: A firm experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Installer Qualifications: An authorized representative of institutional casework manufacturer for installation and maintenance of units required for this Project.
- D. Source Limitations: Obtain institutional casework through one source from a single manufacturer.
- E. Quality Standard: Build and install to AWI quality.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be sorted in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.08 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.
 - 2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.09 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

1.10 SEQUENCING AND SCHEDULING

- A. Coordinate the work with all sections referencing this section.

1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of casework that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:

1. Delamination of components or other failures of glue bond
2. Warping of components.
3. Failure of operating hardware.
4. Deterioration of finishes.

B. Warranty Period: Five years from date of Substantial Completion.

1.12 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 WOODWORK FABRICATORS

- A. All manufacturing technic and components must comply with the contract specifications. The designer's selections will not be limited to those plastic laminate selections which are the standards of the casework manufacturer. The plastic laminate selections will be made from the laminate manufacturer(s) full range of colors, patterns and finishes.
- B. Multiple manufacturers of work of this section will not be accepted. Subject to compliance with requirements, interior architectural woodwork by one of the following include :
1. Accents in Wood, Inc.
 2. Action Outfitters
 3. Advantage Millwork
 4. America's Finest Woodworking Team
 5. Cabinets & Countertops, Inc.
 6. Caseworks of Kentucky, Inc.
 7. Corman & Associates, Inc.
 8. Cowart & Company
 9. Cumberland Manufacturing
 10. Custom Creations, Inc.
 11. Euronique, Inc.
 12. Interior Wood Specialties
 13. Kentucky Caseworks
 14. Kentucky Mill & Casework
 15. Leininger Cabinets
 16. Louisville Lumber
 17. LSI Corporation, Inc.
 18. Morgan Smith Industries
 19. Reynolds & Poyle, Inc.
 20. Riverside Mill
 21. Smith' s Laminating

22. Southern Cabinetry, Inc.
23. SSC Casework & Millwork
24. Stevens Industries, Inc.
25. Stidham Cabinets
26. Tate Ornamental
27. TMi/Trimline
28. US Millwork
29. Wood Concepts
30. Custom cabinetry companies whose products meet or exceed the project specifications as approved by written addendum.

2.02 MATERIALS

- A. General: Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.
- B. Wood Products: Comply with the following:
 1. Hardboard: AHA A135.4.
 2. Medium-Density Fiberboard: ANSI A208.2, Grade MD-Exterior Glue.
 3. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
 4. Softwood Plywood: DOC PS 1, Medium Density Overlay.
 5. Hardwood Plywood and Face Veneers: HPVA HP-1.
 6. Exposed Plywood: Hardwood plywood, selected for compatible color and grain. Grade AA exposed faces at least 1/50 inch (0.5 mm) thick, and Grade J crossbands. Provide both faces of same species.
 7. Semiexposed Plywood: Hardwood plywood of same species as exposed plywood. Semiexposed backs of plywood with exposed faces shall be same species as faces. Grade B faces and Grade J crossbands.
- C. Thermoset Decorative Overlay: Particleboard complying with ANSI A208.1, Grade M-2, or medium-density fiberboard complying with ANSI A208.2, Grade MD, with surface of thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
- D. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.
 1. Manufacturer: Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following:
 - a. Arborite
 - b. Formica Corporation
 - c. Nevamar
 - d. Wilsonart
- E. Exposed Cabinet Materials:
 1. Plastic Laminate: Type VGS.
 - a. Unless otherwise indicated, provide plastic laminate for exposed surfaces.

- b. Provide plastic laminate for doors and drawer fronts and where indicated.
- F. Semiexposed Cabinet Materials:
 - 1. Plastic Laminate: Type CLS.
 - a. Provide plastic laminate for interior faces of doors and drawer fronts [only/and] where indicated.
 - 2. Melamine-Faced Particleboard: Particleboard with decorative surface of thermally fused, melamine-impregnated web and complying with LMA SAT-1.
 - a. Provide melamine-faced particleboard for semiexposed surfaces, unless otherwise indicated.
- G. Concealed Cabinet Materials:
 - 1. Solid Wood: Any hardwood or softwood species, with no defects affecting strength or utility.
 - 2. Plywood: Hardwood plywood. Concealed backs of plywood with exposed or semiexposed faces shall be same species as faces.
 - 3. Plastic Laminate: Type BKL.
- H. Solid-Surfacing Material: Homogeneous solid sheets of filled plastic resin complying with material and performance requirements in ANSI Z124.3, for Type 5 or Type 6, without a precoated finish.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Avonite; Avonite, Inc.
 - b. Corian; DuPont Polymers
 - c. Fountainhead; International Paper, Decorative Products Div.
 - d. Gibraltar
 - e. LG Surfaces
 - f. Surell; Formica Corporation
 - 2. Price Group: Based on selections from Corian provide price group A, B, and C.
- I. Fabric-Covered Tackable Surfaces: Dimensionally stable 6-7 PCF glass fiberboard with resin hardened edge 3/4" thick with a fabric covering equivalent to Guilford of Maine.

2.03 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 8 Section "Door Hardware (Scheduled by Describing Products)." Refer to the drawings for additional hardware components.
- B. Hardware Standard: Comply with BHMA A156.9 for items indicated by referencing BHMA numbers or items referenced to this standard.
- C. Hinges: Provide five knuckle, 2-3/4 inch, overlay type, hospital tip, 0.95 inch thick steel. Hinges shall have a minimum of eight (8) edge and leaf fastening. Doors 48 inches and over in height shall have three (3) hinges per door.
- D. Pulls: Pulls as standard shall be surface mounted solid aluminum.
- E. Catches: Roller catches, BHMA A156.9, B03071.
- F. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081 or BHMA A156.9, B04102; with shelf brackets, B04112. Shelf standards and supports shall be equal to Knap and Vogt 182 decorative heavy duty bracket and standards.

- G. Shelf Rests: BHMA A156.9, B04013.
- H. Drawer Slides: Side-mounted, full-extension, zinc-plated steel drawer slides with steel ball bearings, BHMA A156.9, B05091, and rated for the following loads:
 - 1. Box Drawer Slides: 100 lbf (440 N)
 - 2. File Drawer Slides: 150 lbf (670\~N)
 - 3. Pencil Drawer Slides: 45 lbf (200\~N)
- I. File Drawer Frame System: Provide a metal file frame system in all file drawers equal to Rockler Woodworking & Hardware # 30976 with cut-to-size side rails, front & back rails, and side-to-side rail.
- J. Locks: Locks for drawers and hinged doors, where specified, shall be heavy-duty, cylinder type with five disc tumblers and shall be keyed and master-keyed as specified. Locate as indicated on the drawings.
- K. Grommets for Cable Passage through Countertops: 3-1/2-inch (51-mm) OD, molded-plastic grommets and matching plastic caps with slot for wire passage. Color to be selected by Designer.
 - 1. Product: Subject to compliance with requirements, provide "SG series" by Doug Mockett and Co., Inc.
- L. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
- M. Countertop Support: Provide countertop supports equivalent to A & M Hardware, Inc. Workstation brackets, size brackets to suit installation.
- N. Depressible Book Truck
 - 1. Brodart 60-915-S00
 - 2. Dimensions: 31"h x 26" x 22"
 - 3. Provide with casters/rubber bumpers.
 - 4. Description: Fits under 30" circulation desk (confirm required height). Construction is 3/4" edge-banded plywood in flush panel design. The depressible platform is plastic laminated and mounted on a spring mechanism, and has nylon rollers mounted into all four edges for ease of operation and stability. The truck is supplied with four heavy-duty 3" swivel casters mounted to solid hardwood caster blocks. The unit holds approximately 70 average-size books.

2.04 INSTALLATION MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln-dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.05 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Provide Custom grade interior woodwork complying with the referenced quality standard.
- B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

- C. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- D. Shop cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
 - 1. Seal edges of openings in countertops with a coat of varnish.
- E. All wall and base cabinets over 3'-0" in width shall receive a vertical to prevent deflection.

2.06 PLASTIC-LAMINATE CABINETS

- A. Quality Standard: Comply with AWI Section 400 requirements for laminate cabinets.
- B. Grade: Custom
- C. AWI Type of Cabinet Construction: Flush overlay
- D. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Horizontal Surfaces Other Than Tops: HGS
 - 2. Postformed Surfaces: HGP
 - 3. Vertical Surfaces: HGS
 - 4. Edges: Self edged plastic laminate
 - 5. Body Front Edging: HGS
- E. Materials for Semiexposed Surfaces: Provide surface materials indicated below:
- F. Box Drawers: ½" solid hardwood sides, dovetailed and glued. 1/4" five ply hardwood bottom, fitted into dado, glued and blocked into place. Equip with full extension drawer glides, including tops to prevent accidental removal.
- G. File Drawers: ½" solid hardwood sides, dovetailed and glued. ½" five ply hardwood bottom, fitted into dado, glued and blocked into place. Equip with full extension file drawer slides, 150 lb load capability, including stops to prevent accidental removal.
- H. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - 1. Solid colors
 - 2. Wood grains
 - 3. Patterns
- I. Provide dust panels of 1/4-inch (6.4-mm) plywood or tempered hardboard above compartments and drawers, unless located directly under tops.
- J. Wood grains and/or any laminate with a directional design shall all be applied to the cabinet face in one consistent direction.

2.07 PLASTIC-LAMINATE COUNTERTOPS

- A. Quality Standard: Comply with AWI Section 400 requirements for high-pressure decorative laminate countertops.

- B. Grade: Custom
- C. High-Pressure Decorative Laminate Grade: HGS
- D. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - 1. Solid colors
 - 2. Wood grains
 - 3. Patterns
- E. Plastic Laminate Countertops: Plastic laminate countertops shall be minimum 1-1/2" thick with horizontal grade plastic laminate on all exposed sides, including edges, back and endsplashes, underside shall have laminate backer sheet, all countertops shall be continuous.
 - 1. Provide 4" back and side splashes at all junctures of countertop and any vertical surface.
- F. Core Material: Particleboard made with exterior glue
- G. Core Material at Sinks: Exterior-grade plywood

2.08 SOLID-SURFACING-MATERIAL COUNTERTOPS

- A. Quality Standard: Comply with AWI Section 400 requirements for countertops.
- B. Grade: Custom
- C. Solid-Surfacing-Material Thickness: 1/2 inch (13 mm), unless shown otherwise on drawings
- D. Colors, Patterns, and Finishes: Provide materials and products that result in colors of solid-surfacing material complying with the following requirements:
- E. Fabricate tops in one piece with field-applied backsplashes and edges, unless otherwise indicated. Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.

2.09 FINISH FOR WOOD CASEWORK

- A. Preparation: Sand lumber and plywood for casework construction before assembling. Sand edges of doors and drawer fronts and molded shapes with profile-edge sander. Sand casework after assembling for uniform smoothness at least equivalent to that produced by 220-grit sanding and without machine marks, cross sanding, or other surface blemishes.
- B. Wood Colors and Finishes: Match Architect's samples.
- C. Staining: Remove fibers and dust and apply wash-coat sealer and stain to exposed and semiexposed surfaces as required to provide uniform color and to match approved samples.
- D. Finishing Closed-Grain Woods: Apply manufacturer's standard two-coat, baked, clear finish consisting of a thermosetting catalyzed sealer and a thermosetting catalyzed conversion varnish. Sand and wipe clean between applications of sealer and topcoat. Topcoat may be omitted on concealed surfaces.

2.10 INTERIOR ORNAMENTAL WORK FOR OPAQUE FINISH

- A. Quality Standard: Comply with AWI Section 700
- B. Quality Standard: Comply with WIC Section 11
- C. Wood Species: Any closed-grain hardwood

2.11 FABRICATION

- A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Locate counter butt joints minimum 2 feet from sink cut-outs.
 - 1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
 - 2. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- E. Mechanically fasten back splash to countertops as recommended by laminate manufacturer.
- F. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 PREPARATION

- A. Condition woodwork to average prevailing humidity conditions in installation areas before installation.

3.03 INSTALLATION

- A. Install work in accordance with AWI/AWMAC/WI (AWS) requirements for grade indicated.
- B. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.
- C. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces and repair damaged finish at cuts.
- D. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with recommendations of chemical treatment manufacturer, including those for adhesives used to install woodwork.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 - 2. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c.

- G. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
 - 1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
 - 2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 - 3. Caulk space between backsplash and wall with clear silicone.
- H. Refer to Division 9 Sections for final finishing of installed architectural woodwork.
- I. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- J. Use fixture attachments in concealed locations for wall mounted components.
- K. Use concealed joint fasteners to align and secure adjoining cabinet units.
- L. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- M. Secure cabinets to floor using appropriate angles and anchorages.
- N. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.04 **ADJUSTING AND CLEANING**

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.
- D. Adjust installed work; test installed work for rigidity and ability to support loads.
- E. Adjust moving or operating parts to function smoothly and correctly.

3.05 **CLEANING**

- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 070810 - EXTERIOR BUILDING ENCLOSURE WEATHER BARRIER REQUIREMENTS**PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. This section includes administrative and procedural requirements for accomplishing a weather-tight building enclosure that controls infiltration or exfiltration of air, including but may not be limited to:
 - 1. The airtight components of the building enclosure and the joints, junctures and transitions between materials, products, and assemblies forming the air-tightness of the exterior building enclosure shall be "the air barrier system."
 - 2. Coordinate between trades, schedule and sequence the Work, and provide preconstruction meetings, inspections, tests, and related actions.
 - 3. Reports performed by Contractor, independent agencies, and governing authorities.
 - 4. Construct the building enclosure with a continuous air barrier system to control air leakage into (infiltration) and out of (exfiltration) conditioned spaces. The air barrier system shall have the following characteristics:
 - a. Continuous, with all joints sealed.
 - b. Structurally supported to withstand positive and negative air pressures applied to the building enclosure.
 - c. Connections between:
 - 1) Foundation and walls.
 - 2) Walls and windows and doors.
 - 3) Different wall systems.
 - 4) Wall and roof.
 - 5) Walls, floors, and roofs across construction joints, control joints and expansion joints.
 - 6) Walls, floors and roofs to utility, pipe and duct penetrations.
 - 5. Make all penetrations of the air barrier membrane or system and paths of air infiltration / exfiltration air-tight.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 070810.13 - Weather Barrier System Pre-Installation Conference Guide: Pre-Installation requirements.

1.03 RESPONSIBILITIES

- A. Contractor responsibilities:
 - 1. Coordinate affected trades and sequence construction to ensure continuity of the air barrier system, joints, junctures, and transitions between materials and assemblies of materials and products, from substructure to walls to roof.
 - a. Coordinate the sequence of activities to accommodate required services with a minimum of delay.

EXTERIOR BUILDING ENCLOSURE WEATHER BARRIER REQUIREMENTS		070810 - 1
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- b. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
- 2. Provide quality assurance procedures, testing and verification as required.
 - a. Schedule times for inspections, tests, taking samples, and similar activities.
- 3. Facilitate inspections, tests, and other quality-control services required.
 - a. Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested.
 - b. Notify the agency sufficiently in advance of operations to permit assignment of personnel.
 - c. Services include, but are not limited to, the following:
 - 1) Provide access to the Work.
 - 2) Furnish incidental labor and facilities necessary to facilitate inspections and tests.
 - 3) Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
 - 4) Deliver samples to testing laboratories.
 - 5) Provide security and protection of samples and test equipment at the Project Site.
- 4. Organize preconstruction meetings between the trades involved in the whole building's air barrier system to discuss where each trade begins and ends and the responsibility and sequence of installation of all the air-tight joints, junctures, and transitions between materials, products and assemblies of products specified in the different sections, to be installed by the different trades.
- 5. Provide mockup of exterior wall assembly as required.
- 6. Coordinate the Work and trades to provide an airtight building enclosure.
 - a. Continuity of the air barrier materials and products with joints to provide assemblies.
 - b. Continuity of all exterior enclosure assemblies with joints and transition materials to provide an exterior enclosure air barrier system.
 - c. Specific quality-control requirements for individual construction activities are also indicated in other applicable sections of the specifications. Ensure each subcontractor is adequately and satisfactorily performing the quality assurance documentation, tests and procedures required by each such section.
 - d. Inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.
 - e. Requirements to provide an airtight exterior building enclosure is not limited by quality-control services performed by Architect, Owner, or authorities having jurisdiction and are not limited by provisions of this section.

1.04 PERFORMANCE REQUIREMENTS

EXTERIOR BUILDING ENCLOSURE WEATHER BARRIER REQUIREMENTS		070810 - 2
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- A. Materials: Used for the air barrier system in the opaque envelope shall have an air permeance not to exceed 0.004 cfm/ft² under a pressure differential of 0.3 in. water (1.57psf) (0.02 L/s.m² @ 75 Pa) when tested in accordance with ASTM E 2178.
- B. Assemblies of materials and components: Shall have an air permeance not to exceed 0.04 cfm/ft² under a pressure differential of 0.3 in. water (1.57psf) (0.15 L/s.m² @ 75 Pa) when tested in accordance with ASTM E 2357.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.
- B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings" and adhere to the following specifics regarding masonry pre-installation conference guidelines.
 - 1. The General Contractor/Construction Manager should organize and hold a meeting with the Owner, Architect, General Contractor/Construction Manager, site superintendent, masonry foreman, testing and inspection agency representative, installers of cavity wall insulation, storefront, curtain wall, door and window, installers of steel, joist and deck, installers of mechanical, electrical and plumbing items, installers of other work in and around the masonry that must precede or follow masonry work.
 - 2. Review foreseeable methods and procedures related to masonry work, including but not necessarily limited to the following:
 - a. Sample and Mock-up Wall Sections:
 - 1) Size and Location
 - 2) Products and Detail required
 - 3) Protection Methods of Sample and Mock-up Wall Sections
 - 4) Approval Authority and Notification
 - b. Site Inspection:
 - 1) Identity of Responsible Person
 - 2) Frequency of Inspection
 - c. Materials:
 - 1) Storage & Protection
 - 2) Delivery Process
 - d. Submittals:
 - 1) Product Certification
 - 2) Shop Drawing Requirements
 - 3) Time Expectation
 - 4) Testing and Inspection Requirements
 - e. Construction Means and Methods:
 - 1) Hot & Cold Weather Protection
 - 2) Protection of Work in Process

- 3) Material Handling Process
 - 4) Cleaning Process
- f. Schedule:
 - 1) Product Availability
 - 2) Review of Associated Trades Responsibility
- g. Project Closeout:
 - 1) Punch List Procedure
- 3. Record (Contractor) discussions of conference, including decisions and agreements (or disagreements) reached, and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

- A. Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes.
- B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.
- C. Repair and protect the Work, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION

SECTION 070810.13 - WEATHER BARRIER SYSTEM PRE-INSTALLATION CONFERENCE GUIDE**PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Few building construction components require the coordinated activities of more different trades on the construction, design, and management teams than the water, air, vapor and thermal barrier system. Once the water, air, vapor and thermal barrier has been covered, any remedies for problems with the components or installation can be costly and time-consuming.

1.02 PREINSTALLATION

- A. Contractor and subcontractors must have a working knowledge of the water, air, vapor and thermal barrier installation, proper sequencing, and must work toward a common goal. Through the use of the integrated mockup panel and this Pre-Installation Conference Guide, gaining such knowledge should be enhanced.
- B. Send a copy of this guide to the affected trades and/or attendees so they can attend the Conference prepared to discuss these topics and to fill in as much of this information as possible prior to the meeting, or be prepared to fill them in at the meeting.

1.03 TASK CHECKLIST

- A. Submit and/or complete the following prior to conducting the Pre-Installation Conference. Confirm any additional submittal requirements with the relevant specification sections. Check those items below that you have completed or received \loch\af1\dbch\af1\hich\f1\93\hich\af1\dbch\af1\loch\fl Approved\loch\af1\dbch\af1\hich\f1\94\hich\af1\dbch\af1\loch\fl submittals from the Architect.

Submittals	Approved
Product data	
Shop drawings	
Product Certificates	
Product test reports	
Installer qualifications	
Samples	
Compatibility docs	
Integrated mockup	
Quality Assurance Program	
ABAA certifications	
Warranty Sample	
Air Barrier System Subcontractor reviewed submittals of other indicated/specified trade(s)	

1.04 MANDATORY ATTENDEES

- A. Attendance by the following parties and affected trades is mandatory. Identify and ensure any other trades or parties involved or affected by the installation of the air barrier system components are also present. Check those below who actually attend the meeting.

Owner and/or Owner's representative	
Architect	

Contractor	
Masonry subcontractor	
Roofing subcontractor	
Window opening subcontractor	
Exterior Insulation subcontractor	
Concrete subcontractor	
(CFMF-S) subcontractor	
Steel frame (hollow metal) subcontractor	
Underslab Vapor Barrier subcontractor	

1.05 REVIEW OF RELEVANT PROJECT CONTRACT SPECIFICATION SECTIONS

- A. Review the Contract Specifications and identify and note any modifications that may be necessary, so all parties understand what is required of them. Submit any modifications via appropriate supplemental documents (FC or PCO).

Spec Section	Modifications (if any)
042000 - Unit Masonry	
070810 - Exterior Building Enclosure Weather Barrier Requirements	
071300 - Underslab Sheet Waterproofing	
072100 - Thermal Insulation	
081113 - Hollow Metal Doors and Frames	
084313 - Aluminum Framed Storefronts	
088000 - Glazing	

1.06 REVIEW OF RELEVANT PROJECT CONTRACT DRAWINGS

- A. Review the Contract Drawings and identify and note any modifications that may be necessary, so all parties understand what is required of them. Submit any modifications via appropriate supplemental documents (FC or PCO).

Project Contract Drawing or Detail Number	Modifications (if any)

1.07 REVIEW OF RELEVANT PROJECT SHOP/SUBMITTAL DRAWINGS

- A. Review the submittals and identify and note any modifications that may be necessary, so all parties understand what is required of them. Resubmit those submittals that have not been approved by the Architect.

Project Submittal / Shop Drawing Reference	Modifications (if any)

1.08 REVIEW OF PRODUCTS

- A. Review the type of air barrier system that will be provided on the Project and identify each component.

Component	Actual Product to be provided for Project
SPF insulation - field of wall	
SPF insulation (wall) - voids / cracks / shims	
SPF insulation - field of roof	
Fluid-applied membrane - Permeable - wall	
Fluid-applied membrane - Impermeable -wall	
Self-adhered membrane - Permeable - wall	
Self-adhered membrane - Impermeable -wall	
Self-adhered membrane - Permeable - roof	
Self-adhered membrane - Impermeable -roof	
Transition membrane - self-adhered	
Primer	
Mastic / Termination sealant	

1.09 CONSTRUCTION TIE-IN RESPONSIBILITY

- A. Air barrier systems are successful when a full building envelope/enclosure - without penetrations, voids, holes, gaps, and cracks - is complete. This is critical when numerous trades are involved in the tying-in of the air barrier system to all facets of the exterior building envelope. Utilize the table below to ensure everyone knows who is responsible for the indicated tie-in.

Tie-in Area	Subcontractor responsible for tie-in
Exterior footing to exterior foundation wall	
Exterior foundation to exterior wall	
Slab-on-grade to wall (exterior and interior)	
Slab-on-grade joints	
Slab-on-grade penetrations	
Exterior wall to steel frame/hollow metal (e.g., doors and windows)	
Exterior walls to aluminum frames (e.g., windows and louvers)	
Different exterior wall systems (e.g., masonry to metal)	
Exterior head-of-wall to sloping roof	
Parapet walls to roof	
Exterior wall joints	
Exterior shelf angles	
Exterior steel lintels	
Exterior wall penetrations (e.g., pipes, ducts)	
Roof penetrations	
Roof perimeter	

1.10 COMPATIBILITY REVIEW

- A. Each trade/installer shall identify materials that may have potential compatibility issues. For example, some membranes may be subject to decomposing when placed in contact with other materials or components, especially sealants and primers; or may deteriorate if left exposed to the elements and are not protected.

Trade / Installer	Issues / Resolutions
Air barrier	
Window	
Masonry	
Roofing	
Sheathing	
Concrete	
Insulation	
Flexible Flashing	
Metal Flashing	
Structural steel	
Substrate primer considerations:	

1.11 SUBSTRATE PRIMER CONSIDERATIONS:

- A. Indicate whether the substrate for the air barrier material requires the use of a primer, and if so, identify the actual product to be used on the Project.

Substrate	Yes	No	Product
CMU			
Sheathing			
Concrete			
Roof substrate board			
Flexible Flashing			
Steel frame / hollow metal			
Structural steel			
Substrate preparation considerations:			

1.12 SUBSTRATE PREPARATION CONSIDERATIONS:

- A. Indicate whether the substrate for the air barrier material requires special treatment or preparation (e.g., flush joints in CMU), and if so, identify the method to be used on the Project. Delete those that do not apply.

Substrate	Yes	No	Method / Procedure	Subcontractor responsible
CMU				
Sheathing				
Concrete				
Roof substrate board				
Window frames				
Flexible Flashing				
Metal Flashing				
Steel frame / hollow metal				
Structural steel				
Joint considerations:				

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1.13 JOINT CONSIDERATIONS:

- A. It is critical for all joints, gaps, voids, cracks, seams, etc. to be sealed/closed for the air barrier to function properly (based on air barrier manufacturer's instructions). If applicable, indicate the method to be used to close the joints and who is responsible. Delete those that do not apply.

Type of joint	Method used to close joint	Subcontractor responsible
CMU		
Sheathing		
Concrete		
Roof substrate board		
Window frames		
Steel (hollow metal) frames		
Head-of-wall		

1.14 INSTALLATION TEMPERATURES:

- A. A major factor in contributing to a successful air barrier system installation is to monitor and install the components within the proper temperature ranges and weather conditions. Indicate below the proper temperature range for each component; the procedure for maintaining the proper temperature range; and the party responsible for maintaining the proper temperature range in accordance with the requirements.

Component	Proper temperature range	Procedure and Subcontractor responsible
SPF insulation - field of wall		
SPF insulation (wall) - voids / cracks / shims		
SPF insulation - field of roof		
Fluid-applied membrane - Permeable - wall		
Fluid-applied membrane - Impermeable - wall		
Self-adhered membrane - Permeable - wall		
Self-adhered membrane - Impermeable - wall		
Self-adhered membrane - Permeable - roof		
Self-adhered membrane - Impermeable - roof		
Transition membrane - self-		

adhered		
Primer		
Mastic / Termination sealant		

1.15 AIR BARRIER PROTECTION:

- A. The air barrier system shall be protected during construction. Indicate below how the components will be protected (method used), by whom, and when.

Component	Method used for protection	Subcontractor	When
SPF insulation - field of wall			
SPF insulation (wall) - voids / cracks / shims			
SPF insulation - field of roof			
Fluid-applied membrane - Permeable - wall			
Fluid-applied membrane - Impermeable -wall			
Self-adhered membrane - Permeable - wall			
Self-adhered membrane - Impermeable -wall			
Self-adhered membrane - Permeable - roof			
Self-adhered membrane - Impermeable -roof			
Transition membrane - self-adhered			
Primer			
Mastic / Termination sealant			
Air barrier repair:			

1.16 AIR BARRIER REPAIR:

- A. Discuss how any damage, including but not limited to, accidental holes in the air barrier system, will be repaired - and by whom. Indicate the actual product to be used to perform any repairs in the air barrier components.

Component	Product to be used for repair	Subcontractor responsible
SPF insulation - field of wall		
SPF insulation (wall) - voids / cracks / shims		
SPF insulation - field of roof		
Fluid-applied membrane - Permeable - wall		
Fluid-applied membrane - Impermeable - wall		
Self-adhered membrane - Permeable - wall		
Self-adhered membrane - Impermeable - wall		
Self-adhered membrane - Permeable - roof		
Self-adhered membrane - Impermeable - roof		
Transition membrane - self-adhered		
Primer		
Mastic / Termination sealant		

1.17 INSULATION SECURED TO OR OVER AIR BARRIER MATERIAL

- A. Address any concerns or issues of installing insulation over the air barrier material (foundation, walls, and roof), such as preparation, securing, or fastening methods. Delete those that do not apply.

Insulation type	Method for securement	Concerns (if any)
SPF		
XPS		
Polyiso		
EPS		
EPX		
Component	Subcontractor responsible for location marks, if necessary	
Sheathing		
Air Barrier		
Insulation		

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END OF SECTION

SECTION 071113 - BITUMINOUS DAMPPROOFING**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Cold-applied asphalt emulsion dampproofing.
 - 1. Exterior face of all CMU backup in masonry cavity wall construction.

1.02 RELATED REQUIREMENTS

- A. Section 072100 - Thermal Insulation: Rigid insulation board used as perimeter foundation and cavity wall thermal insulation.

1.03 REFERENCE STANDARDS

- A. ASTM D 1187 - Standard Specification for Asphalt-Base Emulsions for Use as Protective coatings for Metal.
- B. ASTM D1227 - Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing 2013.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide properties of primer, bitumen, and mastics.
- C. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with at least three years of documented experience.

1.06 FIELD CONDITIONS

- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application until dampproofing has cured.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - 1. BASF; Sonneborn Building Products: www.buildingsystems.basf.com
 - 2. Euclid Chemical Co.: www.euclidchemical.com
 - 3. Karnak Corporation: www.karnakcorp.com/#sle.
 - 4. Mar-Flex Systems, Inc: www.mar-flex.com/#sle.
 - 5. W. R. Meadows, Inc: www.wrmeadows.com/#sle.
 - 6. Premium Liquid Rubber: www.sprayrubber.com

2.02 COLD ASPHALTIC MATERIALS

- A. Bitumen: Emulsified asphalt, {rs\#1}; with fiber reinforcement other than asbestos (Type II).

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify existing conditions are acceptable prior to starting this work.
- B. Verify substrate surfaces are durable, free of matter detrimental to adhesion or application of dampproofing system.
- C. Verify that items penetrating surfaces to receive dampproofing are securely installed.

3.02 APPLICATION

- A. Apply bitumen by spray application or brush/roller application.
- B. Apply bitumen in one coat, continuous and uniform, at a rate of 1.5 to 2.5 gal/100 sq ft .
 - 1. Provide a uniform, dry film thickness of not less than 15 mills. Apply in two coats, if necessary, to obtain required thickness, allowing time for complete drying between coats.
- C. Seal items watertight with mastic, that project through dampproofing surface.

END OF SECTION

SECTION 071300 - UNDERSLAB SHEET WATERPROOFING**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Underslab sheet membrane vapor barrier.
 - 1. Vapor barrier is to be installed beneath the entire interior area of first floor new concrete slab construction.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 079005 - Joint Sealers: Sealant for joints in substrates.
- C. Section 312323 - Fill.
- D. Section 334600 - Subdrainage.

1.03 REFERENCE STANDARDS

- A. ASTM D570 - Standard Test Method for Water Absorption of Plastics 1998 (Reapproved 2010).
- B. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact 2014.
- C. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting 2012.
- D. ASTM D1709 - Standard Test Method for Impact Resistance of Plastic Film by the Free-Falling Dart Method.
- E. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials 2014.
- F. ASTM E154/E154M - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover 2008a (Reapproved 2013).
- G. ASTM E 1643 - Standard Specification For Installation of Plastic Water Vapor Retarder Used in Contact with Soil or Granular Fill Under Concrete Slabs.
- H. ASTM E 1745 - Standard Specification For Plastic Water Vapor Retarder Used in Contact with Soil or Granular Fill Under Concrete Slabs - Class A.
- I. NRCA ML104 - The NRCA Roofing and Waterproofing Manual Fifth Edition, with interim updates.

1.04 SUBMITTALS

- A. Product Data: Provide data for vapor barrier and sheet waterproofing membranes, tape, sealants and other system components.
- B. Product Test Reports: From a qualified independent testing agency indicating and interpreting test results of vapor barrier for compliance with requirements, based on testing of current formulations.
- C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
- D. Certificate: Certify that products meet or exceed specified requirements.
- E. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.
- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual.

- B. Membrane Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.
- D. Source Limitations: Obtain products through one source from a single manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver liquid and sheet material to Project site in original packages with seals unbroken, labeled with manufacturers name, product brand name and type, date of manufacture, and directions for storing and mixing other components.
- B. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by manufacturer.
- C. Remove and replace liquid materials that cannot be applied within thief stated shelf life.
- D. Store sheets and rolls according to manufacturers written instructions.
- E. Protect stored materials from direct sunlight.

1.07 FIELD CONDITIONS

- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until liquid or mastic accessories have cured.
- B. Do not apply to a damp or wet substrate.
- C. Do not apply in snow, rain, fog or mist.

1.08 WARRANTY

- A. Contractor shall correct defective Work within a five year period after Date of Substantial Completion; remove and replace materials concealing waterproofing at no extra cost to Owner.
- B. Special Installer's Warranty: Written waterproofing Installer's warranty, signed by the Installer. covering work of this section, for warranty period of two years.

PART 2 PRODUCTS

2.01 MEMBRANE MATERIALS

- A. CLEAR, OR WHITE, POLYETHYLENE SHEET PLASTIC WILL NOT BE ACCEPTED UNDER ANY CIRCUMSTANCES.
- B. Manufacturers
 - 1. Underslab Vapor Barrier: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - a. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - 1) W.R. Meadows, Inc. - Perminator - Class A.
 - b. Products by other manufacturers may be considered provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect.
 - 1) Floor Seal Technology, Inc. TruBarrier 10 mil: www.floorseal.com
 - 2) Insulation Solutions, Inc; Viper II 10 mil: www.insulationsolutions.com
 - 3) Inteplast Group: Barrier Bac IntePlus XF VB-250: www.barrierbac.com

- 4) Raven Industries; VaporBlock 10 mil: www.ravenefd.com
- 5) Stego Industries LLC; Stego Wrap 10 mil: www.stegoindustries.com
- 6) Tex-Trude, LP; Xtreme 10 mil: www.tex-trude.com
- 7) W.R. Meadows; Perminator: www.wrmeadows.com

C. Product Requirements

- 1. Vapor Barrier: 10 mil vapor retarder.
 - a. Vapor transmission rate: 0.027 or less.
 - b. Puncture resistance: ASTM D1709, Minimum 2700 grams.

D. Materials

- 1. General: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
 - a. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.
- 2. Joint Sealing Compounds: Low-viscosity, two component, asphalt-modified sealer. All protrusions (pipes, etc.) Shall have a premolded collar surround to be sealed in place.
- 3. Mastic, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes recommended by waterproofing manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions are acceptable prior to starting this work.
- B. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.
- C. Verify items that penetrate surfaces to receive waterproofing are securely installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protect adjacent surfaces from damage not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions; vacuum substrate clean.
- C. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.
- D. Seal cracks and joints with sealant using depth to width ratio as recommended by sealant manufacturer.
- E. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.

3.03 INSTALLATION - VAPOR BARRIER

- A. Install vapor barrier in accordance with manufacturer's instructions.
- B. Roll out membrane, and minimize wrinkles and bubbles.
- C. Membrane to cover entire pour area.

- D. All vapor barrier joint/seams, both lateral and butt, are to be overlapped minimum 6 inches and taped using minimum 4 inch wide tape provided by the manufacturer.
 - 1. Tape area of adhesion to be free from dust, dirt and moisture to allow maximum adhesion of tape.
- E. Vapor barrier is to be turned up on all vertical foundation walls the full thickness of the concrete slab on grade. Adhere to the walls with an adhesive provided by the manufacturer of the waterproofing sheet.
- F. Per manufacturers requirements create collars, made from the vapor barrier material, to seal around all pipe, duct, rebar and conduit/wire penetrations. Tape collars completely.
- G. In the event that the vapor barrier is damaged during or after installation, repairs must be made. Cut a piece of vapor barrier material large enough to cover the damage by a minimum overlap of 6 inch in all directions. Clean all adhesive areas and tape.

3.04 PROTECTION

- A. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION

SECTION 072100 - THERMAL INSULATION**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Board insulation at perimeter foundation wall.
- B. Sprayed-in-place thermal insulation (2 lb.) air barrier system at all exterior cavity wall construction.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 035216 - Lightweight Insulating Concrete: Roof insulation.
- C. Section 042000 - Unit Masonry: Supporting construction for insulation..
- D. Section 054100 - Cold-Formed Exterior Steel Stud Framing: Supporting construction for sprayed-in-place and batt insulation.
- E. Section 075400 - Thermoplastic Membrane Roofing: Insulation specified as part of the roofing system.
- F. Section 075700 - Coated Foamed Roofing: Insulation specified as part of roofing system.
- G. Section 078400 - Firestopping: Fire safing.
- H. Section 092116 - Gypsum Board Assemblies: Acoustic insulation inside walls and partitions.
- I. Sections 23 in regards to duct, equipment and pipe insulation.

1.03 REFERENCE STANDARDS

- A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation 2015a.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2015a.
- C. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria and product limitations.
- C. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Sprayed-in-Place Thermal Insulation:
 - 1. Provide data on product characteristics, product testing, product performance criteria, and product limitations.
 - a. Provide specific data that product is approved for direct application on cmu substrate as part of cmu/masonry veneer cavity wall and/or exterior sheathing as part of the metal stud/sheathing/masonry veneer cavity wall construction.
 - b. Provide product data on all auxiliary components; primer, seam tape and transition strip materials.
 - c. Provide specific data that product has been tested and is approved for use as an air barrier.
 - d. Provide hydrostatic water resistance pressure test results.

- e. Shop Drawings: Indicate locations and extent of sprayed-in-place thermal insulation air barrier system assemblies and details of all typical conditions, intersections with other envelope assemblies and materials, membrane counter-flashings, and details showing how gaps in construction will be bridged, how inside and outside corners are negotiated, how materials that cover the insulation are secured, how air-tight conditions are maintained, and how miscellaneous penetrations such as conduits, pipes, electric boxes and similar items are sealed.
- 2. Quality Assurance Program: Provide evidence of current accreditation of the subcontractor and certification of installers under the Air Barrier Association of America's (ABAA) Quality Assurance Program. Provide accreditation and certification information on the form included in the Form of Proposal.
- F. Manufacturer certificate, located in the FOP, to be submitted with the bid, for the proposed sprayed-in-place thermal insulation system confirming that the sprayed-in-place thermal insulation system installer is approved to install the proposed sprayed-in-place thermal insulation system.

1.05 FIELD CONDITIONS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

1.06 SEQUENCING

- A. Sequence work to ensure fireproofing and firestop materials are in place before beginning work of this section.

1.07 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of building insulation through one source.
- B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
 - 1. Surface - Burning Characteristics: ASTM E 84.
 - 2. Fire - Resistance Ratings: ASTM E 119.
 - 3. Combustion Characteristics: ASTM E 136.
- C. Sprayed-In-Place Thermal Insulation: Current accreditation of the subcontractor and certification of installers in accordance with the Air Barrier Association of America's (ABAA) Quality Assurance Program.
 - 1. Install in accordance with ABAA and training requirements outlined in ULC S705.2-05 Installation Standard.
- D. Sprayed-In-Place Thermal Insulation Field Quality Control:
 - 1. ABAA Site Inspections: ABAA to verify conformance with the manufacturers instructions, the ULC S705.2 Installation Standard, the ABAA Quality Assurance Program and requirements of this specification.
 - a. Inspections and testing shall be carried out at 50 percent of sprayed-in-place thermal insulation completion. Forward written inspection reports to the Architect within 10 working days of the inspection and test being performed.
 - b. If the tests reveal any defects, promptly remove and replace defective work at no additional expense to the Owner.

- 1) If the preliminary or final written inspection report indicates the system will not or has not passed then an additional ABAA inspection shall be conducted to ensure defects and deficiencies have been corrected and a passing ABAA report can be obtained.

1.08 PRE-INSTALLATION MEETING

- A. Preinstallation Meeting: Per Section 042000 - Unit Masonry the general contractor/construction manager will conduct a preinstallation conference prior to the masonry installation occurring. The sprayed-in-place thermal insulation installer is to attend this preinstallation conference too coordinate the installation of the sprayed-in-place insulation with the masonry subcontractor.
 1. Review foreseeable methods and procedures related to sprayed-in-place thermal insulation installation, including but not necessarily limited to the following:
 - a. Protection of through wall flashing.
 - b. Spray around horizontal reinforcing eyes.
 - c. Hot and cold weather protection.
 - d. Protection of work in process and installed.
 - e. Sequencing of work with masonry installation.
 - f. Review percentages of completion when ABAA testing will be conducted.
 - g. Has the project been registered with the ABAA for testing?
 - 1) If registered has the ABAA testing agent been notified?

1.09 MOCK-UP

- A. Sprayed-in-place thermal insulation to be included in the mock-up wall construction.

PART 2 PRODUCTS

2.01 FOAM BOARD INSULATION MATERIALS

- A. Extruded Polystyrene (XPS) Board Insulation: Complies with ASTM C578 with either natural skin or cut cell surfaces.
 1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
 2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
 3. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88) per 1 inch thickness at 75 degrees F mean temperature.
 4. R-value; 1 inch of material at 72 degrees F: 5, minimum.
 5. Board Thickness at Foundation Wall: 2 inches.
 6. Board Edges: Square.
 7. Thermal Conductivity (k factor) at 25 degrees F: 0.18.
 8. Thermal Resistance: R of 7.5 for 1-1/2 inch.
 9. Compressive Resistance: 25 psi.
 10. Board Density: 1.6 lb/cu ft.
 11. Water Absorption, Maximum: 0.3 percent, by volume.
 12. Manufacturers: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include;

- a. Certainteed Saint Gobain: www.certainteed.com
- b. Dow Chemical Company: www.dow.com.
- c. Kingspan Insulation LLC : www.trustgreenguard.com/#sle.
- d. Owens Corning Corporation: www.ocbuildingspec.com/#sle.

2.02 SPRAYED-IN-PLACE THERMAL INSULATION

- A. Manufacturers: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - 1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. NCFI Polyurethanes, Division of BMC: InsulBloc 2 lb. Spray Foam System 11-017.
 - b. NCFI Polyurethanes, Division of BMC: Sealite 1/2 lb. Spray Foam System.
 - 2. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions, profiles, and formulations are minor and do not change the design concept as judged by the Architect.
 - a. NCFI Polyurethanes, Division of BMC: InsulBloc 2 lb. Spray Foam System 11-017: www.ncfi.com
 - b. Accella Polyurethane Systems, Inc.: EcoBay Closed Cell: www.accellapolyurethane.com
 - c. BASF Polyurethane Foam Enterprises, LLC: Walltite 2 lb. Air Barrier System: www.basf-pfe.com
 - d. Demilec USA, LLC: Heatlok Soy 200 Plus: www.demilecusa.com
 - e. Gaco Western: Gaco WallFoam 183M 2 lb.: www.gaco.com
 - f. Henry Company: Permax 2.0: www.henry.com
 - g. Icynene Inc.: ProSeal MD-C-200 2 lb. Spray Foam Insulation: www.icynene.com
 - h. JohnsManville Insulation Systems: JM Corbond III 2 lb.: www.jm.com
 - 3. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions, profiles, and formulations are minor and do not change the design concept as judged by the Architect.
 - a. NCFI Polyurethanes, Division of BMC: Sealite 1/2 lb. Spray Foam System 11-017: www.ncfi.com
 - b. BASF Polyurethane Foam Enterprises, LLC: Enertite 1/2 lb. Air Barrier System: www.basf-pfe.com
 - c. Demilec APX 1.2: www.demilecusa.com
 - d. Gaco Western: Gaco WallFoam Open Cell Foam 052N 1/2 lb.: www.gacowallfoam.com
 - e. Icynene Inc.: LD-R-50 1/2 lb. Spray Foam Insulation: www.icynene.com
 - f. JohnsManville Insulation Systems: JM ocSPF 1/2 lb.: www.jm.com
- B. Spray applied closed cell, 2 lb. polyurethane foam insulation, air seal and water repellent treatment for CMU cavity wall and cold formed metal stud framed walls throughout the project.
 - 1. Physical material properties shall be:

2. Core Density 1.9-2.2 lb/ft per ASTM D-1622
 3. Water Vapor Transmission *{font-family:Times New Roman;font-size:10pt;}img{max-width:300px;max-height:300px;width:225px;height:225px;} span {white-space:pre; }
 4. R-Value 6.7 minimum at 1 inch thick per ASTM C-518
 5. R-Value Aged: 6.4 minimum at 1 inch thick per ASTM C-1029
 6. Compressive Strength 25 (min) psi per ASTM D-1621
 7. Flame Spread *{font-family:Times New Roman;font-size:10pt;}img{max-width:300px;max-height:300px;width:225px;height:225px;} span {white-space:pre; }
 8. Smoke Developed *{font-family:Times New Roman;font-size:10pt;}img{max-width:300px;max-height:300px;width:225px;height:225px;} span {white-space:pre; }
 9. Air Leakage - Infiltration: 0.00 @ 1.57 psf/cfm/ft2 per ASTM E-283
 10. Air Leakage - Exfiltration: 0.00 @ 1.57 psf/cfm/ft2 per ASTM E-283
 11. Air Barrier System Test: ASTM E 2357 and NFPA 285
 12. Tensile Bond Strength >45 for masonry psi per ASTM D-1623
 13. Hydrostatic Water Pressure Resistance Test: No failure at 56.5 feet head pressure per AATCC 127-1998.
- C. Refer to the wall types on the A0.1 drawing sheet for thickness of spray polyurethane material required.
- D. Apply spray polyurethane foam directly to the masonry block or exterior sheathing in accordance with the manufacturers installation instructions. All surfaces to be sprayed with foam must be free of moisture and ice.
- E. Do not apply spray polyurethane foam during inclement weather or when ambient temperatures and humidity are outside the ranges prescribed by the manufacturer.
1. Optimum Adhesion: Sprayed-In-Place Thermal Insulation Installer to determine appropriate grade of adhesive material to be used on project based on; project type, substrate type, time of year of installation, average daily temperatures forecasted during installation, and other factors, as determined by the sprayed-in-place thermal insulation manufacturer to maintain the specified requirements. No additional compensation will be considered, or due, the sprayed-in-place thermal insulation contractor if the sprayed-in-place thermal insulation manufacturer requires a tack coat, or the type or grade of adhesive, originally bid, to be changed due to project type, environmental and/or temperature factors, to maintain the specified requirements and construction schedule.
- F. Materials:
1. Transition Strip and Seam Tape Primer:
 - a. Primer to facilitate adhesion of flashings to fiberglass faced sheathing, concrete and masonry substrates.
 - 1) Manufacturers: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work

include:

- (a) Grace Construction Products: Perm-A-Barrier WB Primer
- (b) W. R. Meadows, Inc.: Mel-Prime
- (c) Product approved for use by sprayed-in-place thermal insulation manufacturer.

2. Seam Tape:

- a. Self-adhered flashing with cross-laminated, high density polyethylene sheet backed with pressure-sensitive rubberized asphalt adhesive.
 - 1) Manufacturers: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - (a) Grace Construction Products: Vycor Plus
 - (b) W. R. Meadows, Inc.: Air-Sheild 25 mil Flashing Tape
 - (c) Product approved for use by sprayed-in-place thermal insulation manufacturer.

3. Transition Strip Materials:

- a. Contractor option to use self-adhered sheet product or fluid applied product for the transition strip materials.
- b. Self-adhered Transition Strip Material: Minimum 1 mm self-adhered flashing sheet with cross-laminated, high density polyethylene sheet backed with pressure-sensitive rubberized asphalt adhesive. Install transition strip materials at all wall openings, transitions in substrate and connections to adjacent elements:
 - 1) Manufacturers: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - (a) Carlisle Coatings and Waterproofing: CCW-705 TWF
 - (b) Grace Construction Products: Perm-A-Barrier Flashing
 - (c) Henry: Blueskin SA
 - (d) Protective Coatings Technology, Inc.: Poly-Wall Crack Guard
 - (e) Tremco, Inc.; ExoAir 110
 - (f) W. R. Meadows, Inc.: Air Shield
- c. Fluid-applied Transition Strip Material System: One component rubberized air barrier material. Suitable for spray, roller or brush application direct to substrate. Install by roller/brush in two minimum 13 mil wet thickness applications, or one 26 mil wet thickness application by spray. Provide all additional auxiliary materials necessary to complete the entire system: Reinforced, nonwoven, polyester sheathing joint fabric with preformed corners, polyester-faced 30-mil thick, self-sealing, rubberized asphalt membrane, and water-based primer.
 - 1) Manufacturers: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:

- (a) BASF: Enershield-1, Quick Corner 6, TF Membrane, WS
Flashing Primer: www.enershield.basf.com
- (b) Prosoco - R-Guard Fast Flash
- (c) W. R. Meadows, Inc.: Air Shield LM

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

- A. Adhere a 6 inch wide strip of polyethylene sheet over construction, control and expansion joints with double beads of adhesive each side of joint.
 - 1. Tape seal joints.
 - 2. Extend sheet full height of joint.
- B. Install boards horizontally on foundation perimeter.
 - 1. Place boards to maximize adhesive contact.
 - 2. Install in running bond pattern.
 - 3. Butt edges and ends tightly to adjacent boards and to protrusions.
- C. Extend boards over expansion joints, unbonded to foundation on one side of joint.
- D. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- E. Immediately following application of board insulation, place protective boards over exposed insulation surfaces.

3.03 SPRAYED-IN-PLACE THERMAL INSULATION AIR BARRIER SYSTEM

- A. Equipment used to spray insulation shall comply with ABAA ULC S705.2 and the manufacturer's recommendations.
- B. Record equipment settings daily as required by the ABAA ULC S705.2 installation standard.
- C. Apply in consecutive passes as recommended by manufacturer and thickness indicated on drawings. Passes shall not be less than 1/2 inch and not greater than 2 inches.
- D. Install within manufacturer's tolerances, but not more than minus 1/4 inch or plus 1/2 inch.
 - 1. The total average thickness, tested and provided on the final ABAA Audit Report, for the sprayed insulation installed on the wall in the field shall be the minimum thickness indicated, for the various wall types, as shown on the drawings.
- E. Surface of foam insulation to be free of voids and embedded foreign objects.
- F. Remove masking materials and overspray from adjacent areas immediately after foam surface has hardened. Ensure cleaning methods do not damage work performed by other sections.
- G. Trim as required, any excess thickness that would interfere with the application of cladding/covering system by other trades.

- H. Complete connections to other components and repair any gaps, holes or other damage using material which conforms to ABAA ULC S710.1 or ABAA ULC S711.1 and installed in accordance with ABAA ULC S710.2 or ABAA ULC S711.2 as applicable.
- I. Fill exterior metal stud boxed/beam headers, jambs, and sills at all openings completely with 0.5 lb. spray insulation.
- J. Transition Strip and/or Fluid-Applied Material Installation: Install transition strip/fluid-applied materials to provide continuity throughout the building envelope. Install materials in accordance with manufacturer's recommendations and the following:
 - 1. Priming, seam tape/fluid-applied material, and transition strips are required by RossTarrant whether or not they are required by a manufacturer to meet the ABAA air leakage requirements of ASTM E2357.
 - 2. Apply primer for seam tape and transition strips. Allow primer to dry completely before transition strip application. Apply as many coats as necessary for proper adhesion.
 - 3. Position subsequent sheets of transition strips applied above so that membrane overlaps the membrane sheet below by a minimum of 2 inches, unless greater overlap is required by manufacturer. Roll into place with roller.
 - 4. Overlap horizontally adjacent pieces of transition strips a minimum of 2 inches, unless greater overlap is required. Roll seams with roller.
 - 5. Seal around all penetrations with a transition strip or other procedure.
 - 6. At changes in substrate plane, provide transition material to make a smooth transition from one place to another.
 - 7. Provide mechanically fastened non-corrosive metal sheet to span gaps in substrate plane and to make a smooth transition from one plane to another. Membrane shall be continuously supported by substrate.
 - 8. At through-wall flashings, provide an additional 6 inch wide strip of membrane counterflashing to seal top of through-wall flashing to membrane. Seal exposed top edge of strip with bead of mastic.
 - 9. At deflection and control joints, provide backup for the membrane to accommodate anticipated movement.
 - 10. At expansion and seismic joints provide transition to the joint assemblies.
 - 11. At the top of parapet walls, provide transition material over top of parapet to transition with roof membrane.
 - 12. Do not allow materials to come into contact with chemically incompatible materials.
 - 13. Do not expose transition membrane to sunlight longer than recommended by manufacturer.
 - 14. Inspect installation prior to enclosing assembly and repair damaged areas with sprayed-in-place thermal insulation air barrier system.

3.04 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 075400 - THERMOPLASTIC MEMBRANE ROOFING**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Fully adhered PVC membrane roofing system.

1.02 RELATED REQUIREMENTS

- A. Section 035216 - Lightweight Insulating Concrete: Roof insulation.
- B. Section 061000 - Rough Carpentry: Roof blocking, parapet sheathing.
- C. Section 077100 - Manufactured Roof Specialties: Fascia, Reglets and Counterflashing and expansion joints.
- D. Section 092116 - Gypsum Board Assemblies: Parapet sheathing.

1.03 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.04 REFERENCE STANDARDS

- A. ASCE/SEI 7-10 - Minimum Design Loads for Buildings and Other Structures: Wind design.
- B. ASTM C728 - Standard Specification for Perlite Thermal Insulation Board; 2013.
- C. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2013.
- D. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2014.
- E. ASTM D6630 - Standard Guide for Low Slope Insulated Roof Membrane Assembly; current edition.
- F. NRCA ML104 - The NRCA Roofing and Waterproofing Manual; National Roofing Contractors Association; Fifth Edition, with interim update
- G. UL (RMSD) - Roofing Materials and Systems Directory; Underwriters Laboratories Inc.; current edition.
- H. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.
- I. UL 580 - Tests for Uplift Resistance of Roof Assemblies ; current edition.
- J. UL 1897 - Uplift Tests for Roof Covering Systems; current edition.

1.05 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Lightweight Insulating Concrete: Roofing installer to coordinate lightweight insulating concrete manufacturer to ensure that a tested insulation/roof system can be provided between the two manufacturer's to meet the Special Project Full System Warranty as specified in the roofing section.
- C. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.

- D. ASCE 7-10: Provide thermoplastic membrane, base flashings, and component materials that meet the wind design requirements as a part of a roofing system, as applicable.
 - 1. Refer to the structural drawings for wind speeds, building exposure, and building risk category.
- E. UL Listing: Provide thermoplastic sheet roofing system and component materials that have been tested for application and slopes indicated and are listed by Underwriters Laboratories, Inc. (UL) for Class A external fire exposure.
 - 1. Provide roof-covering materials bearing UL Classification Marking on bundle, package, or container indicating that materials have been produced under UL's Classification and Follow-up Service.
 - 2. Provide thermoplastic sheet roofing system that has been tested in accordance with UL 580 or UL 1897.
- F. Insulation Fire-Performance Characteristics: Provide insulation materials that are identical to materials whose fire-performance characteristics have been determined for the assemblies of which the insulation materials are a part, per test method listed below, by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Surface Burning Characteristics: ASTM E 84.
 - 2. Fire Resistance Ratings: ASTM E 119.
- G. All material, the installation thereof shall meet or exceed the minimum criteria of the Kentucky State Building Code.

1.06 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
 - 1. Base flashings and membrane terminations.
- C. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing systems to maintain warranty.
 - 1. add a choice
- D. Qualification Data: For Installer and manufacturer.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.
- F. Warranties: Special warranties specified in this Section.
- G. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.
- H. Wind Uplift Design: Provide wind uplift calculation that include wind uplift performance tested per ASCE 7-10 Envelope Procedure. Calculations to include:
 - 1. Minimum Design Wind-Resistance Loads: Include field of roof, perimeter, and corner uplift pressures for each applicable roof area.
 - 2. Fastener pattern, spacing, and/or enhanced adhesive requirements.
 - 3. Additional wind uplift safety factors required by the building area, size or shape, and manufacturers requirements to meet the specified warranty requirements.

- I. Manufacturer certificate, located in the FOP, to be submitted with the bid, for the proposed PVC roof system confirming that the PVC roof system installer is approved to install the proposed PVC roof system.

1.07 QUALITY ASSURANCE

- A. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.
- B. Manufacturer Qualifications: A qualified manufacturer that has FMG and/or ASCE approval for membrane roofing system identical to that used for this Project. Obtain primary products, including each type of roofing sheet, flashings, adhesives and/or fasteners from a single manufacturer. Provide secondary products as recommended by manufacturer of primary products for use with roofing system specified.
- C. Installer Qualifications: Engage an experienced installer to perform Work of this Section who has specialized in installing roofing that is required for this Project; who is approved, authorized, or licensed by the roofing system manufacturer to install manufacturer's products; and who is eligible to receive the project specific full system roofing manufacturer's warranty as specified. A minimum of five (5) years experience with the manufacturer and the specified system is required.
 - 1. Installer's Field Supervision: Require Installer to maintain a full-time supervisor/foreman on job site during times that PVC sheet roofing work is in progress and who is experienced in installation of roofing systems similar to type and scope required for this Project. A minimum of four (4) years experience with the manufacturer and the specified system is required.
- D. Source Limitations: Obtain components for membrane roofing system approved by roofing membrane manufacturer.
- E. Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
 - 1. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.
 - 2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.
- F. Preinstallation Conference: Conduct conference at Project site. Comply with requirements in Division 1 Section "General Requirements." Review methods and procedures related to roofing system including, but not limited to, the following:
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
 - a. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - b. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

- c. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
- d. Manufacturer's technical representative to be on site during first day of installation.

1.08 PRE-INSTALLATION MEETING

- A. Convene one week before starting work of this section.
- B. Review preparation and installation procedures and coordinating and scheduling required with related work.
- C. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at project site. Meet with Installer (Roofer), installers of substrate construction (roof decks) and other work adjoining roof system including penetrating work and roof accessories, Architect, Owner, and representatives of other entities directly concerned with performance of roofing system including (as applicable) Owner's insurers and test agencies. This meeting must be attended by the on site Foreman overseeing the work.
 - 1. Review requirements (Contract Documents), submittals, status of coordinating work, availability of materials, and installation facilities and establish preliminary installation schedule. Review requirements for inspections, testing, certifications, forecasted weather conditions, governing regulations, insurance requirements, and proposed installation procedures.
 - 2. Discuss roofing system protection requirements for construction period extending beyond roofing installation. Discuss possible need for temporary roofing.
 - 3. Record discussion, including agreement or disagreement on matters of significance; furnish copy of recorded discussions to each participant. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
- D. Preapplication Roofing Conference: Approximately 2 weeks before scheduled commencement of sheet roofing installation and associated work, meet at Project site with Installer, installer of each component of associated work, installers of roof drains, installers of deck or substrate construction to receive roofing work, installers of rooftop units and other work in and around roofing that must precede or follow roofing work (including mechanical work if any), Architect, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of the Work, including (where applicable) Owner's insurers, test agencies, and governing authorities.
 - 1. Meet with Owner; Architect; Owner's insurer, if applicable; testing and inspecting agency representative; roofing Installer; roofing system manufacturer's representative; deck Installer; and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 - 2. Review foreseeable methods and procedures related to roofing work, including but not necessarily limited to the following:
 - a. Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations, and other preparatory work performed by other trades.
 - b. Review structural loading limitations of steel deck and inspect deck for loss of flatness and for required mechanical fastening.
 - c. Review roofing system requirements (drawings, specifications, and other contract documents).

- d. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - e. Review required submittals, both completed and yet to be completed.
 - f. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing.
 - g. Review and finalize construction schedule related to roofing work and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - h. Review required inspection, testing, certifying, and material usage accounting procedures.
 - i. Review temporary protection requirements for roofing system during and after installation.
 - j. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not a mandatory requirement).
 - k. Review of roof observation and repair procedures after roofing installation.
3. Record (Contractor) discussions of conference, including decisions and agreements (or disagreements) reached, and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.

1.09 COMPLETION MEETING

- A. A meeting shall be held at the completion of the project and attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Contractor and the Manufacturer's representative. The Contractor shall complete all punch list items and acquire Manufacturer's warranty for final submittal to Architect.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.11 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.12 WARRANTY

- A. General Warranty: The warranties 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. Three executed copies of all warranties must be submitted to the Architect.
- B. Special Project Full System Warranty:
1. The entire installation from the deck up, including but not limited to insulation, fasteners, roofing membranes, edge metals, counter flashing, base flashings and other components of the membrane roofing system, shall be warranted against defects in material and workmanship as evidenced by leaks, flashing membrane deterioration, blisters, splits, etc., as required to maintain roofing system in a watertight condition for the period stated below starting from the date of final acceptance by the Owner. Should leak occur, the Manufacturer shall repair or replace the roof materials as required, to provide a watertight condition, at its own expense, with no dollar limit (NDL) or prorated amount. The warranty shall cover fully and completely the entire roofing system and the requirements as specified herein. Particularly warranty shall not include language releasing manufacturer of responsibility if not installed by approved roofing Contractor or in accordance with manufacturer's specifications, or materials not specifically made by the manufacturer. It is the manufacturer's responsibility to know by whom and how roofing was installed to eliminate this. The guarantee is for a complete system and shall not be limited by any previous work accomplished on the roof prior to this contract and elected to remain as a part of the system herein specified:
 - a. Total Systems Warranty shall be for a period of twenty (20) years NDL from the date of substantial completion.
 - b. This warranty shall be jointly signed by the Manufacturer of the primary roofing material and the authorized installer.
 - c. Repairs and replacements required because of events beyond the Contractor's/Installer's/ Manufacturer's control and beyond the limits specified herein shall be completed by the Contractor/Installer and paid for by the Owner.
- C. Installer shall provide a typed certificate stating the following:
1. Type of roof.
 2. Installer.
 3. Installer's address and telephone number.
 4. Manufacturer
 5. Manufacturer's address and telephone number.
 6. Who to contact in case of roof failure.
 7. Warranty period with beginning and ending dates. Certificate shall be framed and bolted (not hung) on the wall as directed by Architect. Copies of certificate shall be included with manufacturer's written warranty and submitted to Architect.
 8. Any representative who inspects roof must copy all inspection reports to the office of RossTarrant Architects, Inc. for the life of the roof.
- D. Lightweight insulating concrete warranty to be provided within the Special Project Full System Roof Warranty as required under this Section. Lightweight insulating concrete warranty is not to be a separate pass-thru warranty attached to the roof warranty.

1. The roofing subcontractor shall not offer the LWIC/roofing warranty cost as a deduct to their bid price.
 2. The roofing and lightweight insulated concrete warranty is to be provided by the roofing contractor and is not to be obtained at a later date by the General Contractor/Construction Manager.
- E. Warranty Work: All warranty and/or maintenance work shall be documented by the individual performing the work with before and after pictures of the work and a detailed breakdown of cost. Submit to the Owner and the Architect. Time spent by the Architect for manufacturer warranty problems shall be billed to the manufacturer.
- F. Recommended Maintenance: In addition to the guarantee, the Contractor shall furnish to the Owner the Manufacturer's printed recommendations for proper maintenance of the specified roof system including inspection frequencies, penetration addition policies, temporary repairs, and leak call procedures.
1. Arrange for a meeting of the Owner, Architect, Manufacturer, and Installer to review procedure for general maintenance by the Owner that will not void warranty, as well as procedure for reporting roof problems, maintenance, and/or warranty problems to manufacturer.
 2. All warranty and/or maintenance work shall be documented by the individual performing the work with before and after pictures of the work and detailed breakdown of cost. Submit to Owner and Architect time spent by Architect for manufacturer's warranty problems shall be billed to the manufacturer.
- G. Contractor's Warranty: Roofing Contractor shall provide a written two (2) year warranty for materials and workmanship commencing with the date of substantial completion. The warranty shall cover all labor and all material necessary to maintain complete water tightness, including that required to repair and all roof leaks and water infiltration through the roof, flashings, and wall copings in any configuration including standing water at no additional cost to the Owner.

1.13 PROJECT FOREMAN/CONTRACTOR CERTIFICATION

- A. Both the project Foreman and the Contractor shall provide a sworn notarized statement to the Owner and the Architect that the entire roofing system has been fully and completely integrated with the through-wall flashing system following industry standards for a permanent watertight integrated system. All means, methods, materials and labor to perform this integration is fully a part of this contract.

PART 2 PRODUCTS

2.01 PVC SHEET ROOFING MEMBRANE

- A. Manufacturer: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include, but are not limited to the following:
1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements, aesthetics, and formulations of the following:
 - a. Roof Field: Sarnafil G410 EnergySmart fleeceback by Sika Sarnafil, Inc.:
www.usa.sarnafil.sika.com
 - b. Flashings: Sarnafil G410 in conjunction with loose felt sheet.
 2. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions, profiles, and formulations are minor and do not change the design concept as judged by the Architect:

- a. Johns-Manville: JM60 Mil/60 Mil MIN: www.jm.com
 - b. Sika Sarnafil, Inc.: www.usa.sarnafil.sika.com
 - c. Soprema: Sentinel P150: www.soprema.us.com
- B. Due to differences in roofing manufacturer standards for membrane reinforcement provisions for fiberglass and polyester are included. Reinforcements listed below are acceptable and manufacturers are to provide their standard of one listed below:
 - 1. PVC sheet ASTM D 4434, Type II, Grade 1, fiberglass reinforced for fully adhered installation.
 - 2. PVC Sheet ASTM D4434, Type III, Grade 1, polyester fiber reinforced for fully adhered installation.
- C. Thickness: Specified thickness 60 mils MINIMUM thickness as required to meet the specified warranty period.
- D. Exposed Face Color for Field of Roof: White.
- E. Exposed Face Color for Vertical/Parapet Walls: White.

2.02 AUXILIARY MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
 - 1. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet membrane.
 - 1. Sheet flashing membrane sheet is not required to have fleece backing unless required by manufacturer.
 - 2. Felt Sheet: Provide 9 oz. felt sheet to be fully adhered to parapet walls or other vertical surfaces.
 - a. Acceptable products:
 - 1) Sika Sarnafil - Sarnafelt
- C. Roof Membrane and Flashing Bonding Adhesive: Manufacturer's standard water or solvent-based bonding adhesive for field membrane, and solvent-based bonding adhesive for base flashings.
 - 1. Solvent-Based Properties and Characteristics
 - a. High strength solvent based contact adhesive allowing bonding to porous and non-porous substrates.
 - b. Base: Synthetic rubber.
 - c. Solids: 24.2%
 - d. Flash Point: 16 degrees F closed cup
 - e. Brookfield Viscosity: 2700 Centipoises
 - 1) Acceptable products, compatible with manufacturers roof membrane and installation system:
 - (a) Carlisle - Sure-Flex PVC Bonding Adhesive
 - (b) JM - PVC Membrane Adhesive - Solvent Based

(c) Sika Sarnafil - Sarnacol 2170

2. Water-Based Properties and Characteristics:
 - a. Acceptable products, compatible with manufacturers roof membrane and installation system:
 - 1) Sika Sarnafil - Sarnacol 2121
 - 2) JM - PVC Membrane Adhesive - Water Based
 3. RossTarrant Architects will not accept any membrane or field flashing adhesives other than the solvent-based or water-based adhesives described in this specification. Single or multi-component low-rise foams, urethanes, or any other type of single or multi-component adhesives will not be substituted or accepted.
- D. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.
- E. Metal Termination Bars: Manufacturer's standard predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.
1. Provide "Sarnastop," or equivalent, termination bar at areas where parapet walls occur.
- F. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470/ASCE 7-10, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
- G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, termination reglets, cover strips, and other accessories.
- H. Tapered Polyisocyanurate Edge Strip: Provide tapered polyisocyanurate on top of blocking at parapets with fascia. Tapered panels composed of closed cell polyisocyanurate, which are bound with fiber glass reinforced facers on both sides. Provide panels that are in full compliance with ASTM C 1289, Type II, Class 1, Grade 2, 20 psi. The panels shall provide for a slope of one quarter (1/4) inch per foot.
1. Atlas Roof Insulation: Gemini Tapered Edge Strip
- I. Tapered and Flat Polyisocyanurate Board at Roof Drain Sumps: Provide tapered and flat polyisocyanurate insulation in the roof drain sump. Tapered and flat panels composed of closed cell polyisocyanurate, which are bound with fiber glass reinforced facers on both sides. Provide panels that are in full compliance with ASTM C 1289, Type II, Class 1, Grade 2, 20 psi. The tapered panels shall provide for a slope of one quarter (1/4) inch per foot.
- J. Roof Edge/Drip Edge Flashing: Manufacturers standard 24 gauge metal clad with 30 mil PVC coating for heat welding to meet warranty requirements.
1. Color: White
- K. Walkway Pads: Provide walkway pads/roll in locations as shown on the drawings. Provide maximum 6 inch space between each pad/roll to allow for water drainage. Contractor's option to use pad or roll product.
1. Pad/Roll: Minimum 30 inch x 30 inch, or minimum 30 inch x 4 foot, 60 mil, fiberglass reinforced material with non-slip surface pattern. Fully adhere center and heat weld entire perimeter of pad. Color to be Light Gray.
 - a. Basis of Design: Saranfil Saranpad.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 - 1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
 - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Verify metal deck is clean and smooth, supported, secure, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system. Verify that flatness and fastening of metal roof decks comply with installation tolerances specified in Division 5 section "Steel Decking".
 - 4. Verify deck surfaces are dry and free of snow or ice.
 - 5. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips, nailing strips and reglets are in place.
 - 6. Verify that nailers and blocking match thickness of the roof insulation.
- B. Bonding Adhesive Test: Roofing contractor to verify lightweight insulating concrete system moisture content prior to starting roof membrane installation. Moisture content to be below roof membrane manufacturers requirements prior to installation of bonding adhesive. Testing standards and procedures per roof membrane manufactures requirement to meet the specified warranty.

3.02 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flash and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.03 FULLY ADHERED ROOFING MEMBRANE INSTALLATION

- A. Install roofing membrane over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.
 - 1. Install sheet according to ASTM D 5036.
- B. Accurately align roofing membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- C. Bonding Adhesives: Roofing Installer and Roofing Membrane Manufacturer to determine appropriate adhesive material to be used on project based on; project type, substrate type, time of year of installation, average daily temperatures forecasted during installation, and other factors, as determined by the roof membrane manufacturer to maintain the specified warranty. No additional compensation will be considered, or due, the roofing contractor if the roof membrane manufacturer requires the type of bonding adhesive, originally bid, to be changed due to project type, environmental and/or temperature factors, to maintain the specified warranty. Either adhesive listed below is acceptable for use:

1. Solvent-Based Bonding Adhesive: Apply solvent-based bonding adhesive to substrate and/or roof membrane at rate required by the roof membrane manufacturer. Apply and allow first coat of solvent based bonding adhesive to dry. Apply second coat of solvent based adhesive and install roof membrane. Do not apply bonding adhesive to splice area of roofing membrane to be heat welded.
 2. Water-Based Bonding Adhesive: Apply water-based bonding adhesive to substrate at rate required by the roof membrane manufacturer. Apply single coat, or as required by roof membrane manufacturer, of water-based bonding adhesive and install roof membrane. Do not apply bonding adhesive to splice area of roofing membrane to be heat welded.
- D. RossTarrant Architects will not accept any membrane or field flashing adhesives other than the solvent-based or water-based adhesives described in this specification. Single or multi-component low-rise foams, urethanes, or any other type of single or multi-component adhesives will not be substituted or accepted.

3.04 BASE FLASHING INSTALLATION

- A. Install sheet flashing and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply solvent-based bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with sheet flashing.
- D. Clean seam areas and overlap and firmly roll sheet flashing into the adhesive. Weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashes and mechanically anchor to substrate through termination bars.

3.05 CONCRETE DECK PREPARATION

- A. Fill surface honeycomb and variations with latex filler.
- B. Contractor to confirm dry deck by moisture meter with 12 percent moisture maximum.
- C. Verify that lightweight insulating concrete will pull a minimum of 40 pounds and is dry to the touch.
- D. Test concrete substrate for excessive moisture by pouring one pint of hot bitumen 2400 degrees F on EVT on deck at start of each days work and at start of each roof area or plane. Do not proceed with roofing work if test sample forms can be easily stripped after cooling then substrate is too wet.

3.06 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.
 1. Notify Architect or Owner seven days in advance of date and time of inspection.
- B. Final Roof Inspection Report: After final roof inspection is completed one copy of the final report (hardcopy or digital format) shall be provided to the General Contractor/Construction Manager, Architect, and Roofing Installer.
- C. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.07 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 075400

SECTION 075700 - COATED FOAMED ROOFING**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Spray-applied polyurethane foam insulation.
- B. Silicone roof coatings.
- C. Mineral granules.

1.02 RELATED REQUIREMENTS

- A. Division 5 Section "Metal Deck" for metal deck requirements.
- B. Division 6 Section "Miscellaneous Carpentry" for wood blocking, curbs, cants, and nailers and for wood-based, structural-use roof deck panels.
- C. Division 7 Section "Sheet Metal Flashing and Trim" for foam stops.
- D. Division 7 Section "Manufactured Roof Specialties" for edge metals and accessories.
- E. Division 7 Section "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.03 PERFORMANCE REQUIREMENTS

- A. Watertightness: Provide coated foamed roofing that is watertight and will not permit the passage of water.
- B. Material Compatibility: Provide polyurethane foam, elastomeric coatings, and miscellaneous roofing materials that are compatible with one another and able to bond to substrate under conditions of service and application required, as demonstrated by coated foamed roofing manufacturer based on testing and field experience.
- C. Code Compliance: Meet requirements of 2015 IBC with KY Amendments Section 2603 Foam Plastics.
- D. ASCE 7-10: Provide thermoplastic membrane, base flashings, and component materials that meet the wind design requirements as a part of a roofing system, as applicable.
 - 1. Refer to the structural drawings for wind speeds, building exposure, and building risk category.

1.04 SUBMITTALS

- A. Product Data: For each type of coated foamed roofing product indicated. Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties.
- B. Shop Drawings: Roof plan and details showing extent of roofing, intersections with adjacent surfaces, details of expansion joints, counterflashing, and other items for a complete roofing system.
- C. Installer Certificates: Signed by manufacturer certifying that installers comply with requirements.
- D. Qualification Data: For installers.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for coated foamed roofing.
- F. Research/Evaluation Reports: For coated foamed roofing.
- G. Wind Uplift Design: Provide wind uplift calculation that include wind uplift performance tested per ASCE 7-10 Envelope Procedure. Calculations to include:

1. Minimum Design Wind-Resistance Loads: Include field of roof, perimeter, and corner uplift pressures for each applicable roof area.
 2. Fastener pattern, spacing, and/or enhanced adhesive requirements.
 3. Additional wind uplift safety factors required by the building area, size or shape, and manufacturers requirements to meet the specified warranty requirements.
- H. Manufacturer certificate, located in the FOP, to be submitted with the bid, for the proposed coated foam roof system confirming that the coated foam roof system installer is approved to install the proposed coated foam roof system.
- I. Warranty: Specimen copy of coated foamed roofing manufacturer's special warranty stating obligations, remedies, limitations, and exclusions of warranty.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who is approved, authorized, or licensed by roof coating manufacturer for installation of manufacturer's product over polyurethane foam.
1. Engage an installer who participates in and who has fulfilled requirements of the SPI/SPFD Spray Polyurethane Foam Accreditation Program.
 2. Approved by the silicone coating manufacturer and able to issue a 20 year NDL warranty.
 3. Contractor to provide a listing of at least five projects completed within the last five years that received a 20 NDL warranty. List to include Owner and Architects name and phone numbers.
 4. Contractor to be fully accredited with the SPFA. The installer must be SPFA accredited seven days prior to submittal of the first pay request. An accredited person should be on the job at all times during the installation procedures. Proof of SPFA accreditation or registration in the SPFA accreditation program is to be submitted with the Form of Proposal on bid day. Refer to the Coated Foamed Roofing System Manufacturer's Certification in the Form of Proposal.
- B. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
- C. Source Limitations: Obtain polyurethane foam materials from one producer and coating products from a single manufacturer.
- D. Fire-Test-Response Characteristics: Provide coated foamed roofing systems with the fire-test-response characteristics indicated, as determined by testing identical systems per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
1. Surface-Burning Characteristics: Maximum flame-spread and smoke-developed indices of 75 and 450, respectively; ASTM E 84.
 2. Exterior Fire-Test Exposure: ASTM E 108; Class A.
 3. Fire-Resistance Ratings: ASTM E 119, determined for coated polyurethane foamed roofing as part of a roof assembly.
- E. Comply with recommendations in SPI/SPFD Bulletin AY 104, "Spray Polyurethane Foam Systems for New and Remedial Roofing."
1. Comply with recommendations in NRCA/SPI/SPFD's "Quality Control Guidelines for the Application of Sprayed Polyurethane Foam Roofing."

- F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination," and as follows:

1. Review requirements for coated foamed roofing, including surface preparation specified in other Sections; substrate condition and pretreatment; minimum curing period; forecasted weather conditions; special details and sheet flashings; installation procedures; testing and inspection procedures; and protection and repairs.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original containers with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, shelf life, and directions for storing and mixing with other components.
- B. Store materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by waterproofing manufacturer. Protect stored materials from direct sunlight.
- C. Remove and replace material that cannot be applied within its stated shelf life.

1.07 PROJECT CONDITIONS

- A. Environmental Limitations: Apply coated foamed roofing within the range of ambient and substrate temperatures recommended by roofing material manufacturers, but not below 50 deg F (10 deg C). Do not apply to damp or wet surfaces. Do not apply when relative humidity exceeds 85 percent or when temperatures are less than 5 deg F (3 deg C) above dew point.
 1. Do not apply roofing foam in snow, rain, fog, or mist, or when such weather conditions are imminent during the application and curing period.
 2. Do not apply polyurethane foam when wind conditions result in surface finish textures not complying with requirements.
 3. Do not apply roof coatings when wind conditions prevent uniform coating application.

1.08 WARRANTY

- A. Existing Roof: It is unknown if the current roof is currently under warranty.
- B. Special Warranty: Roof coating manufacturer's standard form in which manufacturer agrees to repair or replace coated foamed roofing that does not comply with requirements or that does not remain watertight within specified warranty period.
 1. Warranty Period: Full system 20-Year No Dollar Limit (NDL) from date of Substantial Completion.
 2. Installer shall provide a typed certificate stating the following:
 - a. Type of roof.
 - b. Installer.
 - c. Installer's address and telephone number.
 - d. Manufacturer
 - e. Manufacturer's address and telephone number.
 - f. Who to contact in case of roof failure.
 - g. Warranty period with beginning and ending dates. Certificate shall be framed and bolted (not hung) on the wall as directed by Architect. Copies of certificate shall be included with manufacturer's written warranty and submitted to Architect.

- h. Any representative who inspects roof must copy all inspection reports to the office of RossTarrant Architects, Inc. for the life of the roof.
- 3. Warranty Work: All warranty and/or maintenance work shall be documented by the individual performing the work with before and after pictures of the work and a detailed breakdown of cost. Submit to the Owner and the Architect.
- 4. Recommended Maintenance: In addition to the guarantee, the Contractor shall furnish to the Owner the Manufacturer's printed recommendations for proper maintenance of the specified roof system including inspection frequencies, penetration addition policies, temporary repairs, and leak call procedures.
 - a. Arrange for a meeting of the Owner, Architect, Manufacturer, and Installer to review procedure for general maintenance by the Owner that will not void warranty, as well as procedure for reporting roof problems, maintenance, and/or warranty problems to manufacturer.
- 5. Contractor's Warranty: Roofing Contractor shall provide a written two (2) year warranty for materials and workmanship commencing with the date of substantial completion. The warranty shall cover all labor and all material necessary to maintain complete water tightness, including that required to repair and all roof leaks and water infiltration through the roof, flashings, and wall copings in any configuration including standing water at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Polyurethane Foam:
 - a. BASF Polyurethane Foam Enterprises.
 - b. Dow Corning.
 - c. Gaco Western: www.gaco.com
 - d. GE Roofing Systems.
 - e. NCFI Polyurethanes: www.ncfi.com
 - f. WDG
 - 2. Silicone Coatings:
 - a. BASF Polyurethane Foam Enterprises.
 - b. Gaco Western: www.gaco.com
 - c. GE Roofing Systems.
 - d. NCFI Polyurethanes: www.ncfi.com
 - e. WDG
 - f. Coating and Foam Solution: www.cfsolutions.us.com

2.02 POLYURETHANE FOAM

- A. ASTM C 1029, Type III, sets a minimum compressive strength of 40 psi (276 kPa) as well as other performance characteristics.

- B. Rigid cellular polyurethane, spray applied, produced by the catalyzed chemical reaction of polyisocyanates with polyhydroxyls, with stabilizers and hydrochlorofluorocarbon blowing agents added; and complying with ASTM C 1029, Type III, as certified by a qualified independent testing agency.

1. Physical Property Foam ASTM Test
 - a. Density 2.7-3.2 pcf D1622
 - b. Compressive Strength 48 psi D1621
 - c. Tensile Strength 78 psi D1623
 - d. Closed Cell Content 90% min.D1940
 - e. Dimensional Stability; 158 Degrees F, 100% RH, 28 days +6% max. D2126
 - f. K Factor (aged) 0.16 C518
 - g. Aged R-Value 6.65 per inch
 - h. Flame Spread 30 E84
 - i. Smoke developed index 450 max E84

2.03 SILICONE COATINGS

- A. Single component silicone rubber coating, specifically formulated for coating sprayed-polyurethane roofing, of the following composition, coat type, and topcoat color and complying with the following performance and physical requirements for cured coating:

1. Base-Coat Composition and Type: One component silicone.
2. Topcoat Composition and Type: One component silicone.

Property	Test Method	Value
Flash Point, F	ASTM D93	Tagg, closed up 100 min.
Solids, Contents, % by Volume	ASTM-D-2697	62-68
Tensile Strength, PSI	ASTM-D-412	400-600
Elongation, %	ASTM-D-412	100-150
Permeability, per inch	ASTM-E-96-B2.9	3.7
Weatherometer, 4000 hrs.	ASTM 5-2670	No degradation within test error
Heat Aging after 26 weeks at 180 degrees F.		
Carbon Arc 10,000 hours	ASTM D822	No degradation within test error
QUV 10,000 hours	ASTM G52	No degradation within test error
Percent Change Tensile strength	ASTM-D-412	None within test error
Percent change in elongation	ASTM-D-412	None within test error
Percent change in permanent set	ASTM-D-412	None within test error
Ultraviolet Exposure:	ASTM-D-526-70	No cracking
4000 hrs.	75E C (167 E F)	checking or Black panel

		temp pinholes
Water Absorption: 168 hours	ASTM-D-5270	0.5 max. 77o F., Weight %
Water Absorption	ASTM D471	0.5

2.04 AUXILIARY MATERIALS

- A. Miscellaneous materials such as adhesives, caulking, sealant, and other similar materials shall be compatible with the other specified products and approved by the coating manufacturer.
- B. Coat: Spray applied foam insulation, filleted to interruptions and penetrations through the roof surface.
- C. Fasteners: Mechanical fasteners with plates as approved by roofing system manufacturer and in compliance with FM4450.
- D. Roofing Granules: Ceramic coated roofing granules shall be number 11-screen size, dust free. Only granules approved by the roofing manufacturer are to be used.
- E. Sealant: ASTM C 920, Class 25, Use NT, Grade NS, Type M, multi-component silicone, and as recommended by roofing manufacturer for substrate and joint conditions for compatibility with roofing materials.
- F. Sheet Flashing, Fiber Cants and Accessories: Types as recommended by roofing manufacturer, provided at locations indicated and as recommended by manufacturer.
- G. Walkway Pads/Mats and Equipment Supports: Provide and install a factory formed, weather resistant, breathable, resilient pad composed of synthetic rubber strands such as "Yellow Spaghetti". Adhere to the finished roof surface with a roofing manufacturer approved sealant. Acceptable manufacturers are Greenstreak Inc. and Western Plastics.
- H. Walkway Pads: Contractor's option to apply coating in a contrasting color along designated walkway areas. Coating to be applied in 5 to 7 mil thickness with an application of double granules. Broom off all loose granules and apply a second 5 to 7 mil thick coating and again add double the normal amount of granules. Provide periodic breaks in the walkway to prevent ponding water or drainage interference.
 - 1. Do not provide as roof top equipment support.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions under which coated foamed roofing will be applied, with Installer present, for compliance with requirements. Begin installation only after unsatisfactory conditions have been corrected and substrates are dry.

3.02 SURFACE PREPARATION

- A. Clean and prepare substrate according to coated foamed roofing manufacturer's written instructions. Provide clean, dust-free, and dry substrate for roofing application.
- B. Remove grease, oil, form-release agents, curing compounds, and other contaminants from substrate.
- C. Cover and mask adjoining surfaces not receiving coated foamed roofing to prevent overspray or spillage affecting other construction. Close off roof drains, removing roof-drain plugs when no work is being done or when rain is forecast.
 - 1. Remove masking after polyurethane foam application and remask adjoining substrates before coating.

- D. Prime substrate if recommended by coated foamed roofing manufacturer.
- E. Fill, cover, or tape joints and cracks in substrate that exceed a width of 1/4 inch (6 mm). Remove dust and dirt from joints and cracks before applying polyurethane foam.
- F. Install thermal barrier with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt thermal-barrier boards together and secure to top flanges of steel deck.

3.03 POLYURETHANE FOAM APPLICATION

- A. Mix and apply polyurethane foam according to ASTM D 5469 and coated foamed roofing manufacturer's written instructions.
- B. Apply polyurethane foam in lift thicknesses not less than 1/2 inch (13 mm) and not greater than 1-1/2 inches (38 mm).
 - 1. Apply only enough polyurethane foam that can be covered on same day with required base coating.
- C. Uniformly apply total thickness of polyurethane foam indicated, but not less than 1 1/2 inch (38 mm), to a surface tolerance of plus 1/4 inch (6 mm) and no minus.
- D. Apply polyurethane foam to roof penetrations, terminations, and vertical surfaces as indicated. Unless otherwise indicated, extend polyurethane foam at least 4 inches (100 mm) above elevation of adjacent roof field.
- E. Surface Finish: Provide finished surface of polyurethane foam within the following range of surface textures as defined by ASTM D 5469:
 - 1. Texture: Smooth to orange peel.
- F. Remove and replace polyurethane foam not complying with minimum surface_texture limitations.

3.04 COATING APPLICATION

- A. Allow polyurethane foam substrate to cure for a minimum of two hours and remove dust, dirt, water, and other contaminants before applying coatings.
- B. Apply coatings to polyurethane foam, according to coating manufacturer's written instructions, by spray, roller, or other suitable application method.
- C. Apply base coat and one or more finish coats to obtain a uniform, seamless membrane free of blisters and pinholes. Apply each coat at right angles to preceding coat, using contrasting colors for successive coats.
 - 1. Apply base coat the same day as polyurethane foam is applied and allow to cure.
 - 2. Apply finish coat or coats after removing dust, dirt, water, and other contaminants from base coat.
 - 3. Silicone Coating: Apply base and finish coats to a minimum 25 mil dry film thickness at any point of:
 - a. Base Coat: 13 dry mils.
 - b. Top Coat: 12 dry mils.
- D. Apply base and finish coats at wall terminations and vertical surfaces to extend beyond polyurethane foam by 4 inches (100 mm), minimum, unless indicated otherwise.
- E. Granules: Apply granules over wet finish coat using pressure equipment at the rate of 0.5 lb/sq. ft. (2.45 kg/sq. m). Remove excess granules after topcoat has cured.

- F. Sealant: Apply sealant to perimeter and other terminations where indicated or required by coated foamed roofing manufacturer

3.05 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage an Architect/Owner approved, independent, qualified testing and inspecting agency to perform field tests and inspections, test materials being used, and report whether tested Work complies with or deviates from requirements.
 - 1. Testing agency will identify, seal, and certify samples of materials taken from Project site, with Contractor present.
 - 2. Testing agency will perform tests for any product characteristics specified or cited in manufacturer's product data. Number and frequency of samples are based on ASTM D 5469. Revise sampling rate below to suit Project.
 - a. 2 core samples will be required for roof areas up to 5,000 sq. ft., and 1 core sample will be required for each additional 5,000 sq. ft. or part thereof.
 - b. Slit-test samples may be taken as required according to ASTM D 5469. Add sampling frequency if preferred.
 - c. Slit-test samples will be taken to determine number of coats applied and dry film thickness of coating.
- B. Correct deficiencies in, or remove, foam or coatings that do not comply with requirements, fill and repair substrates and reapply materials.
- C. Additional testing, at Contractor's expense, will be performed to determine compliance of corrected Work with requirements.

3.06 CURING, PROTECTING, AND CLEANING

- A. Cure coatings according to manufacturer's written instructions, taking care to prevent contamination and damage during application stages and curing. Do not permit traffic on uncured coatings.
- B. Protect coated foamed roofing from damage and wear during remainder of construction period.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

SECTION 076200 - SHEET METAL FLASHING AND TRIM**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Fabricated sheet metal items, including: foam roof -foam stops and skirt flashing
- B. Sheet metal splash pans.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 061000 - Rough Carpentry: Wood nailers for sheet metal work.
- C. Section 075400 - Thermoplastic Membrane Roofing: Roofing system.
- D. Section 075700 - Coated Foam Roofing: Roofing system.
- E. Section 077100 - Roof Specialties: Preformed flashings and manufactured expansion joint covers.
- F. Section 079005 - Joint Sealers.

1.03 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels 2013.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2015.
- C. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.
- D. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric] 2014.
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2014.
- F. CDA A4050 - Copper in Architecture - Handbook current edition.
- G. SMACNA (ASMM) - Architectural Sheet Metal Manual 2012.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.
- B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 5 years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that could cause discoloration or staining.

1.07 WARRANTY

- A. Through-wall, step or other flashing provided and installed under this specification section that is part of the total roofing system is to have the following warranty provided in conjunction with the total roofing system warranty:
 - 1. Contractor's Warranty: Roofing Contractor shall provide a written two (2) year warranty for materials and workmanship commencing with the date of substantial completion. The warranty shall cover all labor and all material necessary to maintain complete water tightness, including that required to repair and all roof leaks and water infiltration through the roof, flashings, and wall copings in any configuration including standing water at no additional cost to the Owner.
- B. Finish Warranty: Manufacturer's 20-year finish warranty stating products to be free of corrosion, checking, crazing, chalking, discoloring, fading, oxidation, and that exposed finish surface will not peel, crack, chip, or spall.
 - 1. Excessive color change/fading greater than 5 NBS (Hunter) units and passing 5000 hrs per ASTM D 2249-85, ASTM D 2244 and ASTM D 822-85 respectively.
 - 2. Chalking shall not be less than a rating of No. 8 per ASTM D 659 and ASTM D 4214.
 - 3. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

- A. Pre-Finished Galvanized Steel Sheet: ASTM A 653/A 653M, with G90/Z275 zinc coating; minimum 22 ga/ inch thick base metal, shop pre-coated with fluoropolymer coating.
 - 1. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
 - 2. Color: As selected by Architect from manufacturer's standard colors.
- B. Pre-Finished Aluminum: ASTM B 209 (ASTM B 209M); 0.040 inch thick; plain finish shop pre-coated with fluoropolymer coating.
 - 1. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
 - a. Color: As selected by Architect from manufacturer's standard colors.

2.02 ACCESSORIES

- A. Fasteners: Galvanized steel , with soft neoprene washers.
- B. Primer: Zinc chromate type.
- C. Protective Backing Paint: Zinc molybdate alkyd.
- D. Sealant to be Concealed in Completed Work: Non-curing butyl sealant.
- E. Sealant to be Exposed in Completed Work: {rs\#1}; elastomeric sealant, 100 percent silicone with minimum movement capability of plus/minus 25 percent and recommended by manufacturer for substrates to be sealed; clear.
- F. Sealant: Type as specified in Section 079005.

2.03 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Form pieces in longest possible lengths.
- C. Hem exposed edges on underside 1/2 inch; miter and seam corners.

- D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- E. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- F. Fabricate vertical faces with bottom edge formed outward 1/4 inch (6 mm) and hemmed to form drip.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Install surface mounted reglets true to lines and levels, and seal top of reglets with sealant.
- C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION

- A. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..
- B. Apply plastic cement compound between metal flashings and felt flashings.
- C. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- D. Seal metal joints watertight.

END OF SECTION

SECTION 077100 - MANUFACTURED ROOF SPECIALTIES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Manufactured roof specialties, including: fascia, reglet, counterflashing and expansion joint

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 075400 - Thermoplastic Membrane Roofing.
- C. Section 076200 - Sheet Metal Flashing and Trim.
- D. Section 077200 - Roof Accessories: Manufactured guards.
- E. Section 079005 - Joint Sealers.

1.03 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels 2013.
- B. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free 2007 (Reapproved 2012).
- C. NRCA (RM) - The NRCA Roofing Manual 2018.
- D. SMACNA (ASMM) - Architectural Sheet Metal Manual 2012.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.
- C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA (ASMM) details.

1.06 WARRANTY

- A. Refer to roofing membrane section 075400 and 075700 Project Full System Warranty requirements for items to be included from this specification section.
- B. Finish Warranty: Manufacturer's 20-year finish warranty stating products to be free of corrosion, checking, crazing, chalking, discoloring, fading, oxidation, and that exposed finish surface will not peel, crack, chip, or spall.
 - 1. Excessive color change/fading greater than 5 NBS (Hunter) units and passing 5000 hrs per ASTM D 2249-85, ASTM D 2244 and ASTM D 822-85 respectively.
 - 2. Chalking shall not be less than a rating of No. 8 per ASTM D 659 and ASTM D 4214.
 - 3. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

PART 2 PRODUCTS**2.01 COMPONENTS**

- A. Fascia

1. Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - a. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements, and aesthetics of the following:
 - 1) Metal-Era; Anchor-Tite: www.metalera.com
 - b. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions, profiles, and formulations are minor and do not change the design concept as judged by the Architect.
 - 1) Architectural Products Co.: www.archprod.com.
 - 2) Dimensional Metal Inc. (DMI): www.dmimetals.com
 - 3) Firestone Building Products, Inc.: www.firestonebpco.com
 - 4) OMG Roofing Products/OMG Edge Systems formerly W. P. Hickman: www.omgroofing.com
 - 5) Metal-Era Inc: www.metalera.com.
 - 6) Johns Manville: www.jm.com
 - 7) MM Systems Corp: www.mmsystemscorp.com
 - 8) Sika Saranfil: www.sarnafilus.com
 - 9) Siplast: www.siplast.com
2. Provide fascia in shapes and sizes indicated, with shop-mitered and welded-corners. Include water dams formed from at least 0.028-inch- (0.7-mm-) thick, galvanized steel sheet; anchor plates; cleats or other attachment devices; concealed splice plates; and trim and other accessories indicated or required for complete installation, with no exposed fasteners.
3. High performance roof edge system shall be certified by the manufacturer to comply with ANSI/SPRI Standard ES-1-98. Roof edge shall meet performance design criteria according to the following test standards:
 - a. ANSI/SPRI ES-1-98 Test Method RE-1 Test for Roof Edge Termination of Single-Ply Roofing Membranes: The fascia system shall be tested to secure the membrane to minimum of 100 lbs/ft in accord with the ANSI/SPRI ES-1-98 Test Method RE-1. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
 - b. ANSI/SPRI ES-1-98 Test Method RE-2 Pull-Off Test for Fascia: The fascia system shall be tested in accord with the ANSI/SPRI ES-1-98 Test Method RE-2. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
4. The fascia product shall be approved for use in Miami-Dade County and has been designed to comply with Florida Building Code, including the High Velocity Hurricane Zone, Miami-Dade County NOA No. 03-0108.06 Expiration Date 12/11/08.
5. Performance Characteristics:
 - a. Extruded bar shall lock membrane, prevent wind pullback.
 - b. Injection molded EPDM splices to allow thermal expansion of extruded aluminum anchor bar.
 - c. Fascia shall freely thermal cycle on extruded bar, preventing periodic maintenance.

6. Fascia metal gauge: Contractor's option of .040" thick formed aluminum or 24 ga. galvanized steel.
7. Extruded bar: Shall be continuous 6063-T6 alloy aluminum at 12'-0" (3.65 m) standard lengths. All bar miters are welded.
8. Fasteners: #9 x 2" stainless steel fasteners provided with drivers. No exposed fasteners permitted.
9. All inside and outside corners to be manufactured corner pieces to eliminate seams.
10. Standard Face Height: Minimum 6 1/2", or manufacturers next larger size, unless noted otherwise on the drawings.

B. Reglets and Counterflashing:

1. Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - a. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements, and aesthetics of the following:
 - 1) Fry Reglet: MA Masonry Reglet - Customized with flat flange
 - (a) MA-3 (3 inch customized horizontal flat flange for brick)
 - 2) Fry Reglet: SM Surface Mounted Reglet
 - 3) Fry Reglet: 90-Degree Inside and Outside Reglet Corners
 - 4) Fry Reglet: Spring Lock Flashing.
 - 5) Fry Reglet: Inside and Outside Spring Lock Flashing Corners.
 - 6) Fry Reglet: Spring Lock Flashing End Cap
 - b. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions, profiles, and formulations are minor and do not change the design concept as judged by the Architect.
 - 1) Fry Reglet: www.fryreglet.com
 - 2) OMG Roofing Products/OMG Edge Systems formerly W. P. Hickman: www.omgroofing.com
 - 3) Metal-Era Inc: www.metalera.com.
2. General: Provide two-piece reglets with counterflashing receiver of type, material, and profile indicated, compatible with counterflashing. Form to securely interlock with counterflashing.
3. Reglet - Masonry Type - MA: Provide with top flange for embedment in masonry mortar joint. Embedment flange into masonry to be flat and not have a turned up leg that creates a water dam for the flexible flashing.
 - a. Material: 24 gauge galvanized steel.
 - b. Provided by Roofing Contractor and installed by Masonry Contractor.
4. Reglet - Surface Mount Type - SM: Provide with straight flange for surface mounting.
 - a. Material: 24 gauge galvanized steel.
 - b. Coordinate depth of reglet with wall panel condition.
 - c. Provided by Roofing Contractor and installed by Wall Panel Contractor.

- d. Provide continuous sealant in groove on rear face. Seal groove between top of reglet and wall. Seal all laps.
- 5. Reglet Finish: Manufacturers standard paint finish.
- 6. Counterflashing
 - a. Provide springlock counterflashing fabricated from the same metal as reglets and compatible with reglet system installed.
 - 1) Material: 24 gauge galvanized steel.
 - 2) Color to match reglet.
 - 3) Provided and installed by roofing contractor.
- 7. 90-Degree Inside and Outside Reglet and Spring Lock Flashing Corners
 - a. Material: 24 gauge galvanized steel
 - b. Color to match reglet and counterflashing.
 - c. Reglet: Provided by Roofing Contractor and installed by Masonry Contractor/Wall Panel Contractor.
 - d. Counterflashing: Provided and installed by roofing contractor.
 - e. Acute and Obtuse Intersections: Contractor to field verify and special order for corner angles less or more than 90-Degree.
- 8. Spring Lock Flashing System End Cap
 - a. Factory provided 1 inch wide foam insert to close open end of the counterflashing. Insert to function as a backer for exterior sealant.
 - 1) Sealant color to match counterflashing.
- C. Drip Edge:
 - 1. Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - a. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements, and aesthetics of the following:
 - 1) Johns Manville - Presto Weld
 - b. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions, profiles, and formulations are minor and do not change the design concept as judged by the Architect.
 - 1) Architectural Products Co.: www.archprod.com.
 - 2) OMG Roofing Products/OMG Edge Systems formerly W. P. Hickman: www.omgroofing.com
 - 3) Metal-Era Inc: www.metalera.com.
 - 4) Johns Manville: www.jm.com
 - 5) MM Systems Corp: www.mmsystemscorp.com
 - 6) Sika Saranfil: www.sarnafilus.com
 - 7) Siplast: www.siplast.com

2. Drip Edge: Factory-fabricated 24 gauge PVC-coated steel, minimum 2 inch face, or manufacturers next larger size, painted finish, concealed joint covers, and continuous, galvanized anchor cleat.
- D. Expansion Joint Covers;
1. Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - a. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements, and aesthetics of the following:
 - 1) Johns Manville - Expand-O-Flash
 - b. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions, profiles, and formulations are minor and do not change the design concept as judged by the Architect.
 - 1) Architectural Art Manufacturing: www.archart.com
 - 2) CS-Group; C/S Construction Specialties: www.c-sgroup.com
 - 3) Johns Manville Corporation: www.jm.com.
 - 4) MM Systems Corp: www.mmsystemscorp.com.
 - 5) Balco Inc.: www.balcousa.com
 - 6) InPro Corporation: www.inprocorp.com.
 - 7) BASF/Watson Bowman Acme Corporation: www.wbacorp.com
 2. Control and Expansion Joint Covers: Composite construction of 2 inch wide flexible PVC flashing of white color with closed cell urethane foam backing, each edge seamed to aluminum sheet metal flanges, designed for nominal joint width of 1 inch. Include special formed corners, tees, intersections, and wall flashings, each sealed watertight.

2.02 ACCESSORIES

- A. Sealant: Type specified in Section 079005.
- B. Roof Cement: ASTM D4586/D4586M, Type I.
- C. General: Provide manufacturer's standard accessories designed and manufactured to match and fit roof edge treatment system indicated.
- D. Exposed Fasteners: Stainless steel, nonmagnetic, of manufacturer's standard type and size for product and application indicated. Match finish of exposed heads with material being fastened.
- E. Concealed Fasteners: Same metal as item fastened or other noncorrosive metal as recommended by manufacturer.
- F. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.
- G. Asphalt Mastic: SSPC-Paint 12, solvent-type asphalt mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil (0.4-mm) dry film thickness per coat.
- H. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
- I. Foam-Rubber Seal: Manufacturer's standard foam.
- J. Adhesives: Type recommended by manufacturer for substrate and project conditions, and formulated to withstand minimum 60-lbf/sq. ft. (2.9-kPa) wind-uplift force.

2.03 FABRICATION

- A. Roofing Contractor/Local Fabricator shop or field fabricated/broken fascia, reglet, counterflashing and expansion joint will not be accepted.
- B. All roof edge components are to be designed and tested to meet ANSI/SPRI ES-1, and be fabricated in an ANSI/SPRI ES-1 approved fabrication facility.

2.04 FINISHES

- A. All exposed to view roof components specified above to have the following finish.
 - 1. All items to be the same color unless specifically noted.
- B. Finishes:
 - 1. High-Performance Organic Finish (2-coat Fluoropolymer): AA-C12C40R1X (Chemical Finish): cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with AAMA 2605 and with coating and resin manufacturers' written instructions.
 - a. Color to be selected from manufacturers standard color chart. Minimum twenty colors.
 - b. The following components to be painted; fascia, reglet and counterflashing.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

3.02 INSTALLATION

- A. Install components in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Comply with NRCA (RM) drawing details as noted:
- C. Coordinate installation of components of this section with installation of roofing membrane and base flashings.
- D. Coordinate installation of sealants and roofing cement with work of this section to ensure water tightness.
- E. Coordinate installation of flashing flanges into reglets.

END OF SECTION

SECTION 077200 - ROOF ACCESSORIES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Roof hatch guardrail and gate system.
- B. Ships ladder safety post.

1.02 RELATED REQUIREMENTS

- A. Section 075700 - Coated Foam Roofing: Roof system.
- B. Section 077100 - Manufactured Roof Specialties: Other manufactured roof items.

1.03 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2015.
- B. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process 2010 (Reapproved 2015).
- C. FM (AG) - FM Approval Guide; Factory Mutual Research Corporation; current edition.
- D. UL (DIR) - Online Certifications Directory current listings at database.ul.com.

1.04 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used.
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Maintenance requirements.
- B. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.
- C. Warranty Documentation:
 - 1. Submit manufacturer warranty.
 - 2. Ensure that forms have been completed in Owner's name and registered with manufacturer.
 - 3. Submit documentation that roof accessories are acceptable to roofing manufacturer, and do not limit the roofing warranty.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store products under cover and elevated above grade.

1.06 PRODUCT WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty for hatches and accessories.

1.07 ROOF SYSTEM WARRANTY

- A. Refer to roofing membrane section 075700 for Special Project Full System Warranty requirements for items to be included from this specification section.

PART 2 PRODUCTS

2.01 ROOF HATCH SAFETY RAIL AND SAFETY POST

- A. Contractor's option to provide a combination roof hatch, integral roof hatch safety rail and safety post system, or separate roof hatch, freestanding roof hatch safety rail and safety post system.
1. Manufacturers - Freestanding Roof Hatch Safety Rail: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - a. Basis of Design: Design concept and the drawings indicate the size, profiled, dimensional requirements and aesthetics of the following:
 - 1) Bluewater Manufacturing: Non-Penetrating Roof Hatch Railing SR2K.
 - b. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions, profiles, and formulations are minor and do not change the design concept as judged by the Architect.
 - 1) Bluewater Manufacturing: www.bluewater-mfg.com
 - 2) Garlock Safety Systems: www.railguard.net
 - 3) Kee Guard Railing: www.keesafetygroup.com □
 - c. Freestanding Roof Hatch Safety Railing: Non-penetrating railing system with top rail, mid rail, and OSHA complaint swinging gate, with the hatch curb acting as the toe plate. System shall be capable of being dismantled for roof repair.
 - 1) System to support 200 lb., minimum in any direction for all components in accordance with OSHA Regulation 29 CFR 1910.23.
 - 2) Height: 42 inches, minimum.
 - 3) Width: Fit roof hatch. Refer to roof hatch information for hatch size.
 - 4) Railings: 1-5/8 inch O.D. hot rolled pickled electric weld tube, free of sharp edges and snag points.
 - 5) Mounting Bases: Class 30 gray iron material cast with four receiver posts. Provide rubber pads on bottom of bases.
 - 6) Posts: Shall have positive locking system into slots that allow rails to be mounted in any direction. Friction locking systems are not allowed. Receiver posts shall have drain holes.
 - 7) Railing Hardware: Securing pins shall be 101 carbon steel, zinc plated and yellow chromate dipped. Pins shall consist of collared pin and lanyard that connects to a lynch pin.
 - 8) Gate Hardware: Bolts and washers shall be 3/8 inch by 3-1/2", zinc plated.
 - 9) Gate Opener: Latch pole.
 2. Manufacturers - Safety Post: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - a. Basis of Design: Design concept and the drawings indicate the size, profiled, dimensional requirements and aesthetics of the following:

- 1) Extend-A-Rail for inclined ships ladders: www.precisionladders.com
- b. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions, profiles, and formulations are minor and do not change the design concept as judged by the Architect.
 - 1) Bilco Co.: www.bilco.com
 - 2) Acudor Products Inc.: www.acudoor.com
 - 3) Milcor by Commercial Products Group of Hart & Cooley, Inc: www.milcorinc.com.
 - 4) Precision Ladders, LLC: www.precisionladders.com
 - 5) SafetyPro LP: www.safeprosafety.com
- c. Safety Post: Telescoping post permanently anchored to the top rung(s) of the ships ladder.
 - 1) Post to have adjustable mounting hardware to accommodate ladder rung size and spacing.
 - 2) Post to automatically lock in the fully raised position.
 - 3) Post to have release lever for lowering.
 - 4) Post to be steel with a bright safety color powder coat finish.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

3.04 CLEANING

- A. Clean installed work to like-new condition.

3.05 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 079005 - JOINT SEALERS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Sealants and joint backing.
- B. Precompressed foam sealers.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 088000 - Glazing: Glazing sealants and accessories.
- C. Section 093000 - Tiling: Sealant used as tile grout.
- D. Section 321373 - Pavement Joint Sealants: Exterior sealants for horizontal pavements and surfaces.

1.03 REFERENCE STANDARDS

- A. ASTM C834 - Standard Specification for Latex Sealants 2014.
- B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications 2012.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2014.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants 2013.
- E. SCAQMD 1168 - Adhesive and Sealant Applications 1989 (Amended 2017).

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating sealant chemical characteristics.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of each referenced document covering installation requirements on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- C. Applicator Qualifications: Company specializing in performing the work of this section with minimum three years documented experience and approved by manufacturer.

1.06 PROJECT CONDITIONS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.07 SEQUENCING AND SCHEDULING

- A. Coordinate the work with all sections referencing this section.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
1. Silicone, Polyurethane and Acrylic Sealants:
 - a. Dow Corning: www.dowcorning.com
 - b. Bostik Inc: www.bostik-us.com.
 - c. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
 - d. Pecora Corporation: www.pecora.com.
 - e. BASF Construction Chemicals-Building Systems: www.chemrex.com.
 - f. Tremco Global Sealants; Product : www.tremcosealants.com.
 - g. Sika Construction: www.sikaconstruction.com
 - h. Soudal Inc.: www.soudalusa.com
- B. Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
1. Preformed Compressible Foam Sealers:
 - a. EMSEAL Joint Systems, Ltd: www.emseal.com.
 - b. Sandell Manufacturing Company, Inc: www.sandellmfg.com.
 - c. Dayton Superior Corporation: www.daytonsuperior.com.
 - d. Tremco Global Sealants: www.tremcosealants.com.
 - e. Sika Construction: www.sikaconstruction.com
 - f. Soudal Inc.: www.soudalusa.com

2.02 SEALANTS

- A. Sealants and Primers - General: Provide only products having lower volatile organic compound (VOC) content than 250 g/L where applied within the waterproofing envelope.
- B. General Purpose Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 25 minimum; Uses M, G, and A; single component.
1. Color: Standard colors matching finished surfaces.
 2. Applications: Use for:
 - a. Control, expansion, and soft joints in masonry.
 - b. Joints between concrete and other materials.
 - c. Joints between metal frames and other materials.
 - d. Other exterior joints for which no other sealant is indicated.
- C. Exterior Expansion Joint Sealer: Precompressed foam sealer; urethane with water-repellent;
1. Face color: Match exterior masonry veneer.
 2. Size as required to provide weathertight seal when installed.
 3. Provide product recommended by manufacturer for traffic-bearing use.
 4. Applications: Use for:
 - a. Exterior wall expansion joints.

- D. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.
 - 1. Color: Standard colors matching finished surfaces.
 - 2. Applications: Use for:
 - a. Interior wall and ceiling control joints.
 - b. Joints between door and window frames and wall and floor surfaces.
 - 1) Color at intersection of door frame bottom and resilient, sealed or coated flooring to match door frame color.
 - c. Other interior joints for which no other type of sealant is indicated.
- E. Bathtub/Tile Sealant: White silicone; ASTM C920, Uses I, M and A; single component, mildew resistant.
 - 1. Applications: Use for:
 - a. Joints between plumbing fixtures and floor and wall surfaces.
 - b. Joints between kitchen and bath countertops and wall surfaces.
- F. Acoustic Sealant/Sound Caulk: Permanently tacky non-hardening acrylic sealant.
 - 1. Minimum 1/4 inch, continuous, sealant bead, both sides, of top stud runner and structure and bottom stud track and floor.
 - 2. Minimum 1/4 inch, continuous, sealant bead, around all openings, penetrations, and partition intersections.
- G. Interior Floor Joint Sealant: Polyurethane, self-leveling; ASTM C920, Grade P, Class 25, Uses T, M and A; single component.
 - 1. Approved by manufacturer for wide joints up to 1-1/2 inches.
 - 2. Color: Standard colors matching finished surfaces.
 - 3. Applications: Use for:
 - a. Expansion joints in floors.
- H. All masonry and stone movement joints, masonry to stone joints, and stone to stone joints.
 - 1. Basis of Design: Pecora 890 FTS TXTR
 - a. Contractor option to provide custom color to be selected by Architect, or provide caulk from manufacturers standard color selection and embed/coat with sand..

2.03 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.

- B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean and prime joints in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Protect elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.
 - 1. Minimum 1/4 inch, continuous, sealant bead, both sides, of top stud runner and structure and bottom stud track and floor.
 - 2. Minimum 1/4 inch, continuous, sealant bead, around all openings, penetrations, and partition intersections.
- D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- E. Install bond breaker where joint backing is not used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- H. Tool joints concave.
- I. Precompressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.
- J. Compression Gaskets: Avoid joints except at ends, corners, and intersections; seal all joints with adhesive; install with face 1/8 to 1/4 inch below adjoining surface.

3.04 CLEANING

- A. Clean adjacent soiled surfaces.

3.05 PROTECTION

- A. Protect sealants until cured.

END OF SECTION

SECTION 079513 - EXPANSION JOINT COVER ASSEMBLIES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Expansion joint assemblies for floor and wall surfaces.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 033000 - Cast-in-Place Concrete: Expansion and contraction joints in junction of concrete slab-on-grade.
- C. Section 079005 - Joint Sealers: Expansion and control joint finishing utilizing a sealant and bond breaker.
- D. Section 092116 - Gypsum Board Assemblies: Placement of expansion joint assemblies in gypsum board walls and ceilings.

1.03 REFERENCE STANDARDS

- A. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2014.
- B. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric] 2013.
- C. ASTM B308/B308M - Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles 2010.
- D. ASTM B455 - Standard Specification for Copper-Zinc-Lead Alloy (Leaded-Brass) Extruded Shapes 2010.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide joint assembly profiles, profile dimensions, anchorage devices and available colors and finish.
- C. Shop Drawings: Indicate joint and splice locations, miters, layout of the work, affected adjacent construction and anchorage locations.
- D. Manufacturer's Installation Instructions: Indicate rough-in sizes and required tolerances for item placement.

1.05 QUALITY ASSURANCE

- A. Field Measurements: Verify compliance with manufacturer's requirements.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Expansion Joint Cover Assemblies: Subject to compliance with requirements provide products by one of the following, but not limited to the following:
 1. Architectural Art Mfg., Inc: www.archart.com.
 2. Balco, Inc.: www.balcousa.com
 3. C/S Group; C/S Construction Specialties, Inc: www.c-sgroup.com.
 4. Inpro: www.inprocorp.com.

5. MM Systems Corp: www.mmsystemscorp.com/#sle.
 6. BASF/Watson Bowman Acme Corp.: www.wbacorp.com
- B. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
1. Architectural Art Manufacturing Model #K-10-11-11 for interior floor to floor.
 2. Architectural Art Manufacturing Model #H-10-65-14 for interior wall-to-wall corner, 2"
 3. InPro Corporation Model: 1200 Series Foam Seal for exterior vertical expansion joint in masonry veneer.

2.02 EXPANSION JOINT COVER ASSEMBLIES

- A. Expansion Joint Cover Assemblies - General: Factory-fabricated and assembled; designed to completely fill joint openings, sealed to prevent passage of air, dust, water, smoke; suitable for traffic expected.
1. Joint Dimensions and Configurations: As indicated on drawings.
 2. Joint Cover Sizes: Selected to suit joint width and configuration, based on manufacturer's published recommendations and limitations.
 3. Lengths: Provide covers in full lengths required; avoid splicing wherever possible.
 4. Anchors, Fasteners, and Fittings: Provided by cover manufacturer.
- B. Exterior Vertical Expansion Joint:
1. Flexible profile manufactured from a monolithic piece of foam and factory applied elastomeric silicone membrane coating to provide moisture and water intrusion on vertical surfaces. Profile shall be capable of providing plus or minus 25% building movement and resist ultraviolet degradation. Profile shall be installed without the use of adhesives or anchor system.
 - a. Seal preformed and manufacturer from a polyether urethane foam per ASTM C864-98 with a factory applied silicone membrane on the exposed face.
 - b. Color to be selected by Architect from manufacturers standard color range.

2.03 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper; or ASTM B308/B308M, 6061 alloy, T6 temper.
- B. Backing Paint for Aluminum Components in Contact with Cementitious Materials: Asphaltic type.

2.04 FABRICATION

- A. Joint Covers: Aluminum cover plate, aluminum frame construction, designed to permit cover movement with full recovery, flush mounted.
- B. Provide joint components in single length wherever practical. Minimize site splicing.

2.05 FINISHES

- A. Floors: Mill finish.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joint preparation and dimensions are acceptable and in accordance with manufacturer's requirements.

3.02 PREPARATION

- A. Install anchoring devices in conformance to templates.

3.03 INSTALLATION

- A. Install components and accessories in accordance with manufacturer's instructions.
- B. Align work plumb and level, flush with adjacent surfaces.
- C. Rigidly anchor to substrate to prevent misalignment.

3.04 PROTECTION

- A. Do not permit traffic over unprotected floor joint surfaces.
- B. Provide strippable coating to protect finish surface.

END OF SECTION

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Non-fire-rated hollow metal doors and frames.
- B. Hollow metal frames for wood doors.
- C. Thermally insulated hollow metal doors with frames.
- D. Hollow metal borrowed lites glazing frames.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 061000 - Rough Carpentry: Shims.
- C. Section 087100 - Door Hardware.
- D. Section 088000 - Glazing: Glass for doors and borrowed lites.
- E. Section 099000 - Painting: Field painting.

1.03 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- B. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.
- C. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames 2007 (R2011).
- D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100) 2014.
- E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames 2011.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2015.
- G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable 2015.
- H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2014.
- I. ASTM A924 - Specification for General Requirements for Steel Sheet, Metallic Coated by the Hot Dip Process.
- J. ASTM A 1008/A 1008M - Standard Specification for Steel, sheet, Cold rolled, Carbon, High Strength Low-Alloy, High Strength Low Alloy with Improved Formability, Solution Hardened and Bake Hardenable.
- K. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements 2009.
- L. ASTM E413 - Classification for Rating Sound Insulation 2010.
- M. ICC A117.1 - Accessible and Usable Buildings and Facilities 2009.

- N. DHI A115 Series - Specifications for Steel Doors and Frame Preparation for Hardware; Door and Hardware Institute; 2000 (ANSI/DHI A115 Series).
- O. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames 2002.
- P. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames 2011.
- Q. NAAMM HMMA 820 TN01 - Grouting Hollow Metal Frames
- R. NAAMM HMMA 820 TN03 - Guidelines for Glazing of Hollow Metal Transom, Sidelight and Windows.
- S. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames 2007.
- T. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames 2006.
- U. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2016.
- V. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies 2017.
- W. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames 2013.
- X. SDI 111 - Recommended Details and Guidelines for Standard Steel Doors and Frames and Accessories.
- Y. UL (BMD) - Building Materials Directory; current edition.
- Z. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies Current Edition, Including All Revisions.
- AA. UL 1784 - Standard for Air Leakage Tests of Door Assemblies Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.
- B. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.
- C. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.
- D. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.
- E. Manufacturer's Qualification Statement.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.
 - 1. Provide hollow metal frames from SDI Certified manufacturer.
- B. Maintain at project site copies of reference standards relating to installation of products specified.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Steel Doors and Frames: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include;
1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Steelcraft B-Series full flush, steel stiffened doors.
 2. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect:
 - a. Curries, an Assa Abloy Group company: www.assaabloydss.com.
 - b. Custom Metal Products: www.custommetalproductsnc.com
 - c. Mesker, dormakaba Group: www.meskeropeningsgroup.com/#sle.
 - d. Republic Doors, an Allegion brand: www.republicdoor.com/#sle.
 - e. Ceco Door Products an Assa Abloy Group company: www.cecodoor.com.
 - f. Steelcraft, an Allegion brand: www.allegion.com/#sle.
 - g. Metal Products Inc. (MPI): www.metalproductsinc.com
 - h. Pioneer Industries : www.pioneerindustries.com

2.02 DESIGN CRITERIA

- A. Requirements for Hollow Metal Doors and Frames:
1. Steel used for fabrication of doors and frames shall comply with one or more of the following requirements; Galvannealed steel conforming to ASTM A653/A653M, cold-rolled steel conforming to ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel conforming to ASTM A1011/A1011M, Commercial Steel (CS) Type B for each.
 2. Accessibility: Comply with ICC A117.1 and ADA Standards.
 3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
 4. Door Edge Profile: Manufacturers standard for application indicated.
 5. Typical Door Face Sheets: Flush.
 6. Door Undercut: Manufacturer's standard, compatible with threshold configuration specified in section 087100.
 7. Interior Glazed Lights: Non-removable, square, stops on non-secure side. Size stops to accept 1/4 inch glass thickness. Refer to section 088000 - Glazing for glass requirements.
 8. Exterior Glazed Lights: Non-removable, square, stops on non-secure side. Glazing pocket to accept 7/8 inch total thickness insulated unit. Size stops in accordance with specified glass thickness. Refer to section 088000 - Glazing for glass requirements.
 9. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
 10. Finish: Factory primed, for field finishing.
- B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an

exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

- A. Exterior Doors: Thermally insulated.
 - 1. Grade: ANSI A250.8 Level 3, physical performance Level A, Model 1, full flush; 16 gage faces.
 - 2. Core: Vertical steel stiffeners, 22 gage, spaced not to exceed six inches apart, fill between stiffeners with manufacturers standard extruded polystyrene insulation or batt insulation
 - 3. Door Thickness: 1-3/4 inch, nominal.
 - 4. Thickness: 1-3/4 inches.
 - 5. Exterior Doors - Top and Bottom Closures : Close top and bottom edges of doors flush as an integral part of the door construction or by the addition of 16 gage, metallic-coated steel channels with channel webs placed even with top and bottom edges.
 - a. Bottom closure is not required on doors with concealed automatic door bottoms. Provide manufacturers standard door bottom.
 - 6. Interior Doors - Top Closures []: Close top edges of doors flush as an integral part of the door construction or by the addition of 16 gage, metallic-coated steel channels with channel webs placed even with top edges.
 - 7. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness.
 - 8. Door Face Sheets: Flush.
 - 9. Insulating Value: U-value of 0.50, when tested in accordance with ASTM C1363 .
 - 10. Weatherstripping: Refer to Section 087100.
- B. Interior Doors, Non-Fire Rated:
 - 1. Grade: ANSI A250.8 Level 2, physical performance Level B, Model 1, full flush, 18 gage faces.
 - 2. Core: Vertical steel stiffeners, 22 gage, spaced not to exceed six inches apart, filled with fiberglass batt insulation
 - 3. Door Thickness: 1-3/4 inch, nominal.
 - 4. Texture: Smooth faces.

2.04 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. General:
 - 1. Comply with the requirements of grade specified for corresponding door, except:
 - a. Frames for Exterior Hollow Metal Doors: Comply with frame requirements specified in ANSI A250.8 Level 3 Doors: 14 gage frames.
 - b. Frames for Interior Wood and Hollow Metal Doors: Comply with frame requirements specified in ANSI A250.8 for Level 1, 16 gage.

2. Finish: Same as for door.
 3. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
 4. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.
 5. Frames Wider than 48 Inches: Reinforce with steel channel fitted tightly into frame head, flush with top.
 6. Frames Installed Back-to-Back: Reinforce with steel channels anchored to floor and overhead structure.
- C. Exterior Door Frames: Face welded type.
1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
 2. Wall Attachment: Lock-in masonry "T". Minimum three anchors per jamb.
 3. Weatherstripping: Separate, see Section 087100.
- D. Interior Door Frames at CMU Walls, Non-Fire-Rated and Fire-Rated: Fully welded type, seamless with joints filled.
1. Fire Rating: Same as door, labeled.
 2. Wall Attachment: Lock-in masonry "T". Minimum three anchors per jamb.
- E. Interior Door Frames at Gypsum Board/Metal Stud Partitions Non-Fire-Rated: Knock-down type, slip-on with mitered or coped corners for field assembly.
1. Wall Attachment: Metal stud anchor/flush steel stud anchor. Minimum three anchors per jamb.
 2. Floor Attachment: Fixed base.
- F. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.
- G. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.
- H. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
- I. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inch high to fill opening without cutting masonry units.

2.05 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.06 ACCESSORIES

- A. Glazing: As specified in Section 088000.
- B. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.
- C. Astragals for Double Doors: Specified in Section 08 7100.
- D. Grout for Frames: Portland cement grout with maximum 4 inch slump for hand troweling; thinner pumpable grout is prohibited.

- E. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.
- F. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

2.07 FINISHES

- A. Manufacturer Installed Primer: Rust-inhibiting, complying with ANSI A250.10 one coat, baked-on rust inhibiting prime paint.
- B. Frame installer provided material - Fibered Asphalt Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.
 - 1. When temperature conditions necessitate the use of anti-freezing agents in the mortar, the inside of the frame shall be coated minimum 1/16 inch thick.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

- A. Frame installer to coat inside of frames to be installed in masonry and to be grouted, with fibered asphalt coating, prior to installation.
 - 1. Fibered asphalt coating to be installed in all frames when anti-freeze agents are added to the grout.

3.03 INSTALLATION

- A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
- B. Coordinate frame anchor placement with wall construction.
- C. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.
- D. Install door hardware as specified in Section 087100.
- E. Comply with glazing installation requirements of Section 088000.
- F. Coordinate installation of electrical connections to electrical hardware items.
- G. Touch up damaged factory finishes.

3.04 TOLERANCES

- A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.
- B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

- A. Adjust for smooth and balanced door movement.

END OF SECTION

SECTION 081416 - FLUSH WOOD DOORS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Flush wood doors; flush and flush glazed configuration; non-rated.
- B. Factory glazing of doors.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 061000 - Rough Carpentry: Installation of wood doors and hardware.
- C. Section 081113 - Hollow Metal Doors and Frames.
- D. Section 087100 - Door Hardware.

1.03 REFERENCE STANDARDS

- A. ASTM E152 - Methods of Fire Tests of Door Assemblies.
- B. ICC (IBC) - International Building Code; 2012.
- C. ITS (DIR) - Directory of Listed Products; Intertek Testing Services/Warnock Hersey NA, Inc.; current edition.
- D. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2019.
- E. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies 2017.
- F. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.
- G. UL 10B - Standard for Fire Tests of Door Assemblies Current Edition, Including All Revisions.
- H. WDMA I.S. 1A - Interior Architectural Wood Flush Doors 2013.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate door core materials and construction; thickness, veneer species, type and characteristics, cut and matching requirements, factory machining and factory finishing criteria. Provide glass size, type, pattern and thickness for factory glazed doors..
- C. Specimen warranty.
- D. Test Reports: Show compliance with specified requirements for the following:
 - 1. Indicate compliance with specified fire rating (positive pressure or neutral pressure).
- E. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, factory finishing criteria, identify cutouts for glazing
- F. Selection Samples: Submit samples representing manufacturer's full range of available colors. Submit actual samples not photo reproductions.
- G. Manufacturer's Installation Instructions: Indicate special installation instructions.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.

- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package, deliver and store doors in accordance with specified quality standard and manufacturer's care and handling instructions.
- B. Accept doors on site in manufacturer's packaging. Inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.
 - 1. HVAC system should be operational prior to arrival of doors. Acceptable humidity shall be no less than 25% or greater than 55%.

1.07 PROJECT CONDITIONS

- A. Coordinate the work with door opening construction, door frame and door hardware installation.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide manufacturer's warranty for the following term:
 - 1. Interior Doors: Life of installation.
- C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Wood Veneer Faced Doors: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include:
 - 1. Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Wood doors based on Masonite Architectural/Marshfield Door Systems.
 - 2. Products by other manufacturers may be considered provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect:
 - a. Oshkosh Architectural Wood Doors: www.oshkoshdoor.com
 - b. VT Industries, Inc.: www.vtindustries.com
 - c. Eggers Industries: www.eggersindustries.com.
 - d. Assa Abloy/Graham Wood Doors: www.grahamdoors.com.
 - e. Masonite Architectural dba Algoma Hardwoods Inc., and Marshfield Door Systems : www.masonitearchitectural.com.

2.02 DOORS

- A. Doors: Refer to drawings for locations and additional requirements.
 - 1. Quality Level: Custom Grade, "A" Grade Faces, Extra Heavy Duty performance, in accordance with WDMA I.S.1-A.
 - 2. Wood Veneer Faced Doors: 5-ply veneer and solid core unless otherwise indicated.

- B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
 - 1. Provide solid core doors at each location.
 - 2. Wood veneer facing with factory transparent finish as indicated on drawings.

2.03 DOOR CORES

- A. Non-Rated Solid Core, Smoke, 20 and 45 Minute Rated Doors: Type: particleboard core (PC).
 - 1. Door types: Flush (F), narrow view glass (NVG), narrow glass short (NGS), half-glass (HG) or other type indicated on the A6 drawings.
- B. Non-Rated Solid Core Doors: Type: structural composite lumber core (SCLC).
 - 1. Door Types: Full glass (FG1) or full glass with mid-rail (FG2).

2.04 DOOR FACINGS

- A. Veneer Facing for Transparent Finish: White birch, veneer grade in accordance with quality standard indicated, rotary cut, with book match between leaves of veneer, blanket match of spliced veneer leaves assembled on door or panel face.
 - 1. Vertical Edges: Same species as face veneer.
 - 2. "Pair Match" each pair of doors; "Set Match" pairs of doors within 10 feet of each other when doors are closed.

2.05 ACCESSORIES

- A. Glazing Stops: Non-fire-rated and 20 minute; Wood, of same species as door facing, mitered corners .

2.06 DOOR CONSTRUCTION

- A. Fabricate doors in accordance with door quality standard specified.
- B. Core Blocking:
 - 1. Non-Rated Doors - Flush (F), narrow view glass (NVG), narrow glass short (NGS), half-glass (HG) or other type indicated on the A6 drawings.
 - a. Provide solid blocks at lock edge, and top of door for closer for hardware reinforcement.
 - b. Provide solid blocking for other through-bolted hardware.
 - 2. Non-Rated Doors - Full glass (FG1) or full glass with mid-rail (FG2).
 - a. Solid blocking not required.
 - 3. All Doors with Closers:
 - a. Provide top lock blocking.
 - b. Particleboard is not acceptable as blocking material.
- C. Fit door edge trim to edge of stiles after applying veneer facing.
- D. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- E. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
- F. Provide edge clearances in accordance with the quality standard specified.

2.07 FACTORY GLAZING - WOOD VENEER DOORS

- A. Glazing: Provided by wood door manufacturer as specified in Section 088000.
- B. Infill all nail holes, to match wood veneer color, both sides of glazing stops.

2.08 FACTORY FINISHING - WOOD VENEER DOORS

- A. Factory finish doors in accordance with approved sample for a transparent finish. Color to be selected by Architect.
- B. Finish Type: Water based stain with UV resistant cured polyurethane sealer to comply with EPA Title 5 guidelines for VOC emissions limitations or UV cured urethane per WDMA TR-6.
 - 1. Sheen: Satin Gloss.
 - 2. Testing: ANSI A161 1-1993 Section 9-3 Chemical Resistance.
 - a. Chemical Resistance: ANSI A161 1-1993 Section 9-3 Chemical Resistance.
 - b. Adhesion: ASTM D 3359 Method B to provide no loss of adhesion.
 - c. Water Resistance: Cellulose sponge containing 152 grams of water with no visible discoloration, staining, blistering or grain raise after 24 hours of exposure.

2.09 ACCESSORIES

- A. Glazing Stops: Non-fire-rated and 20 minute; Wood, of same species as door facing, mitered corners, flush beads/stops without reveal; prepared for countersink style nails or screws. Nail/screw holes to be filled with wood putty to match wood species. Sand filler smooth.
- B. Glazing Stops: Fire-rated doors 45 minute and above: Flush, wood veneer clad PVC or veneer wrapped rolled steel of same species as door facing. Provide glazing stops to match rating requirement of the door. Fire rated glazing to meet requirements of NFPA 80 to ensure all fire doors have a completed opening that meets all fire rating requirements.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
- B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Use machine tools to cut or drill for hardware.
- D. Coordinate installation of doors with installation of frames and hardware.
- E. Coordinate installation of glazing.

3.02 ADJUSTING

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

END OF SECTION

SECTION 083100 - ACCESS DOORS AND PANELS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Access door and frame units, non-fire-rated, in wall locations.

1.02 RELATED REQUIREMENTS

- A. Section 042000 - Unit Masonry: Openings in masonry.
- B. Section 099000 - Painting: Field coating.

1.03 REFERENCE STANDARDS

- A. ITS (DIR) - Directory of Listed Products current edition.
- B. UL (FRD) - Fire Resistance Directory Current Edition.

1.04 SUBMITTALS

- A. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
- B. Shop Drawings: Indicate exact position of each access door and/or panel unit.
- C. Project Record Documents: Record actual locations of each access unit.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Access Doors: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the Work include:
- B. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements, and aesthetics of the following:
 - 1. Acudor Products, Inc: www.acudoor.com
 - a. Non-Fire Rated Walls - Acudor Products - DW-5040
- C. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions, profiles, and formulations are minor and do not change the design concept as judged by the Architect.
 - 1. Architectural Products Co.: www.archprod.com.
 - 2. Acudor Products Inc: www.acudor.com.
 - 3. Cendrex: www.cendrex.com
 - 4. Karp Associates, Inc: www.karpinc.com.
 - 5. Milcor by Commercial Products Group of Hart & Cooley, Inc: www.milcorinc.com.
 - 6. Larsen's Manufacturing : www.larsenmfg.com
 - 7. Babcock Davis: www.babcockdavis.com
 - 8. J. L. Industries: www.jlindustries.com

2.02 ACCESS DOORS AND PANELS

- A. All Units: Factory fabricated, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with assemblies units are to be installed in.

2.03 ACCESS DOOR UNITS - WALLS

- A. Door and Frame Units: Formed steel.
 - 1. Frames and flanges: 0.058 inch (16 gage minimum) continuous welded steel.
 - a. Grind all welds smooth and flush with adjacent surfaces.
 - 2. Door panels: 0.070 inch (14 gage minimum) single thickness, continuous welded, steel sheet.
 - a. Grind all welds smooth and flush with adjacent surfaces.
 - 3. Sizes:
 - a. Walls: 16 x 16 inches in (cmu) #177 Toilet and #176A Water Entrance.
 - 4. Hardware:
 - a. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
 - b. Hinge: Concealed constant force closure spring type.
 - c. Latch/Lock: Cylinder lock-operated cam latch, two keys for each unit.
 - 5. Prime coat with alkyl primer.

2.04 FABRICATION

- A. Weld, fill, and grind joints to ensure flush and square unit.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that rough openings are correctly sized and located.

3.02 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings, and secure units rigidly in place.
- C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

SECTION 083313 - COILING COUNTER DOORS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Non-fire-rated coiling counter doors and operating hardware.

1.02 RELATED REQUIREMENTS

- A. Section 061000 - Rough Carpentry: Rough openings.
- B. Section 042000 - Unit Masonry: Openings

1.03 REFERENCE STANDARDS

- A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's standard literature showing materials and details of construction and finish. Include data on electrical operation.
- C. Shop Drawings: Indicate rough and actual opening dimensions, anchorage methods, hardware locations, and installation details.
- D. Samples: Submit two slats, 4 inch long, illustrating shape, color and finish texture.
- E. Manufacturer's Instructions: Indicate installation sequence and installation, adjustment, and alignment procedures.
- F. Operation and Maintenance Data: Indicate modes of operation, lubrication requirements and frequency, and periodic adjustments required.
- G. Warranty: Provide two year manufacturer warranty against defects in material, finish and workmanship. Correct defective Work within a one year period after Date of Substantial Completion.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Coiling Counter Doors: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - 1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Cornell - Coiling Counter Door #ESC10
 - 2. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect:
 - a. Clopay Corporation: www.clopaydoor.com.
 - b. Cornell Iron Works, Inc: : www.cornelliron.com
 - c. McKeon Rolling Steel Door Co.: www.mckeondoor.com
 - d. Overhead Door Corporation: www.overheaddoor.com
 - e. Raynor Garage Doors: www.raynor.com
 - f. Wayne Dalton Corporation: www.wayne-dalton.com.

g. The Cookson Company: www.cooksondoor.com

2.02 COILING COUNTER DOORS

- A. Coiling Counter Doors, Non-Fire-Rated: Stainless steel slat curtain.
 - 1. Mounting: Interior face mounted.
 - 2. Nominal Slat Size: 1-1/4 inches wide.
 - 3. Slat Profile: Flat.
 - 4. Finish: No. 4 - Brushed.
 - 5. Guides: Formed track; same material and finish unless otherwise indicated.
 - 6. Hood Enclosure: anodized; aluminum.
 - 7. Manual push up operation.
 - 8. Locking Devices: Slide bolt on inside.
 - 9. Coordinate installation of coiling door with stainless steel dish return table. Provide seamless connection to avoid food or debris collection.

2.03 MATERIALS

- A. Curtain Construction: Interlocking, single thickness slats.
 - 1. Slat Ends: Alternate slats fitted with end locks to act as wearing surface in guides and to prevent lateral movement.
 - 2. Curtain Bottom: Fitted with tube to provide reinforcement and positive contact in closed position; vinyl astragal along bottom edge.
 - 3. Stainless Steel Slats: ASTM A666, Type 304; minimum thickness 22 gage, 0.03 inch.
- B. Guide Construction: Continuous, of profile to retain door in place, with mounting brackets of same metal.
 - 1. Stainless Steel Guides: ASTM A666, Type 304, rollable temper.
- C. Hood Enclosure: Internally reinforced to maintain rigidity and shape.
- D. Lock Hardware:
- E. Slide Bolt: Provide on single-jamb side, extending into slot in guides, with padlock on one side.
- F. Roller Shaft Counterbalance: Steel pipe and torsion steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb nominal force to operate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that opening sizes, tolerances and conditions are acceptable.

3.02 INSTALLATION

- A. Install units 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 sealants and backing materials at frame perimeter as specified in Section 079005.

3.03 TOLERANCES

- A. Maintain dimensional tolerances and alignment with adjacent work.
- B. Maximum Variation From Plumb: 1/16 inch.
- C. Maximum Variation From Level: 1/16 inch.
- D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 ft straight edge.

3.04 ADJUSTING

- A. Adjust operating assemblies for smooth and noiseless operation.

3.05 CLEANING

- A. Clean installed components.
- B. Remove labels and visible markings.

END OF SECTION

SECTION 084313 - ALUMINUM-FRAMED STOREFRONTS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Aluminum-framed storefront, with vision glass.
- B. Aluminum doors and frames.
- C. Weatherstripping.
- D. Integral exterior sunshades.
- E. Perimeter sealant.
 - 1. Perimeter caulking at interior and exterior wall veneer/substrate.
 - 2. Perimeter expandable spray foam insulation to be installed between exterior veneer/substrate and wood storefront anchorage blocking at frame surround to prevent wall cavity air to infiltrate the back side of the storefront framing.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements - Submittal procedures.
- B. Section 051200 - Structural Steel Framing: Steel attachment members.
- C. Section 055000 - Metal Fabrications: Steel attachment devices.
- D. Section 079005 - Joint Sealers: Perimeter sealant and back-up materials.
- E. Section 087100 - Door Hardware: Hardware items other than specified in this section.
- F. Section 088000 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site 2015.
- B. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2012.
- C. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.
- D. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric] 2014.
- E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2014.
- F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric] 2013.
- G. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen 2004 (Reapproved 2012).
- H. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference 2014.
- I. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference 2000 (Reapproved 2009).

1.04 PERFORMANCE REQUIREMENTS

- A. Design and size components to withstand the following load requirements without damage or permanent set, when tested in accordance with ASTM E 330, using loads 1.5 times the design wind

loads and 10 second duration of maximum load.

1. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
- B. Movement: Accommodate movement between storefront and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
- C. Air Infiltration: Limit air infiltration through assembly to 0.06 cu ft/min/sq ft of wall area, measured at a reference differential pressure across assembly of 1.57 psf as measured in accordance with ASTM E 283.
- D. Water Leakage: None, when measured in accordance with ASTM E 331 with a test pressure difference of 2.86 lbf/sq ft.
- E. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
- F. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
- G. Integral Exterior Sunshade: Design and size components to interact with the structural performance and combined loading of the storefront framing system.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, and internal drainage details .
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
 1. Integral Exterior Sunshades: Shop drawings to include all anchors, supports, frame attachments, connections, fastening, sealing methods and integration with the storefront system.
- D. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.
 1. Engineering calculations as described are required by Ross-Tarrant Architects, whether or not the listed manufacturers require engineered calculations.
 2. Include in the engineering calculations all storefront and integral exterior sunshade loads engineered in conjunction, and as part of, the storefront system.
 3. Engineering calculations documenting compliance are to be stamped by a registered professional engineer licensed in the State of Kentucky.
 - a. The storefront and integral sunshade calculations are to be performed together, by one registered P.E.

1.06 QUALITY ASSURANCE

- A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

- B. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.
- D. Source Limitations for Storefront System: Obtain all storefront, integral exterior sunshades and components through one source from a single manufacturer.
 - 1. Storefront manufacturers that do not manufacture sunshades or zero sightline operable vents are to provide proof of an arrangement with the selected sunshade manufacturer such that the sunshade can be included within any warranty requirements of the storefront system.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.09 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. General Contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total storefront system installation. Correct defective Work within a one year period after Date of Substantial Completion.
 - 1. Includes: glass (including insulated glazing units) integral exterior sunshade device anchorage and setting system, sealing, flashing and etc, as it relates to air, water and structural adequacy.
- C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, gloss reduction, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Storefront: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - 1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Exterior Storefront: EFCO Series 403 Flush Glazed Thermal Screw Spline Storefront.
 - b. Interior Storefront: EFCO Series 402 Flush Glazed Non-Thermal Screw Spline Storefront with glazing adaptors.
 - c. Exterior Entrance Doors: EFCO Series D500 Wide Stile Entry Door.
 - d. Interior Entrance Doors: EFCO Series D500 Wide Stile Entry Doors.
 - e. Integral Exterior Sunshades: EFCO Sunshade.

- 1) If the exact dimensions, sizes, shapes, spacing of components, and etc. of the sunshade indicated on the drawings are not an exact match as manufactured by the listed manufacturers, then the manufacturer is to provide the next larger size of component nearest the dimensions provided on the drawings.
2. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect:
 - a. Storefront:
 - 1) Apogee Enterprises, Inc./EFCO Corporation: www.efcocorp.com
 - 2) Graham Architectural Products: www.grahamwindows.com
 - 3) Kawneer North America: www.kawneer.com.
 - 4) Manko Window Systems, Inc: www.mankowindows.com.
 - 5) Oldcastle Building Envelope/Vistawall Architectural Products/CRL(C. R. Laurence)/United States Aluminum: www.oldcastlebe.com.
 - 6) Peerless Products, Inc.: www.peerless-usa.com
 - 7) YKK AP America Inc: www.ykkap.com.
 - 8) Trulite Glass and Aluminum Solutions: www.trulite.com
 - 9) Apogee Enterprises/Tubelite, Inc.: www.tubeliteinc.com.
3. Sunshades: If the storefront manufacturers listed above do not single source sunshades then products by other manufacturers (listed below) may be considered, provided the warranty, deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect:
 - a. AGS Inc.: www.agsshade.com
 - b. Architectural Fabrication: www.archfab.com
 - c. CS Construction Specialties: www.c-sgroup.com
 - d. Mapes Canopies, LLC: www.mapescanopies.com

2.02 STOREFRONT

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 1. Glazing Position: Centered (front to back).
 2. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.
 3. Air Infiltration Test Pressure Differential: 1.57 psf.
 4. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
 5. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
 6. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture

occurring within system.

7. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
8. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
9. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.

B. Performance Requirements:

1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
 - a. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
2. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8 psf.
3. Air Leakage Laboratory Test: Maximum of 0.06 cu ft/min sq ft of wall area, when tested in accordance with ASTM E283 at 6.27 psf pressure differential across assembly.
4. Movement: Accommodate movement between storefront and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
5. Air Infiltration: Limit air infiltration through assembly to 0.06 cu ft/min/sq ft of wall area, measured at specified differential pressure across assembly in accordance with ASTM E283.
6. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
7. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.

2.03 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
 1. Framing members for interior applications need not be thermally broken.
 2. Glazing Stops: Flush.
- B. Doors: Glazed aluminum, wide stile.
 1. Thickness: 1-3/4 inches.
 2. Top Rail: 5 inches wide, minimum.
 3. Vertical Stiles: 5 inches wide, minimum.
 4. Mid Rail: 6 inches wide, 5 inches minimum.
 5. Bottom Rail: 10 inches wide, minimum.
 6. Glazing Stops: Square.

- a. Exterior Glazed Lights: Non-removable stops on non-secure side. Glazing pocket to accept a 7/8 inch total thickness insulated unit. Size stops in accordance with specified glass thickness. Refer to section 088000 - Glazing for glass requirements.
 - b. Interior Glazed Lights: Non-removable stops on non-secure side. Size stops and glazing pocket to accept 1/4 inch glass thickness. Refer to section 088000 - Glazing for glass requirements.
- 7. Finish: Same as storefront framing.
- C. Sill Receptor, Sill Subframe and Sill Extension: Receptors, subframes and extensions are required for all exterior aluminum storefront system whether specifically shown/detailed on the architectural storefront details or required by the manufacturer to meet the aluminum storefront system warranty.
 - 1. General: Receptors, extensions and subframes to be an extruded, thermally broken, aluminum, receiver type sill receptor or subframe with a minimum thickness of .063" as indicated on the drawings. Extensions to be extruded aluminum with a minimum thickness of .063" depth as indicated on the drawings. Assembly shall not require the use of exposed fasteners or rivets. All exposed to view edges shall be hemmed. Color and finish to match aluminum storefront frame.
 - 2. Sill Receptor: Set receptor in a continuous bed of sealant to insure watertight seal with exterior wall components. Sill receptor shall return up the back of the storefront sill in the interior of the room and be one continuous piece the full depth of the storefront sill. Outside edge of sill receptor to have built-in drip edge. Provide receptor in one continuous piece the full width of the storefront opening. If storefront opening width exceeds the limits for one continuous piece receptor then provide a splice joint sealed with 4" wide, self-adhering flashing tape and sealant to provide a watertight splice per manufacturers requirements. Provide receptor with mechanically attached, end dams/caps that have been sealed with a self-adhering sheet product or sealant to provide a watertight condition.
 - a. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - 1) Sill Receptor: EFCO Corporation: 2G90 thermally broken sill receptor: www.efcocorp.com.
 - 2) Self-Adhering Flashing Tape: W. R. Grace; Perma-Barrier Tape (EFCO Corporation; #WM01)
 - 3. Sill Subframe: Provide subframe, in addition to the sill receptor, at areas where the storefront is sitting on the interior concrete slab with flush exterior hard surface. Set subframe in a continuous bed of sealant to insure watertight seal with floor surface. Provide subframe in one continuous piece the full width of the storefront opening. If storefront opening width exceeds the limits for one continuous piece subframe then provide a splice joint sealed with 4" wide, self-adhering flashing tape and sealant to provide a watertight splice per manufacturers requirements. Provide subframe with mechanically attached, end dams/caps that have been sealed with a self-adhering sheet product or sealant to provide a watertight condition.
 - a. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - 1) Sill Subframe - EFCO: 1G64 thermally broken sill subframe: www.efcocorp.com

- 2) Self-Adhering Flashing Tape: W. R. Grace; Perma-Barrier Tape (EFCO Corporation; #WM01)

4. No field or shop fabricated brake metal sill receptors, subframes or extensions will be accepted.

D. Integral Exterior Sunshades

1. All aluminum components to be extrusions fabricated from aluminum alloy 6063-T6, manufactured within commercial tolerances and free from defects impairing strength and/or durability.
2. All aluminum horizontal components (blades/air foils and fascia) shall be fabricated to have a minimum wall thickness of 0.063 inch to a maximum of 0.125 inch.
3. Horizontal components (blades and fascia) shall be mechanically fastened by means of extruded aluminum screw splines.
4. Sunshade "arms/outriggers" and mullion clips shall be extrusions, or cut from a single piece of aluminum plate, with a nominal wall thickness of 0.25 inch.
5. Screws, bolts and other exposed fasteners shall be aluminum, color/finish to match system, or stainless steel.
6. Refer to the drawings for locations, sizes and profiles of the integral exterior sunshades.

2.04 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Sheet Aluminum for Brake Metal: ASTM B209 (ASTM B209M). Minimum 0.040 gauge thickness. Prefinished sheet in color and gloss to match adjacent framing. Joints between brake metal and metal framing to be "hairline" in width. Provide "Z" clips to secure brake metal to metal framing. Provide sealant in all hairline joints, color to match adjacent framing color.
- C. Fasteners: Stainless steel.
- D. Perimeter Sealant: Type as specified in Section 079005.
- E. Glass: As specified in Section 088000.
- F. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

2.05 FINISHES

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.
 1. Storefront framing, integral exterior sunshade and all other exposed system components to have same finish system.
- B. Touch-Up Materials: As recommended by coating manufacturer for field application.

2.06 HARDWARE

- A. Other Door Hardware: As specified in Section 087100.
- B. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.
- C. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.

2.07 FABRICATION

- A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- C. Prepare components to receive anchor devices. Fabricate anchors.
- D. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
- E. Arrange fasteners and attachments to conceal from view.
- F. Reinforce components internally for door hardware and door operators.
- G. Reinforce framing members for imposed loads.
- H. Finishing: Apply factory finish to all surfaces that will be exposed in completed assemblies.
 - 1. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.02 INSTALLATION

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
 - 1. Install perimeter expandable spray foam insulation between exterior veneer/substrate and wood storefront anchorage blocking at frame surround to prevent wall cavity air from infiltrating the back side of the storefront framing.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Coordinate attachment and seal of perimeter air and vapor barrier materials.
- I. Provide expandable foam insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- J. Set thresholds in bed of sealant and secure.
- K. Install glass in accordance with Section 088000, using glazing method required to achieve performance criteria.
- L. Install perimeter sealant in accordance with Section 079005.
- M. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 ADJUSTING

- A. Adjust operating hardware and sash for smooth operation.

3.05 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.
- C. Remove excess sealant by method acceptable to sealant manufacturer.

END OF SECTION

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Commercial door hardware for the following swinging doors:
 - a. Aluminum.
 - b. Hollow metal.
 - c. Flush wood.
 - 2. Key cylinders for doors specified in other Sections.
 - 3. **Electrified access control door hardware and integration with existing access control and video-intercom systems. See Door Hardware Schedule and Door-Set Numbering Index (this Section) for hardware sets prefixed with "E" for required electrical and access control work and materials. See electrical specifications for additional electrical work and materials required.**
- B. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. KENTUCKY BUILDING CODE.

1.3 ALTERNATE PRICING

- A. Provide alternate pricing to include the Owner's preferred hardware manufacturers and series as indicated below:
 - 1. Key Cylinders: Corbin-Russwin, 7-pin, factory keyed to Owner's existing master key system.
 - 2. Locksets: Corbin-Russwin CL3300 series with AZD trim.
 - 3. Exit Devices: Yale 7000 series.
 - 4. Closers: Norton 7500 series.

1.4 SUBMITTALS

- A. **Number of Submittals: All items listed in this section are to be included in one submittal prepared by one Supplier.**
- B. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- C. Shop Drawings: Details of electrified door hardware, indicating the following:

1. **Factory-drawn Wiring Diagrams:** Hardware submittals without these diagrams will be rejected without review. Power, signal, and control wiring. Include the following:
 - a. System schematic.
 - b. Point-to-point wiring diagram identifying specific termination points for all electrified hardware items.
 - c. Riser diagrams indicating number of conductors and wire gauges required.
 - d. Elevation of each door indicating where items are located with respect to which side of opening, dimension above floor, and lateral and vertical distances from opening.
 - e. Product schematics.
 2. Detail interface between electrified door hardware and access control system.
 3. Operation Narrative: Describe the operation of doors controlled by electrified door hardware.
- D. Qualification Data:
1. Finish Hardware Installers
 - a. Finish hardware, including electrified hardware, for wood, hollow metal, and aluminum doors to be installed by personnel trained and certified by the manufacturer of the product furnished.
 - b. Provide manufacturer's certificates for installer as part of Contractor's bid information. Failure to supply certificates may result in rejection of bid.
 2. Hardware Supplier
 - a. Established contract hardware firm which maintains and operates an office, display, and stock in project area and which is a factory authorized distributor of the lock being furnished.
 - b. Hardware scheduled and furnished by or under direct supervision an Architectural Hardware Consultant.
 - c. All schedules submitted to the Architect for approval and job use must carry the signature and certified seal of this Architectural Hardware Consultant.
 3. Architectural Hardware Consultant
 - a. Currently certified by the Door and Hardware Institute.
 - b. Full-time employee of the Hardware Supplier or an individual having no contractual ties to any supplier/manufacturer entity.
 - c. Available at reasonable times to Architect, Owner, and Contractor during course of work.
- E. Maintenance Data: For each type of door hardware. Include final hardware schedule, keying schedule, riser diagrams, and point-to-point wiring diagrams in 3-ring binder, labeled on spine with project name and "Door Hardware".
- F. Warranty: Special warranty specified in this Section.
- G. Other Action Submittals:
1. Door Hardware Sets: Prepared by or under the supervision of a DHI certified Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - a. **Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule"; other formats will be rejected without review. Double space entries, and number and date each page.**
 - b. **Numerical Sequence of Sets and Headings: Submittal headings shall be in exact order as hardware sets in specification: one heading only per set. Submittal set numbers shall relate to specification set numbers, ie. if three headings are required for Set 12**

due to door width differences, then the heading numbers should be 12.1, 12.2, and 12.3 or employing similar linking logic.

c. **Door Numbers: Identical to those used in the contract documents.**

d. Number of Copies: (5).

e. Content: Include the following information:

- 1) Identification number, location, hand, fire rating, and material of each door and frame.
 - 2) Type, style, function, size, quantity, and finish of each door hardware item.
 - 3) Complete designations of every item required for each door or opening including name and manufacturer.
 - 4) Degree of opening for closer and overhead stop and holder installation.
 - 5) Keying information.
 - 6) Fastenings and other pertinent information.
 - 7) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - 8) Explanation of abbreviations, symbols, and codes contained in schedule.
 - 9) Mounting locations for door hardware.
 - 10) **Notes included with specification hardware sets transcribed verbatim into submittal hardware sets.**
 - 11) Door and frame sizes and materials.
 - 12) Description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems.
 - a) Sequence of Operation: Include description of component functions that occur in the following situations: authorized person wants to enter; authorized person wants to exit; unauthorized person wants to enter; unauthorized person wants to exit.
 - 13) List of related door devices specified in other Sections for each door and frame.
- f. Submittal Sequence: Submit the final door hardware sets at earliest possible date, particularly where approval of the door hardware sets must precede fabrication of other work that is critical in Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the door hardware sets.

2. Keying Schedule: Prepared by or under the supervision of Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.5 QUALITY ASSURANCE

- A. **Furnish proper hardware types and quantities for door function, hardware mounting and clearances, and to meet applicable codes. Bring discrepancies to the attention of the Architect a minimum of (10) days prior to bid date so that an addendum may be issued. No additional compensation will be allowed after bidding for hardware changes required for proper function, hardware mounting or clearances, or to meet codes.**
- B. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- C. Source Limitations: **All items listed in hardware sets are to be furnished by one supplier.** Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.
- D. Regulatory Requirements: Comply with NFPA 70, NFPA 80, NFPA 101 and ANSI A117.1 requirements and guidelines as directed in the model building code including, but not limited to, the following:
1. NFPA 70 "National Electrical Code", including electrical components, devices, and accessories listed and labeled as defined in Article 100 by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 2. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1 as follows:
 - a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
 - b. Door Closers: Comply with the following maximum opening-force requirements indicated:
 - 1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
 - 2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
 3. NFPA 101: Comply with the following for means of egress doors:
 - a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
 - b. Thresholds: Not more than 1/2 inch high.
 4. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 (neutral pressure at 40" above sill) or UL-10C.
 - a. Test Pressure: Positive pressure labeling.
- E. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
1. Function of building, purpose of each area and degree of security required.
 2. Plans for existing and future key system expansion.
 3. Requirements for key control storage and software.
 4. Installation of permanent keys, cylinder cores and software.
 5. Address and requirements for delivery of keys.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. **Deliver hardware for aluminum doors to GC in timely manner so as not to delay fabrication of aluminum doors and frames. Balance of hardware may be delivered to GC at same time, packaged separately from aluminum door hardware, and may be billed as stored materials.**
- C. Tag each item or package separately with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.

- D. Deliver keys to Owner by registered mail or overnight package service. Obtain Owner's contact name and address from Architect.

1.7 COORDINATION

- A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Distribute templates in a timely manner so as not to delay suppliers. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Electrical System Roughing-in: Coordinate layout and installation of electrified door hardware with connections to power supplies, fire alarm system and detection devices, access control system, and security system.
- C. Existing Openings: Where new hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide for proper operation.

1.8 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for extra heavy duty cylindrical (bored) locks and latches.
 - 2. Seven years for heavy duty cylindrical (bored) locks and latches.
 - 3. Five years for exit hardware.
 - 4. Ten years for manual door closers.
 - 5. Two years for electromechanical and integrated access control door hardware.

1.9 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. Maintenance Service: Beginning at Substantial Completion, provide (6) months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper

door hardware operation. Provide parts and supplies same as those used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in this and door hardware sets indicated in Part 3 "Door Hardware Sets" Article.
 - 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
- B. Designations: Requirements for design, grade, function, material, finish, size and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.
 - 2. References to BHMA Standards: In addition to other requirements in this section, provide products complying with or exceeding these standards and requirements for description, quality, and function.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electrified access control door hardware, in compliance with specifications, must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01 "Substitution Procedures". Approval of requests is at the discretion of the architect, owner, and their designated consultants.
- D. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include manufacturers specified.

2.2 BUTT HINGES, GENERAL

- A. Quantity: Provide the following, unless otherwise indicated:
 - 1. Two Hinges: For doors with heights up to 60 inches (1524 mm).
 - 2. Three Hinges: For doors with heights 61 to 90 inches (1549 to 2286 mm).
 - 3. Four Hinges: For doors with heights 91 to 120 inches (2311 to 3048 mm).
 - 4. For doors with heights more than 120 inches (3048 mm), provide 4 hinges, plus 1 hinge for every 30 inches (750 mm) of door height greater than 120 inches (3048 mm).
- B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- C. Hinge Height, Width, and Weight: Unless otherwise indicated, provide the following:
 - 1. Doors with Exit Devices or 3'6" or more in width: 5" high, heavy-weight hinges.
 - 2. Doors less than 3'6" in width: 4-1/2" high, standard-weight hinges.
 - 3. Width: 4-1/2" heavy-weight, 4" standard-weight, unless proper clearance requires a different width.
 - 4. Doors with Closers: Antifriction-bearing hinges.

- D. Hinge Base Metal: Unless otherwise indicated, provide the following:
 - 1. Exterior and in-swinging restroom door hinges: Stainless steel, with stainless-steel pin.
 - 2. Balance of hinges: Steel, with steel pin.
- E. Hinge Options: Provide the following:
 - 1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for reverse bevel lockable doors.
 - 2. Corners: Square.
 - 3. Number of knuckles: Five.
- F. Fasteners: Comply with the following:
 - 1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
 - 2. Wood Screws: For wood doors and frames.
 - 3. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
 - 4. Screws: Phillips flat-head. Finish screw heads to match surface of hinges.
- G. Template Hinge Dimensions: BHMA A156.7.
- H. Available Manufacturers:
 - 1. Bommer Industries, Inc. (BI).
 - 2. Hager Companies (HAG).
 - 3. McKinney Products Company; an ASSA ABLOY Group company (MCK).
 - 4. Stanley Commercial Hardware; Div. of The Stanley Works (STA).
 - 5. PBB, Inc. (PBB)

2.3 CONTINUOUS HINGES

- A. Provide hinge of general series as indicated in hardware sets and of proper shape and model to suit door and frame configuration.
- B. Continuous, Pinless-Type Hinges: Extruded-aluminum, pinless, hinge leaves; with concealed, self-lubricating thrust bearings.
 - 1. Available Manufacturers:
 - a. Hager Companies (HAG).
 - b. IVES Hardware; an Allegion Company (IVE).
 - c. McKinney Products Company; an ASSA ABLOY Group company (MCK).
 - d. Architectural Builders Hardware (ABH).
 - e. Pemko Manufacturing Co. (PEM).
 - f. Select Products Limited (SPL).
 - g. Stanley Commercial Hardware; Div. of The Stanley Works (STA).
 - h. Zero International (ZRO).

2.4 ELECTRIC STRIKES

- A. Standard Electric Strikes: Heavy duty, cylindrical and mortise lock electric strikes conforming to ANSI/BHMA A156.31, Grade 1, UL listed for both Burglary Resistance and for use on fire rated door assemblies. Stainless steel construction with dual interlocking plunger design tested to exceed 3000 lbs. of static strength and 350 ft-lbs. of dynamic strength. Strikes tested for a minimum 1 million operating cycles. Provide strikes with 12 or 24 VDC capability and supplied standard as fail-secure unless

otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.

1. Acceptable Manufacturers:
 - a. HES (HES) - 1006 Series.
 - b. Security Door Controls (SDC) - 55 Series.
 - c. Von Duprin (VON) - 6000 Series.
 - d. Trine (TRN) - 4100 series.
- B. Provide electric strikes with in-line (MOV) surge suppressors.

2.5 LOCKS AND LATCHES, GENERAL

- A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."
1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).
- B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.
- C. Lock Trim:
 1. Levers: Cast.
 - a. Corbin Russwin AZD model with no return.
 2. Dummy Trim: Match lever lock trim and roses.
 3. Lockset Designs: Provide design indicated in hardware sets, or, if sets are provided by another manufacturer, provide designs that match those designated.
- D. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
 1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.
- E. Backset: 2-3/4 inches (70 mm), unless otherwise indicated.
- F. Strikes: Manufacturer's standard strike with strike box for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, and as follows:
 1. Strikes for Bored Locks and Latches: BHMA A156.2.

2.6 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: Function numbers and descriptions indicated in door hardware sets comply with the following:
 1. Bored Locks: BHMA A156.2.
- B. Bored Locks: BHMA A156.2 Grade 1.
 1. Available Manufacturers:

- a. Best Access Systems; Div. of The Stanley Works (BAS).
- b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (C-R).
- c. Schlage Commercial Lock Division; an Allegion Company (SCH).

C. Compatibility with Key Cylinders: fully warranted for use with key cylinder furnished.

2.7 DOOR BOLTS

A. Bolt Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

- 1. Surface Bolts: Minimum 1-1/8-inch (29-mm) throw.

B. Surface Bolts: BHMA A156.16, Grade 1.

- 1. Flush Bolt Heads: Minimum of 1/4-inch-(6mm) x 1/2-inch- (13-mm-) bolts of stainless steel with minimum 12-inch- (305-mm-) long rod for doors up to 84 inches (2134 mm) in height. Provide longer rods as necessary for doors exceeding 84 inches (2134 mm).
- 2. Available Manufacturers:
 - a. Door Controls International (DCI).
 - b. Glynn-Johnson; an Allegion Company (GLY).
 - c. Hager Companies (HAG).
 - d. IVES Hardware; an Allegion Company (IVE).
 - e. McKinney Products Company; an ASSA ABLOY Group company (MCK).
 - f. Rockwood Manufacturing Company (ROC).
 - g. Trimco (TRI).

2.8 EXIT DEVICES

A. Exit Devices: BHMA A156.3, Grade 1.

B. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

- 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

C. Exit Devices for Means of Egress Doors: Comply with NFPA 101. Exit devices shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

D. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

E. Removable Mullions

- 1. BHMA A156.3.
- 2. Key removable.
- 3. Provide head cap spacers, angle brackets, and other mounting accessories as needed for proper mounting, and anchoring and support of screws, as needed for top jamb configuration.
- 4. Provide mullion stabilizer sets for mullions at exterior openings.

- F. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
 - 1. Operation: Rigid.
- G. Outside Trim: As specified in hardware sets; material and finish to match locksets, unless otherwise indicated.
 - 1. Match design for locksets and latchsets, unless otherwise indicated.
- H. Fasteners. Manufacturer's standard, except furnish sex bolts for attachments to doors.
- I. Shims: Provide shims if needed for clearance.
- J. Available Manufacturers:
 - 1. Detex, Inc. (DTX)
 - 2. Precision Hardware, Inc. (PHI).
 - 3. Von Duprin; an Allegion Company (VON).
 - 4. Yale (YAL).

2.9 KEY CYLINDERS

- A. Standard Lock Cylinders: BHMA A156.5, Grade 1.
- B. Cylinders: Provide non-IC cylinders for all devices requiring key cylinders to properly function: constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:
 - 1. Number of Pins: Seven.
 - 2. Keyway: Corbin-Russwin high security or as directed by Owner.
 - 3. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
 - 4. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 - 5. Bored-Lock Type: Cylinders with tailpieces to suit locks.
- C. Construction Keying: Comply with the following:
 - 1. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 6 construction master keys.
- D. Supplemental Items: Provide cylinder spacers, collars, and correct cams as needed for proper function of locking devices.
- E. Available Manufacturers:
 - 1. Best Access Systems; Div. of The Stanley Works (BAS).
 - 2. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (C-R).
 - 3. Medico; an ASSA ABLOY Group company (MED).

2.10 KEYING

- A. Keying System: Factory registered (contact Corbin-Russwin for key registry number), complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference, and as follows:
 - 1. Existing System: Master key or grand master key locks to Owner's existing system.

- B. Keys: Nickel silver.
 - 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: "DO NOT DUPLICATE."
 - 2. Quantity: Provide the following:
 - a. Cylinder Change Keys: Three per cylinder.
 - b. Master Keys: Six per master.
 - c. Grand Master Keys: Six.
 - d. Great-Grand Master Keys: Five.
 - e. Blanks: One hundred.

2.11 OPERATING TRIM

- A. Materials: Fabricate from stainless steel, unless otherwise indicated.
- B. Dimensions: All dimensions, shapes, fasteners, and other properties identical to models specified in hardware sets.
- C. Push Plates:
 - 1. 0.125" thick, Type 304 solid stainless steel, 4" or 8" wide as indicated by model number in hardware sets, 16" high (unless stile width requires different width), heavy bevel all (4) edges, 3/8" radius rounded corners, factory prepped for key cylinders and thumb-turns as required.
 - 2. Dimensions:
 - a. Top of plate to horizontal centerline of key cylinder: 5".
 - b. Horizontal centerline of key cylinder to horizontal centerline of thumb-turn: as required per dimension of lock model.
 - c. Lock-side edge of plate to vertical centerline of key cylinder: 2".
- D. Pull Plates:
 - 1. Plate: 0.050" thick, 4" wide x 16" high (unless stile width requires different width), bevel all (4) edges, 3/8" radius rounded corners, factory prepped for key cylinders and thumb-turns as required.
 - 2. Grip: 1" wide, 8" CTC, Type 304 solid stainless steel, half-moon profile.
 - 3. Dimensions:
 - a. Top of plate to horizontal centerline of key cylinder: 2".
 - b. Horizontal centerline of key cylinder to horizontal centerline of thumb-turn: as required per dimension of lock model.
 - c. Edge of plate to vertical centerline of key cylinder and grip: 2".
 - d. Top of plate to horizontal centerline of grip: 10".
- E. Available Manufacturers:
 - 1. Hager Companies (HAG).
 - 2. Hiawatha (HIW).
 - 3. Burns (BRN).
 - 4. IVES Hardware; an Allegion Company (IVE).
 - 5. Rockwood Manufacturing Company (ROC).
 - 6. Trimco (TRI).

2.12 SURFACE CLOSERS

- A. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."
- 1. Comply with the following maximum opening-force requirements:
 - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
 - b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
- B. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.
- C. Fasteners: Manufacturer's standard for arms, shoes and brackets. Sex bolts for fastening closers to doors.
- D. Mounting Accessories: Provide shoes, brackets, drop plates, spacers, etc., as needed for proper mounting of closers and arms to door and frame.
- E. Spring Size of Units: Provide field-sizeable closers, adjustable for spring sizes 1-6, plus 50% extra spring power at spring size 6, to meet field conditions and requirements for opening force.
- F. Cylinders: 1-1/2" minimum diameter; cast iron or high-silicon alloy aluminum.
- G. Mounting Configuration: Unless otherwise indicated by model number in the hardware sets:
 - 1. Do not furnish closers capable of being mounted on the corridor side of doors.
 - 2. Do not furnish regular arm closers in areas accessible to students.
 - 3. If tri-pack closers are furnished for regular arm applications, remove parallel arm shoe from closer box before delivering to job.
 - 4. Parallel Arm closers are to be manufacturer's double forged rigid models.
- H. Available Manufacturers and Series for Rack and Pinion Surface Closers:
 - 1. LCN Closers; an Allegion Company (LCN): 4040XP series.
 - 2. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SAR): 281 series.
 - 3. Norton 7500 series (NOR).

2.13 PROTECTIVE TRIM UNITS

- A. Size:
 - 1. Width
 - a. Singles, and pairs with removable mullions or surface applied astragals: 2 inches (38 mm) less than door width on push side and 1 inch (13 mm) less than door width on pull side
 - b. Other pairs: 1 inch (13 mm) less than door width
 - 2. Height: as specified in door hardware sets; or, if constrained by door bottom rail height, 1" less bottom rail height.
- B. Fasteners: Manufacturer's machine or self-tapping countersunk screws.
- C. Metal Protective Trim Units: BHMA A156.6; beveled 4 sides; fabricated from 0.050-inch- (1.3-mm-) thick stainless steel.

D. Available Manufacturers:

1. Hager Companies (HAG).
2. IVES Hardware; an Allegion Company (IVE).
3. Hiawatha (HIW).
4. Burns (BRN).
5. Rockwood Manufacturing Company (ROC).
6. Trimco (TRI).

2.14 MECHANICAL WALL AND FLOOR STOPS AND HOLDERS

A. Stops and Bumpers: BHMA A156.16, Grade 1.

1. Provide wall stops for doors unless floor, overhead, or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Provide floor stops (and spacers if needed) of proper height and configuration to accommodate floor condition. Where floor or wall stops are not appropriate, provide overhead holders.
2. Properties. Cast construction with fastener suitable for wall or floor condition.
3. Available Manufacturers:
 - a. Hager Companies (HAG).
 - b. IVES Hardware; an Allegion Company (IVE).
 - c. Hiawatha (HIW).
 - d. Burns (BRN).
 - e. Rockwood Manufacturing Company (ROC).
 - f. Trimco (TRI).

B. Wall and Floor mounted Combination Door Stops and Holders: BHMA A156.16, Grade 1.

1. Properties: Heavy cast with adjustable holding force, self-compensating for changes up to ¼" in vertical door position. **Provide flush spacers finished to match adjoining substrates for clearance as needed.**
2. Manufacturer and Model: Trimco 1283.

2.15 OVERHEAD STOPS AND HOLDERS

A. BHMA A156.8, Grade 1. Template for maximum degree of opening before encountering obstruction.

B. Available Manufacturers:

1. Architectural Builders Hardware Mfg., Inc. (ABH).
2. Glynn-Johnson; an Allegion Company (GLY).
3. Hager (HAG).
4. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
5. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SAR).

2.16 SILENCERS

A. Provide silencers for Metal and Wood Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame.

B. Available Manufacturers:

1. Glynn-Johnson; an Allegion Company (GLY).
2. Hager Companies (HAG).
3. IVES Hardware; an Allegion Company (IVE).

4. McKinney Products Company; an ASSA ABLOY Group company (MCK).
5. Rockwood Manufacturing Company (ROC).
6. Trimco (TRI).

2.17 DOOR GASKETING

- A. General: Provide continuous weather-strip gasketing on exterior hollow metal doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide noncorrosive fasteners as indicated by models in hardware sets.
 1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame. If hardware is to be attached to the frame and would interfere with the gasketing, then provide hardware compatible gasketing that does not need to be cut for the mounting of hardware.
 2. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
 3. Mullion Gasketing: Fasten to mullions, forming seal when doors are closed.
 4. Sweeps: Apply to bottom of in-swinging exterior hollow metal doors, or as required for sound attenuation, forming seal with threshold or floor when door is closed.
 5. Seals integral to threshold at out-swinging exterior hollow metal doors.
- B. Requirements per type of rated door provided (these requirements supersede models indicated in hardware sets):
 1. Category A wood doors: provide models indicated in hardware sets.
 2. Category B wood doors: provide Category G&H seals at jambs and meeting edges. If Category H seals are indicated in hardware sets, provide Cat G seals in addition to the Category H seals.
 3. Category A and B hollow metal doors: provide models indicated in hardware sets.
- C. Air Leakage: Not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283.
- D. Mullion Gasketing: Sealing up to 1/4" gaps, 4 vanes, adhesive backed, collapsible to 1/32", black. Basis of Design: DHSI (DHS) Model MS-SA/75 x BK.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Jamb Gasketing Materials:
 1. Adhesive Seals. As specified in hardware sets or approved equal.
 2. Intumescents: As required.
 3. Screwed-on weatherstrip and sweeps. Neoprene.
 4. Panic type thresholds. Neoprene.
- G. Available Manufacturers for Jamb Gaskets (provided they provide items with neoprene inserts):
 1. Hager Companies (HAG).
 2. National Guard Products (NGP).
 3. Pemko Manufacturing Co. (PEM).
 4. Reese Enterprises (REE).
 5. Zero International (ZER).

2.18 THRESHOLDS

- A. Standard: BHMA A156.21

- B. Accessibility Requirements: Where thresholds are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."
- 1. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
- C. Thresholds for Means of Egress Doors: Comply with NFPA 101. Maximum 1/2 inch (13 mm) high.
- D. Fasteners: 1/4-20 machine screws and expansion anchors.
- E. Gasketing material: At panic-type thresholds: neoprene.
- F. Available Manufacturers (provided they provide items with neoprene inserts):
 - 1. Hager Companies (HAG).
 - 2. National Guard Products (NGP).
 - 3. Pemko Manufacturing Co. (PEM).
 - 4. Reese Enterprises (RE).
 - 5. Zero International (ZRO).

2.19 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.
 - 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.
- C. **Fasteners: Manufacturer's standard, except as noted in product sections of this specification.**

2.20 FINISHES

- A. Standard: BHMA A156.18, as indicated in door hardware sets.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Steel Doors and Frames: Comply with DHI A115 Series.
 - 1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI A250.6.
- B. Wood Doors: Comply with DHI A115-W Series.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 3. Pulls: locate pulls as directed by Architect.
 - 4. Push Plates: Top edge of plate: 53" AFF.
 - 5. Pull Plates: Top edge of plate: 50" AFF. Centerline of Grip: 40" AFF.
- B. Mounting Locations:
 - 1. Floor Stops and Holders: Locate at least 20" out from hinge edge of door for maximum degree of opening before door encounters obstruction.
 - 2. Wall Stops: Locate so that lockset spindle and wall stop share horizontal and vertical centerlines.
 - 3. Wall Stop/Holders: Locate 4" down and in from top lock-edge corner of door w/holder slot at bottom of unit.
 - 4. **Closers and Overhead Stop/Holders: Template and mount closers and overhead stops for maximum degree of opening before door encounters obstruction or so as to interface with specified wall stops and holders. When used with closers, template and locate overhead stops so that closer arm does not fully extend and bottom out. These functionality requirements override any degree of opening information in the specifications or submittals.**
- C. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- D. **Weatherstrip and Gasketing with Metal Retainers: Fit up as needed for neat appearance with no gaps between retainers or bulbs.**

- E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants." **Position for complete seal with bottom of doors with no penetration of air or daylight.**

3.4 FIELD QUALITY CONTROL

- A. Provide Door Hardware Inspection Services and Field Quality Report as indicated below.
- B. Door Hardware Inspection Services
 - 1. Scope
 - a. Inspection of all swinging doors and door hardware immediately following completion of installation.
 - b. Inspector to furnish a Field Quality Report, itemized per each individual opening, to the Architect within 7 days of the inspection, including:
 - 1) deficiencies in workmanship and standard industry practices,
 - 2) use of allowable products,
 - 3) use of manufacturer recommended fasteners,
 - 4) compliance with the ADA,
 - 5) proper door/frame/hardware clearances,
 - 6) problems related to function, security, aesthetics or maintenance.
 - 2. Inspector Qualifications
 - 1) Certified Architectural Hardware Consultant.
 - 2) Entirely independent of the supply side of the project, having no familial or financial relationship with any manufacturer, manufacturer's representative, distributor, installer or supplier used on this project.
 - 3) Approved by Architect. Go to <http://www.dhi.org/> for searchable list of local Architectural Hardware Consultants.
 - 4) Full member in good standing of Specification Consultants in Independent Practice (SCIP).
 - 5) Same Inspector for re-inspections as for the initial inspection.
 - 3. Payment for the inspection and subsequent re-inspections until work is complete and approved is to be made directly by the Contractor to the Inspector within 30 days of receipt of report and invoice.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
- B. Overhead Stops/Holders: Set adjustable stops for maximum degree of opening before door encounters obstruction. Adjust friction to control door.
- C. Wall and Floor Mounted Stop/Holders: Adjust holding force with spanner head wrench so that door is held securely, yet is easy to pull out of hold open.
- D. Door Closers:
 - 1. Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.
 - 2. Adjust latch period so that door does not slam nor injure fingers.

3. **Adjust spring power for minimum force required so that door properly and reliably latches. It is recommended that all closers be adjusted to a Spring Size 1 (either at the factory or at the facility of the Contract Hardware Supplier) prior to delivery to job; they can then be adjusted up to meet requirements. ADA maximum force to open a non-rated interior doors is 5 lbf; 8.5lbf for an exterior non-rated door. Installer is required to adjust spring power on every closer during installation using a door force gage. If ADA requirements cannot be met due to door-frame-hardware clearance issues of HVAC issues, bring to Contractors attention to resolve problem.**
 4. Adjust backcheck to slow door down before hitting stop point so as to prevent damage to closer, arm, door, frame, and fasteners.
- E. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer shall examine and readjust, including adjusting operating forces, each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 DOOR HARDWARE SCHEDULE (on following pages followed by door-set index)

Hardware Set E01***Non-electrified Items:***

(2)	Continuous Hinge	SL11HD	628	SEL
(1)	Key Removable Mullion	KRM200 x 102S x M103 x M104	689	YAL
(1)	NS Panic Device, Rim, 03	7205M x 121	630	YAL
(1)	NS Panic Device, Rim, 01	7205M	630	YAL
(1)	Rim Cylinder		626	C-R
(3)	Mortise Cylinder		626	C-R
(2)	Offset Pull	1191-3 x E Mtg	630	TRI
(2)	Closer, w/Spring Stop	CPS7500 x 6891 x 6890	689	NOR
(1)	Cat H Adhesive Mullion Seal/Mute MS-SA/75		BLK	DHS

Note 1: ADA threshold, door bottom, meeting edge and jamb seals by aluminum door supplier.

Electrified Items:

(2)	Rim Panic Electric Strike	4850	630	TRN
(2)	Mullion Wire Harness	MWH-5		TRN
(1)	Video-intercom System w/Remote Release Pushbutton (see electrical specifications)			

Electrical / Access Control Note 1: Salvage the Nortek (IEI) Prox.Pad Plus cardreader unit and power supply from an existing location approximately 40' to the east of Door 170.1. Reinstall these units (including new 110V, 1A service to power supply) to integrate with the electric strikes at Door 170.1. Provide single-gang flush mounting box on exterior wall within 18" of RHRB side jamb, 44" AFF; locate video-intercom next to flush box. Provide conduit with pull string from power supply to electric strikes (to center mullion headcap on top jamb) and to flush box and to video-intercom. Provide low voltage cabling and terminations for fully functional system. Program Prox.Pad Plus cardreader unit using the existing Hubmanager Professional software as directed by Owner. The original installer of this access control system is Terry's Locksmith in Houstonville, KY at 606-346-3076; they may be subcontracted to do the work associated with this system.

System Function: Free egress. Ingress by card, key, or by remote release pushbutton integral to the video-intercom system. Doors may be maintained locked or unlocked through access control system.

Hardware Set E02***Non-electrified Items:***

(1)	Continuous Hinge	SL24HD	628	SEL
(1)	Panic Device, Rim, 03	7105 x 632F	630	YAL
(1)	Rim Cylinder		626	C-R
(1)	Mortise Cylinder		626	C-R
(1)	Closer, HD Parallel Arm	PR7500	689	NOR
(1)	Armor Plate	KA050-2 34 x 2LDW x CS x B4E	630	TRI
(1)	Wall Stop/Holder	1283-6S	626	TRI
(1)	Digital Peephole Viewer	PHV1325		Brinno
(1)	Cat H Jamb Seal Set	700NA	628	NGP
(1)	Door Bottom Shoe	217APK	628	PEM
(1)	¼" HD Saddle Threshold	513HD	628	NGP

Electrified Items:

(1)	Rim Panic Electric Strike	4850	630	TRN
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Electrical / Access Control Note 1: Salvage the Nortek (IEI) Prox.Pad Plus cardreader unit and power supply from an existing location (Admin entry door). Reinstall these units (including new 110V, 1A service to power supply) to integrate with the electric strike at Door 177A. Provide 110VAC, 1A service to power supply; locate as directed by Architect. Provide single-gang flush mounting box on exterior wall within 12" of strike jamb, 44" AFF. Provide conduit with pull string from power supply to electric strike and to flush box. Provide low voltage cabling and terminations for fully functional system. Program Prox.Pad Plus cardreader unit using the existing Hubmanager Professional software as directed by Owner. The original installer of this access control system is Terry's Locksmith in Houstonville, KY at 606-346-3076; they may be subcontracted to do the work associated with this system.

Hardware Set 01 (for Door 172.3 if Alternate No. 4 is accepted)

(2)	Continuous Hinge	SL11HD	628	SEL
(1)	Key Removable Mullion	KRM200 x 102S x M103 x M104	689	YAL
(1)	NS Panic Device, Rim, 03	7205M x 121	630	YAL
(1)	NS Panic Device, Rim, 01	7205M	630	YAL
(1)	Rim Cylinder		626	C-R
(3)	Mortise Cylinder		626	C-R
(2)	Offset Pull	1191-3 x E Mtg	630	TRI
(2)	Closer, w/Spring Stop/HO	CPS7500T x 6891 x 6890	689	NOR
(1)	Cat H Adhesive Mullion Seal/Mute MS-SA/75		BLK	DHS

Note 1: ADA threshold, door bottom, meeting edge and jamb seals by aluminum door supplier.

Hardware Set 01A

(2)	Continuous Hinge	SL11HD	628	SEL
(1)	Key Removable Mullion	KRM200 x 102S x M103 x M104	689	YAL
(1)	NS Panic Device, Rim, 03	7205M x 121	630	YAL
(1)	NS Panic Device, Rim, 01	7205M	630	YAL
(1)	Rim Cylinder		626	C-R
(3)	Mortise Cylinder		626	C-R
(2)	Offset Pull	1191-3 x E Mtg	630	TRI
(2)	Closer, w/Spring Stop	CPS7500 x 6891 x 6890	689	NOR
(1)	Cat H Adhesive Mullion Seal/Mute MS-SA/75		BLK	DHS

Note 1: ADA threshold, door bottom, meeting edge and jamb seals by aluminum door supplier.

Hardware Set 01B

(6)	Butt Hinges	BB5004-545	652	BOM
(1)	Key Removable Mullion	KRM100 x 102S	689	YAL
(1)	Panic Device, Rim, 03	7105 x 632F	630	YAL
(1)	Panic Device, Rim, 02	7105 x 634F	630	YAL
(1)	Rim Cylinder		626	C-R
(3)	Mortise Cylinder		626	C-R
(2)	Closer, HD Parallel Arm	PR7500	689	NOR
(2)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(2)	Wall Stop/Holder	1283-6S	626	TRI
(1)	Cat H Adhesive Mullion Seal/Mute MS-SA/75		BLK	DHS

Hardware Set 01C (for Door 172.3 in Base Bid)

(2)	Continuous Hinge	SL11HD	628	SEL
(1)	Key Removable Mullion	KRM200 x 102S x M103 x M104	689	YAL
(2)	NS Panic Device, Rim, 01	7200M x Less Dogging	630	YAL
(1)	Mortise Cylinder		626	C-R
(2)	Closer, w/Spring Stop	CPS7500 x 6891 x 6890	689	NOR
(1)	Cat H Adhesive Mullion Seal/Mute MS-SA/75		BLK	DHS

Note 1: ADA threshold, door bottom, meeting edge and jamb seals by aluminum door supplier.

Hardware Set 02

(6)	Butt Hinges	BB5004-545	652	BOM
(1)	Panic Device, SVR, 01	7175 x LBR	630	YAL
(1)	Panic Device, SVR, 08	7175 x MO626F x LBR	630	YAL
Note: Field set up lever trim for classroom function.				
(1)	Rim Cylinder		626	C-R
(2)	Mortise Cylinder		626	C-R
(2)	Closer, HD Parallel Arm	PR7500	689	NOR
(2)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(2)	Wall Stop/Holder	1283-6S	626	TRI

Hardware Set 03

(2)	Continuous Hinge	SL11HD	628	SEL
(2)	NS Dummy Panic Bar	720	630	YAL
(2)	Offset Pull	1191-3 x E Mtg	630	TRI
(2)	Closer, w/Spring Stop	CPS7500 x 6891 x 6890	689	NOR

Note 1: Meeting edge and jamb seals by aluminum door supplier.

Hardware Set 04

(3)	Butt Hinges	BB5000-454	652	BOM
(1)	Storeroom Lock	CL3357AZD	626	COR
(1)	Closer, w/Stop	CLP7500	689	NOR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI

Hardware Set 04A

(3)	Butt Hinges	BB5000-454	652	BOM
(1)	Storeroom Lock	CL3357AZD	626	COR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Overhead Stop, MD, Surface	450S	630	GLY

Hardware Set 04B

(3)	Butt Hinges	BB5000-454	652	BOM
(1)	Storeroom Lock	CL3357AZD	626	COR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Wall Stop, Convex	1270CX	626	TRI

Hardware Set 04C

(3)	Butt Hinges	BB5000-454	652	BOM
(1)	Storeroom Lock	CL3357AZD	626	COR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Overhead Stop, HD, Concealed	100S x ADJ	630	GLY

Hardware Set 05

(3)	Butt Hinges	BB5000-454	652	BOM
(1)	Passage Set	CL3310AZD	626	COR
(1)	Closer, w/Stop	CLP7500	689	NOR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI

Hardware Set 06

(3)	Butt Hinges	BB5000-450	652	BOM
(1)	Office Lock	CL3351AZD	626	COR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Wall Stop/Holder	1283-6S	626	TRI

Note 1: Set frame for 180 degree door swing.

Hardware Set 06A

(3)	Butt Hinges	BB5000-454	652	BOM
(1)	Office Lock	CL3351AZD	626	COR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Wall Stop, Concave	1270CV	626	TRI

Hardware Set 06B

(3)	Butt Hinges	BB5000-454	652	BOM
(1)	Office Lock	CL3351AZD	626	COR
(1)	Closer, Regular Arm	7500	689	NOR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Wall Stop, Convex	1270CX	626	TRI
(1)	Cat H Jamb Seal Set	700NA	628	NGP

Hardware Set 07

(6)	Butt Hinges	BB5000-450	652	BOM
(2)	Surface Bolt	3923 x 24" Bolt	626	TRI
	Note: Mount surface bolts on push side of doors to latch into top jamb.			
(2)	Single Dummy Trim	CL3350AZD	626	COR
	Note: Mount dummy trim on push side of doors.			
(2)	Kick Plate	KO050 8 x 1LDW x CS x B4E	630	TRI
(2)	Wall Stop/Holder	1283-6S	626	TRI
	Note 1: Set frame for 180 degree door swing.			

Hardware Set 08

(3)	Butt Hinges	BB5000-454	652	BOM
(1)	Passage Set	CL3310AZD	626	COR
(1)	Closer, Regular Arm	7500	689	NOR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Wall Stop, Convex	1270CX	626	TRI
(1)	Cat H Jamb Seal Set	700NA	628	NGP

Hardware Set 09

Note 1: All hardware including non-keyed slide bolts by overhead door supplier.

Hardware Set 10

(3)	Butt Hinges	BB5002-454	630	BOM
(1)	Dormitory Lock	CL3375AZD	626	COR
(1)	Closer, Regular Arm	7500	689	NOR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Mop Plate	KM050 4 x 1LDW x CS x B4E	630	TRI
(1)	Universal Stop, 1-1/2"	7280	630	TRI

Hardware Set 10A

(3)	Butt Hinges	BB5002-454	630	BOM
(1)	Dormitory Lock	CL3375AZD	626	COR
(1)	Closer, w/Spring Stop	CPS7500	689	NOR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Mop Plate	KM050 4 x 1LDW x CS x B4E	630	TRI
(1)	Cat H Jamb Seal Set	700NA	628	NGP

Hardware Set 10B

(3)	Butt Hinges	BB5000-454	652	BOM
(1)	Dormitory Lock	CL3375AZD	626	COR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Wall Stop, Convex	1270CX	626	TRI

Hardware Set 11

(3)	Butt Hinges	BB5000-454	652	BOM
(1)	Institution Lock	CL3332AZD	626	COR
(1)	Closer, Regular Arm	7500	689	NOR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Wall Stop, Convex	1270CX	626	TRI
(1)	Cat H Jamb Seal Set	700NA	628	NGP

Note 1: Door is not a required exit.

Hardware Set 12

(3)	Butt Hinges	BB5000-454	652	BOM
(1)	Classroom Lock	CL3355AZD	626	COR
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Universal Stop, 1-1/2"	7280	630	TRI

Hardware Set 13

(1)	Mortise Cylinder		626	C-R
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Note 1: All hardware to remain. Salvage the mortise key cylinder out of the existing Corbin Russwin ML2057CSA x Less Outside Trim mortise lockset; turn over to Owner for stock. Install new key cylinder into lockset.

Hardware Set 14

(1)	Panic Device, Mortise, 03	7130 x 662F x Less Dogging (LHRB)	630	YAL
(1)	Mortise Cylinder		626	C-R
(1)	Closer, w/Stop	CLP7500	689	NOR

Note 1: Remove existing mortise lockset. Turn over to Owner for stock. Install new panic device and key cylinder.

Hardware Set 15

(1)	Panic Device, Mortise, 03	7130 x 662F x Less Dogging (LHRB)	630	YAL
(1)	Mortise Cylinder		626	C-R
(1)	Closer, Parallel Arm	7500	689	NOR
(1)	Universal Stop, 1-1/2"	7280	630	TRI

Note 1: Remove existing mortise lockset. Turn over to Owner for stock. Install new panic device and key cylinder.

3.8 DOOR TO HARDWARE SET NUMBERING INDEX

Door	HW Set
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Base Bid	
102	06B
170.1	E01
170.2	03
171	04A
172.1	01B
172.2	01B
172.3	01C
172A	04
175.1	06
175.2	07
175.3	06
175A	E02
175B	06A
175C	08
175C.1	10A
175D	04C
175G	09
176	05
176A	04B
177	10

178	10
B106B	14
B106B.1	15
CA	01A
CB	02
CC	02

Alternate No. 1	
B101	06A
B102	06A
B103	06A
B104	06A
B105.1	11
B105.2	13
B105A	10

Alternate No. 2	
101	12
101A	10B
102A	10A

Alternate No. 4	
172.3	01

END OF SECTION 087100

SECTION 088000 - GLAZING**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Glass.
- B. Infill Panels.
- C. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 079005 - Joint Sealers: Sealant and back-up material.
- B. Section 081113 - Hollow Metal Doors and Frames: Glazed lites in doors and borrowed lites.
- C. Section 081416 - Flush Wood Doors: Factory glazed doors.
- D. Section 084313 - Aluminum-Framed Storefronts: Framing system.
- E. Section 102800 - Toilet, Bath, and Laundry Accessories: Mirrors.

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials current edition.
- B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.
- C. ASTM C1036 - Standard Specification for Flat Glass 2011.
- D. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass 2012.
- E. ASTM C1193 - Standard Guide for Use of Joint Sealants 2013.
- F. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation 2010.
- G. GANA (GM) - GANA Glazing Manual 2008.
- H. GANA (SM) - GANA Sealant Manual 2008.

1.04 SUBMITTALS

- A. Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
- B. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.
- C. Product Data on Solar Control Coatings: Provide product data on all specified solar control coatings to be provided.
- D. Provide data on infill panels.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA Glazing Manual and FGMA Sealant Manual for glazing installation methods. Maintain one copy on site.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.
- C. Insulated Glass Fabricator Qualifications: Current, approved member of the Insulating Glass Certification Council (IGCC). Member warrants that its manufactured insulated glass units (IGU) will correspond in all material respects to the specification and will be free from defects in material and workmanship for ten (10) years from the date of substantial completion.

1.06 FIELD CONDITIONS

- A. Do not install glazing when ambient temperature is less than 50 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.07 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Sealed Insulating Glass Units: Provide a five (5) year warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.

PART 2 PRODUCTS**2.01 GLASS MATERIALS**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include;
- B. Glass Manufacturers:
 - 1. Cardinal Glass Industries: www.cardinalcorp.com.
 - 2. AGC Flat Glass North America, Inc: www.na.agc-flatglass.com.
 - 3. Guardian Industries Corp: www.sunguardglass.com.
 - 4. Pilkington North America Inc: www.pilkington.com/na.
 - 5. Vitro Glass + PPG Glass: www.ppgideasclapes.com.
 - 6. Trulite Glass and Aluminum Solutions: www.trulite.com
 - 7. Zeledyne: www.versaluxglass.com.
- C. Float Glass: Provide float glass based glazing unless noted otherwise.
 - 1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality-Q3.
 - 2. Heat-Strengthened and Fully Tempered Types: ASTM C1048, Kind HS and Kind FT.
 - 3. Thicknesses: As indicated; for exterior glazing comply with requirements indicated for wind load design regardless of thickness indicated.
- D. Clear Float Glass : Clear, annealed.
 - 1. Comply with ASTM C 1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select).
 - 2. Comply with ASTM C 1048.
- E. Safety Glass : Clear; fully tempered.
 - 1. Comply with ASTM C 1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select) and ASTM C 1048.
 - 2. Comply with 16 CFR 1201 test requirements for Category II.
 - 3. 6 mm minimum thick.
 - 4. Provide this type of glazing in the locations indicated on the drawings.

2.02 SEALED INSULATING GLASS UNITS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include:

1. Cardinal Glass Industries: www.cardinalcorp.com.
 2. Glenny Glass: www.glennygls.com
 3. Guardian Industries Corp: www.guardian.com.
 4. Louisville Plate Glass: www.louisvilleplateglass.com
 5. Oldcastle Building Envelope: www.oldcastlebe.com
 6. Trulite Glass and Aluminum Solutions: www.trulite.com
 7. Viracon, Apogee Enterprises, Inc: www.viracon.com.
- B. Sealed Insulating Glass Units: Types as indicated.
1. Application: Exterior, except as otherwise indicated.
 2. Durability: Certified by an independent testing agency to comply with ASTM E2190.
 3. Edge Spacers: Aluminum, bent and soldered corners.
 4. Edge Seal: Glass to elastomer with supplementary silicone sealant.
 5. Purge interpane space with dry hermetic air.
- C. Insulated Glass Units : Double pane with glass to elastomer edge seal.
1. Locations: Exterior metal windows, storefront and/or curtainwall window systems.
 2. Total unit thickness of 1 inch, minimum.
 3. Outer pane of 1/4" glass, inner pane of 1/4" glass.
 4. Place low E coating on No.2 surface within the unit.
 5. Low-E Coating: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include:
 - a. AGC - Energy Select 40
 - b. Guardian - SN-68
 - c. PPG - Solarban 60
- D. Insulated Glass Units : Double pane with glass to elastomer edge seal.
1. Locations: Exterior hollow metal, aluminum storefront and /or curtainwall doors.
 2. Total unit thickness of 7/8 inch, minimum.
 3. Outer pane of 3/16 glass, inner pane of 3/16 glass.
 4. Place low E coating on No.2 surface within the unit.
 5. Low-E Coating: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include:
 - a. AGC - Energy Select 40
 - b. Guardian - SN-68
 - c. PPG - Solarban 60

2.03 GLAZING COMPOUNDS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include,
- B. Manufacturers:

1. Bostik Inc: www.bostik-us.com.
 2. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
 3. Pecora Corporation: www.pecora.com.
 4. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
 5. Substitutions: Refer to Section 016000 - Product Requirements.
- C. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C920, Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; standard color

2.04 GLAZING ACCESSORIES

- A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.
- C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; hardness range of 5 to 30 cured Shore A durometer; coiled on release paper; black color.
1. Manufacturers:
 - a. Pecora Corporation: www.pecora.com.
 - b. Tremco Global Sealants: www.tremcosealants.com.
 - c. Substitutions: Refer to Section 016000 - Product Requirements.
- D. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; standard color.

2.05 INFILL PANELS

- A. Infill Panels: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
1. Basis of Design: Design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. Mapes Panels, LLC - Mapes-R Panel : www.mapes.com
 2. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect:
 - a. Citadel Architectural Products: www.citadelap.com
 - b. Laminators, Inc: www.laminatorsinc.com
 - c. Mapes Panels, LLC : www.mapes.com
- B. Infill Panels
1. Laminated, sealed, insulated, faced panels.
 2. Thickness: 1".
 3. Exterior Skin: .032" aluminum sheet with custom Kynar finish.

4. Exterior Finish Texture: Smooth
5. Exterior Color: Match existing red.
6. Interior Finish Substrate: Tempered hardboard.
7. Interior Skin: .032" aluminum sheet with custom Kyanr finish.
8. Interior Finish Texture: Smooth.
9. Interior Color: Match existing gray.
10. Panel Core: 1.7 lb high density isocyanurate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that openings for glazing are correctly sized and within tolerance.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.02 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant.
- D. Install sealants in accordance with ASTM C1193 and GANA Sealant Manual.
- E. Install sealants in accordance with manufacturer's instructions.

3.03 INSTALLATION - EXTERIOR/INTERIOR DRY METHOD (GASKET GLAZING)

- A. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- B. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- C. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.04 INSTALLATION - EXTERIOR WET METHOD (SEALANT AND SEALANT)

- A. Place setting blocks at 1/4 points and install glazing pane or unit.
- B. Install removable stops with glazing centered in space by inserting spacer shims both sides at 24 inch intervals, 1/4 inch below sight line.
- C. Fill gaps between glazing and stops with sealant to depth of bite on glazing, but not more than 3/8 inch below sight line to ensure full contact with glazing and continue the air and vapor seal.
- D. Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.05 CLEANING

- A. Remove glazing materials from finish surfaces.
- B. Remove labels after Work is complete.
- C. Clean glass and adjacent surfaces.

3.06 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

END OF SECTION

FINISH LEGEND				
AUGUST 2019		BURGIN INDEPENDENT		RTA #1904
SPEC SECTION	KEY	FINISH		DESCRIPTION
000003	SC1	SEALED CONCRETE		
	ETR	EXISTING TO REMAIN		
	EXP	EXPOSED TO STRUCTURE ABOVE		
047301	ST1	FAUX STONE	MFR.:	ELDORADO STONE
		MEDIA CENTER CASEWORK	SERIES:	STACKED STONE
			COLOR:	NANTUCKET
			THICKNESS:	.625" - 2"
			ACCESSORIES:	PROVIDE TRIM AND CORNER PIECES AS NEEDED
			LOCATION:	MEDIA CENTER CASEWORK AND CAFETERIA WALL
064100	HPL3	HIGH PRESSURE LAMINATE	MFR.:	WILSONART
		MEDIA CENTER BASE CABINETS	COLOR:	TBD
			NO:	TBD
			FINISH:	MANUFACTURERS STANDARD COLORS
			LOCATION:	MEDIA CENTER CASEWORK
	HPL4	HIGH PRESSURE LAMINATE	MFR.:	WILSONART
		MEDIA CENTER TRANSACTION TOP	COLOR:	TBD
			NO:	TBD
			FINISH:	MANUFACTURERS STANDARD COLORS
			LOCATION:	MEDIA CENTER CASEWORK
	SS1	SOLID-SURFACE	MFR.:	TBD
		MEDIA CENTER COUNTERTOP AND TRANSACTION TOP	COLOR:	UP TO PRICE GROUP C
			THICKNESS:	1/2"
			EDGE PROFILE:	TBD
			LOCATION:	MEDIA CENTER CASEWORK
	SS2	SOLID-SURFACE	MFR.:	TBD
		WINDOW SILLS	COLOR:	UP TO PRICE GROUP C
			THICKNESS:	1/2"
			EDGE PROFILE:	TBD
			LOCATION:	ALT #2 FIRST AID AND FMD CLASSROOM
092116	FRP1	FIBERGLASS REINFORCED	MFR.:	CRANE COMPOSITES
		PANELS	PRODUCT:	STANDARD FRP
			FINISH:	SMOOTH/FSI
			COLOR:	MANUFACTURER'S STANDARD COLORS
			LOCATION:	REFER TO DRAWINGS
			ACCESSORIES:	OUTSIDE CORNERS
093000	CT1	CERAMIC OR PORCELAIN TILE	MFR.:	AMERICAN OLEAN
		FLOOR TILE & BASE	STYLE:	CREEKWOOD
			COLOR:	ASH RIVER CW99
			SIZE:	6X36
			GROUT:	FLOORS- LATICRETE SPECTRALOCK PRO OR EQUAL (DO NOT BLENDGROUT MANUFACTURERS), COLOR TO BE SELECTED FROM MANUFACTURERS FULL LINE
			GROUT MFR:	CUSTOM BUILDING PRODUCTS OR LATICRETE
			GROUT COLOR:	MANUFACTURER'S STANDARD COLORS
			INSTALLATION:	1/3 OFFSET
			ACCESSORIES:	1 PROVIDE SCHLUTER-JOLLY BRUSHED STAINLESS STEEL ON TOP OF CUT BASE AROUND THE PERIMETER OF THE ROOM.
				2 PROVIDE SCHLUTER-RENO-RAMP/K BRUSHED STAINLESS STEEL AT THE DOOR THRESHOLD TRANSITION TO EXISTING CORRIDOR FLOOR FINISH.
			NOTE:	1 IN SOME LOCATIONS TILE INSTALLATION SHALL BE SIMILAR TO OTHER RESTROOMS RENOVATED BY ROSSTARRANT IN THE BURGIN BUILDING WHICH KEPT EXISTING FLOORS

SPEC SECTION	KEY	FINISH		DESCRIPTION
				2 THE FLOOR TILE PRODUCT WITH A SCHLUTER JOLLY TRIM WILL BE THE WALL BASE AROUND THE PERIMETER OF THE ROOM, INCLUDING ON THE WALLS NOT RECEIVING WALL TILE.
			LOCATION:	REFER TO DRAWINGS
	CT2	CERAMIC OR PORCELAIN TILE	MFR.:	AMERICAN OLEAN
		WALL TILE	STYLE:	URBAN CANVAS
			COLOR:	BISCUIT MATTE 0092
			SIZE:	4-1/4" X12-3/4"
			GROUT:	WALLS- LATICRETE PERMA COLOR SELECT OR EQUAL (DO NOT BLENDGROUT MANUFACTURERS), COLOR TO BE SELECTED FROM MANUFACTURERS FULL LINE
			GROUT MFR:	CUSTOM BUILDING PRODUCTS OR LATICRETE
			GROUT COLOR:	TBD
			BASE:	6" (CT1) TILE BASE
			INSTALLATION:	STACK BOND
			ACCESSORIES:	1 PROVIDE SCHLUTER-QUADEC BRUSHED STAINLESS STEEL ON ALL OUTSIDE CORNERS.
				2 PROVIDE SCHLUTER BRUSHED STAINLESS STEEL COVE BASE PROFILE, - DILEX-EHK AT INTERSECTION OF FLOOR AND WALL TILE
			LOCATION:	REFER TO DRAWINGS
			NOTE:	PROVIDE SCHLUTER-JOLLY BRUSHED STAINLESS STEEL ON TOP OF CUT BASE
	CT3	CERAMIC OR PORCELAIN TILE	MFR.:	CROSSVILLE
		ACCENT WALL TILE	STYLE:	GLASS BLOX
			COLOR:	DAZZLE RED
			SIZE:	1X1 MOSAIC
			INSTALLATION:	MOSAIC
			GROUT:	WALLS- LATICRETE PERMA COLOR SELECT OR EQUAL (DO NOT BLENDGROUT MANUFACTURERS), COLOR TO BE SELECTED FROM MANUFACTURERS FULL LINE
			GROUT MFR:	CUSTOM BUILDING PRODUCTS OR LATICRETE
			GROUT COLOR:	MANUFACTURER'S STANDARD COLORS
			INSTALLATION:	STACK BOND
			LOCATION:	REFER TO DRAWINGS
			NOTE:	THERE WILL BE A 1" HIGH ACCENT STRIPE IN BOTH TILED WALLS OF EACH RESTROOM
	QT1	UNGLAZED QUARRY TILE	MFR.:	AMERICAN OLEAN
		FLOOR TILE & BASE	STYLE:	QUARRY NATURALS
			COLOR:	TBD
			SIZE:	6"X6"
			GROUT MFR:	TBD
			GROUT COLOR:	TBD
			INSTALLATION:	MONOLITHIC
			LOCATION:	KITCHEN AND KITCHEN SUPPORT AREAS
095113	ACT1	ACOUSTICAL PANEL CEILING	MFR.:	ARMSTRONG
			STYLE:	SCHOOL ZONE FINE FISSURED
			SIZE:	24 X 48 X 3/4"
			COLOR:	WHITE
			EDGE:	SQUARE
			GRID:	15/16" PRELUDE
			LOCATION:	REFER TO DRAWINGS
	ACT2	ACOUSTICAL PANEL CEILING	MFR.:	ARMSTRONG
			STYLE:	SCHOOL ZONE FINE FISSURED
			SIZE:	24 X 48 X 3/4"
			COLOR:	WHITE
			EDGE:	TEGULAR
			GRID:	15/16" PRELUDE
			LOCATION:	REFER TO DRAWINGS
	ACT3	ACOUSTICAL PANEL CEILING	MFR.:	ARMSTRONG
		WASHABLE FACE	STYLE:	HEALTHZONE
			SIZE:	24 X 24 X 3/4"
			COLOR:	WHITE

SPEC SECTION	KEY	FINISH		DESCRIPTION
			EDGE:	SQUARE
			GRID:	15/16" PRELUDE
			LOCATION:	REFER TO DRAWINGS
096500	VCT1-7	RESILIENT TILE FLOORING:	MFR.:	ARMSTRONG
		VINYL COMPOSITION TILE	STYLE:	IMPERIAL TEXTURE, MULTI COLOR AND RAVE
			COLOR:	TBD
			SIZE:	12 X 12
			INSTALLATION:	MONOLITHIC
			LOCATION:	REFER TO DRAWINGS
096513	RB1	RESILIENT BASE & ACCESSORIES	MFR.:	JOHNSONITE
		RUBBER WALL BASE	STYLE:	COVE WITH TOP SET TOE - ROLLS
			COLOR:	TBD
			HEIGHT:	4" AND 6" TYPICAL; PROVIDE 4" HIGH AT CASEWORK
			LOCATION:	REFER TO FINISH SCHEDULE
096623	T1	TERRAZZO & PRECAST BASE	MFR.:	TBD
		COLOR #1	EPOXY COLOR:	TBD
			CHIP FORMULA:	STANDARD TBD
			LOCATION:	REFER TO DRAWINGS
			NOTE:	REFER TO DEMO DRAWINGS FOR AREAS OF TRENCHING THAT WILL CUT EXISTING TERRAZZO, AREAS OF PATCH TO COORDINATE WITH TRENCHING LOCATIONS
099000	P1	PAINTING	MFR.:	TBD
		TYPICAL PAINT	COLOR:	TBD
			SHEEN:	1 FLAT AT CEILINGS
				2 EGGSHELL AT WALLS
	AP	PAINTING	MFR.:	TBD
		ACCENT PAINT	COLOR:	TBD
		PROVIDE UP TO 5 ACCENT PAINT COLORS	SHEEN:	1 FLAT AT CEILINGS
				2 EGGSHELL AT WALLS
	HMP	PAINTING	MFR.:	TBD
		HOLLOW METAL FRAMES	COLOR:	TBD
			SHEEN:	SEMI-GLOSS AT HOLLOW METAL DOOR FRAMES
			LOCATION:	HOLLOW METAL DOOR FRAMES, TYPICAL
101101	MB1	VISUAL DISPLAY BOARDS	MFR.:	CLARIDGE
		MARKERBOARD	SURFACE:	PORCELAIN ENAMEL MARKERBOARDS
			COLOR:	MANUFACUTURER'S STANDARD COLORS
			FINISH:	GLOSS
			CATALOG NUMBER:	TBD
			SIZE:	REFER TO FINISH LEGEND
			LOCATION:	REFER TO DRAWINGS
	TB1	VISUAL DISPLAY BOARDS	SURFACE:	VINYL FACED WASHABLE FABRIC
		TACKBOARD	COLOR:	MANUFACUTURER'S STANDARD COLORS
			CATALOG NUMBER:	TBD
			SIZE:	REFER TO FINISH LEGEND
			LOCATION:	REFER TO DRAWINGS
101424		SIGNS	MFR:	ASI SIGNAGE
		ROOM SIGNAGE	BACKGROUND COLOR:	TBD
			COPY COLOR:	TBD
			SIZE:	8" x 8"
			LOCATION:	TYPICAL
		SIGNS	MFR:	ASI SIGNAGE
		DIMENSIONAL LETTERING	BACKGROUND COLOR:	TBD
			COPY COLOR:	TBD
			SIZE:	8" x 8"
			LOCATION:	TYPICAL

SPEC SECTION	KEY	FINISH		DESCRIPTION
102600	CG1	WALL SURFACE PROTECTION	MFR.:	KOROGARD
		CORNER GUARDS	PRODUCT:	G-100 SERIES
			HEIGHT:	4'-0" AND 4" OFF FLOOR
			THICKNESS:	2" THICK
			COLOR:	MANUFACTURERS STANDARDS
			LOCATION:	GYPSUM CORNERS, REFER TO DRAWINGS
			NOTE:	
105000	WG1	PRINTED DISPLAY MATERIAL	MFR.:	LYNN MONSTER COLOR
		VINYL WALL GRAPHIC	GRAPHIC:	CUSTOM WALL GRAPHIC
			SUBSTRATE:	3MIJ 180 CD2 WITH OVERLAMINATE
			FINISH:	MATTE
			SIZE:	REFER TO DRAWINGS ON GYP AND CMU
			NOTE:	GRAPHICS TO BE PROVIDED AT A LATER DATE BY THE OWNER
105050	L1	METAL LOCKERS	MFR.:	LYON
			COLOR:	TBD
			SIZE:	12 X 12 X 60 DOUBLE TIER, SLOPE TOP CMU BASE, STANDARD VENT
			LOCATION:	REFER TO DRAWINGS
			NOTE:	1 MASONRY BASE & SLOPING TOP
				2 OWNER PROVIDED LOCKS
122413	RWS1	MANUAL WINDOW SHADES	MFR.:	DRAPER
		ROLLER WINDOW SHADES	SHADE FABRIC:	SHEERWEAVE SW2400
			OPENNESS FACTOR:	3% - TYPICAL ; PROVIDE 1% OPENESS AT ALL WINDOWS IN CAFETERIA
			COLOR:	MANUFACTURER'S STANDARD
			FASCIA:	CLEAR ANODIZED
			LOCATION:	ALL EXTERIOR WINDOWS, NOTED INTERIOR WINDOWS
123550	HPL1	HIGH PRESSURE LAMINATE	MFR.:	WILSONART
		BASE & WALL CABINETS	COLOR:	TBD
			NO:	TBD
			FINISH:	MANUFACTURERS STANDARD COLORS
			LOCATION:	REFER TO DRAWINGS
	HPL2	HIGH PRESSURE LAMINATE	MFR.:	WILSONART
		COUNTERTOPS	COLOR:	TBD
			NO:	TBD
			FINISH:	MANUFACTURERS STANDARD COLORS
			LOCATION:	REFER TO DRAWINGS

SECTION 092116 - GYPSUM BOARD ASSEMBLIES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Metal stud wall framing, non-loadbearing.
- B. Metal channel ceiling framing.
- C. Sound Attenuation Batts / Acoustic insulation.
- D. Gypsum sheathing.
- E. Cementitious backing board.
- F. Gypsum wallboard.
- G. Glass mat faced gypsum board.
- H. Joint treatment and accessories.
- I. Suspended gypsum board on track/grid.
- J. Products installed, but not furnished, under this Section include the following:
 - 1. Access panels to be furnished by, but not limited to the following; mechanical, electrical, plumbing, controls, communication/data contractors.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements - Submittal procedures.
- B. Section 054000 - Cold-Formed Metal Framing: Exterior wind-load-bearing metal stud framing.
- C. Section 061000 - Rough Carpentry: Wood blocking product and execution requirements.
- D. Section 072100 - Thermal Insulation: Thermal insulation.
- E. Section 079005 - Joint Sealers: Acoustic sealant/sound caulk.
- F. Section 102601 - Wall and Corner Guards: Standard corner guards.

1.03 REFERENCE STANDARDS

- A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute 2012.
- B. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units 1999 (Reaffirmed 2016).
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2015.
- D. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board 2015.
- E. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members 2014.
- F. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2012.
- G. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products 2015.
- H. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board 2013.

- I. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness 2015.
- J. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs 2014.
- K. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base 2014a.
- L. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing 2013.
- M. ASTM C1280 - Standard Specification for Application of Gypsum Sheathing Board 2013.
- N. ASTM C1325 - Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units 2014.
- O. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2014.
- P. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber 2012.
- Q. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2015a.
- R. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements 2009.
- S. GA-214 - Recommended Levels of Finish for Gypsum Board, Glass Mat and Fiber-Reinforced Gypsum Panels; 2015
- T. GA-216 - Application and Finishing of Gypsum Panel Products 2016.
- U. GA-253 - Recommended Specifications for the Application of Gypsum Sheathing; Gypsum Association; 1999.
- V. GA-600 - Fire Resistance Design Manual 2015.
- W. GA-801 - Handling of Storage of Gypsum Panel Products; current edition.
- X. ICC (IBC) - International Building Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- Y. UL (FRD) - Fire Resistance Directory current edition.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on metal framing, gypsum board, accessories and joint finishing system, FRP panels, and corner guards.
- C. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
- D. Test Reports: For stud framing products that do not comply with ASTM C645 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.05 QUALITY ASSURANCE

- A. Perform in accordance with ASTM C840 and GA-214 and GA-216. Comply with requirements of GA-600 for fire-rated assemblies.

- B. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum 5 years of experience.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original packaging, containers or bundles bearing the manufacturers brand name and identification.
- B. Store materials inside and under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes.
- C. Stack panels flat to prevent sagging.
- D. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.
- E. In addition follow the guidelines found in GA-801.
- F. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling as required by AISI's "Code of Standard Practice".

1.07 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 or GA-216 requirements, whichever are more stringent.
- B. Do not install interior products until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet or moisture damaged, and those that are mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840, GA-214 and GA-216.
 - 1. See PART 3 for finishing requirements.

2.02 METAL FRAMING MATERIALS

- A. Manufacturers: Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include;
 - 1. Metal Framing, Connectors, and Accessories:
 - a. Clark Dietrich Building Systems: www.dietrich.com
 - b. J. N. Linrose Manufacturing LLC: www.jnlinrose.com
 - c. Marino Ware: www.marinoware.com.
 - d. Phillips Manufacturing Company: www.phillipsmfg.com.
 - e. Southeastern Stud and Components, Inc: www.sestud.com
 - f. Telling Industries, LLC: www.tellingindustries.com.
- B. Manufacturers: Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include;

1. Drywall Suspension Systems and Accessories: Contractor's option to use a drywall suspension system for the gypsum board ceilings in lieu of metal stud ceiling framing.
 - a. Armstrong Commercial Ceilings: www.armstrong.com
 - b. USG: www.usg.com
 - c. Chicago Metallic Corporation: www.chicago-metallic.com
- C. Non-Loadbearing Framing System Components: ASTM C 645; galvanized sheet steel, of size and properties necessary to comply with ASTM C 754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
 1. Minimum recycled content of 30%. Preference shall be given for steel framing components containing locally recovered steel.
 2. All Framing and System Components: Minimum G40 zinc-coated hot dipped galvanized steel, per ASTM A 653 or coating with equivalent corrosion resistance of ASTM A 653/A 653M, G40 (Z120) coating, roll-formed from steel meeting mechanical and chemical requirements of ASTM A 1003 with a zinc-based coating. Galvannealed products are not acceptable.
 - a. Coatings shall demonstrate equivalent corrosion resistance with an evaluation report acceptable to authorities having jurisdiction.
 - b. Equivalent Gauge Thickness for Steel Studs and Runner: Members that can show certified third party testing with gypsum board in accordance with ICC ES AC86 (current edition) need not meet the minimum thickness limitation or minimum section properties set forth in ASTM C645. The submission of an evaluation report is acceptable to show conformance to this requirement.
 - 1) Clark Dietrich Building System - ProStud: www.clarkdietrich.com.
 - 2) Marino\\Ware - Viper Stud: www.marinoware.com
 3. Studs: "C" shaped with flat or formed webs with knurled faces.
 4. Runners: U shaped, sized to match studs.
 5. Ceiling Channels: C-shaped.
 6. Furring at Walls: Hat-shaped sections, minimum depth of 7/8 inch.
- D. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
- E. Partition Head to Structure Connections: Contractor option to friction fit slip leg track or track with slotted holes as specified below:
 1. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and fastened as indicated on drawings.
 2. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
 - a. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100-12.
 - b. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.

- F. Drywall Grid System: Grid system meeting ASTM C 635 and ASTM C 645 Standard Specification for Rigid Furring Channels for Screw Applications of Gypsum Board.
1. Contractor option to use this system in lieu of framed construction.
 2. Intermediate-duty main beam, G40 zinc-coated hot dipped galvanized steel, double-web construction, profile height of 1-11/16" with peaked roof or rectangular top bulb and 1-1/2" knurled flange.
 3. Cross-tees, G40 zinc-coated hot dipped galvanized steel, double-web construction, profile height 1-1/2" with peaked roof or rectangular top bulb and 1-1/2" knurled flange.
 4. Wall moldings, galvanized steel, hemmed angle, nominal 1-1/4" x 1-1/4".
 5. Hanger wire, minimum 12 gauge and spaced along main beam not more than 4' on center to support load.
 6. Add vertical bracing as required to stabilize the frame.
 7. Product to have manufacturers 10-year limited warranty.

2.03 BOARD MATERIALS

- A. Manufacturers: Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include;
- B. Manufacturers - Gypsum-Based Board:
1. Saint-Gobain BPB/Certainteed Inc: www.bpb-na.com.
 2. Georgia-Pacific Gypsum(acquired Temple Inland): www.gpgypsum.com.
 3. Continental Building Products: www.continental-bp.com.
 4. National Gypsum Company: www.nationalgypsum.com/#sle.
 5. USG Corporation: www.usg.com/#sle.
- C. Cement Board/Backing Board For Wet Areas:
1. Application: Surfaces behind tile in wet areas including tub and shower surrounds.
 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 3. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
 - a. Thickness: 5/8 inch.
 - b. Manufacturers: Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include;
 - 1) Custom Building Products: www.custombuildingproducts.com.
 - 2) National Gypsum Company; PermaBase Cement Board: www.nationalgypsum.com/#sle.
 - 3) Georgia Pacific: Densshield Tile Backer: www.buildgp.com
 - 4) USG Corporation; Durock Tile Backer Board: www.usg.com.
- D. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings and soffits, unless otherwise indicated.

2. Thickness: 5/8 inch.
 3. Edges: Tapered.
- E. Gypsum Wallboard: ASTM C 1396/C 1396M. Sizes to minimize joints in place; ends square cut.
1. Regular Type:
 - a. Application: Use for vertical surfaces, unless otherwise indicated.
 - b. Thickness: 5/8 inch.
 - c. Edges: Tapered.
 - d. Application: Where required for fire-rated assemblies, unless otherwise indicated.
 2. Fire Resistant Type: Complying with Type X requirements; UL or WH rated.
 - a. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X.
 - b. Application: Where required for fire-rated assemblies, unless otherwise indicated.
 - c. Thickness: 5/8 inch.
 - d. Edges: Tapered.
- F. Abuse-Resistant Type: Gypsum wallboard especially formulated for increased impact resistance, with enhanced gypsum core and heavy duty face and back paper.
1. Application: High-traffic areas indicated.
 2. Core Type: Regular and Type X, as indicated.
 3. Thickness: 5/8 inch.
 4. Edges: Tapered.
 5. Recycled Content: Minimum 80% recycled gypsum and 95% recycled content face paper.
 6. Local Materials: Manufactured and of raw materials from within 500 miles of Project Site.
 - a. Manufacturers: Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include, but are not limited to the following:
 - 1) Certainteed/Saint Gobain - AirRenew Extreme Abuse
 - 2) Continental Building Products - Protecta HIR 300
 - 3) USG - FiberRock Abuse Resistant: www.usg.com
 - 4) National Gypsum - High Abuse XP: www.nationalgypsum.com
 - 5) GP/Temple-Inland - ComfortGuard AR: www.templeinland.com
- G. Mold-Moisture/Water-Resistant/Abuse Gypsum Backing Board: ASTM C 1396/C 1396M; ends square cut.
1. Application: Vertical surfaces behind thinset tile, except in wet areas.
 2. Edges: Tapered.
 - a. Manufacturers: Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include, but are not limited to the following:
 - 1) Certainteed/Saint Gobain - Extreme Abuse with M2 Technology

- 2) Continental Building Products - Protecta HIR 300
 - 3) USG - FiberRock Aqua-Tough or Mold Tough Abuse Resistant: www.usg.com
 - 4) National Gypsum - Gold Bond High Abuse XP: www.nationalgypsum.com
 - 5) GP/Temple-Inland - ComfortGuard: www.templeinland.com
- H. Exterior Gypsum Soffit Board: ASTM C 1396/C 1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings and soffits in protected exterior areas, unless otherwise indicated.
 2. Core Type: Regular, as indicated.
 3. Thickness: 5/8 inch.
 4. Edges: Tapered.
- I. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
1. Application: Exterior sheathing, unless otherwise indicated.
 2. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
 3. Core Type: Regular.
 4. Regular Board Thickness: 5/8 inch.
 5. Edges: Square.
 6. Glass Mat Faced Products:
 - a. CertainTeed Corporation; GlasRoc Exterior Sheathing.
 - b. Continental Building Products; Weather Defense Platinum Exterior Sheathing.
 - c. Saint Gobain Certainteed: GlasRoc.
 - d. Georgia-Pacific Gypsum; DensGlass Sheathing.
 - e. National Gypsum Company; Gold Bond eXP Sheathing.
 - f. Temple-Inland Building Products by Georgia-Pacific, LLC; GreenGlass Exterior Sheathing.
 - g. USG Corporation: Securock Glass-Mat Sheathing
- J. Exterior Roof Board: Sizes to minimize joints in place; ends square cut.
1. Application: Roof board at parapet walls, unless otherwise indicated.
 - a. Installer/supplier of roof board to coordinate with roofing manufacturer/installer to ensure that roof board selected (fiber-glass faced and/or unfaced/gypsum-fiber board or plywood sheathing per section 061000) meets the roof manufacturers warranty requirements as described in section 075400 Thermoplastic Membrane Roofing.
 2. Glass-Mat-Faced Board: Glass mat faced gypsum substrate as defined in ASTM C 1177/C 1177M.
 3. Unfaced/Gypsum-Fiber Board: Gypsum-fiber substrate as defined in ASTM C 1278.
 4. Core Type: Regular.

5. Board Thickness: 5/8 inch.
6. Edges: Square, for vertical application.
7. Glass-Mat-Faced Roof Board Products:
 - a. Georgia-Pacific Gypsum LLC; DensDek Prime
8. Unfaced/Gypsum-Fiber Roof Board Products:
 - a. United States Gypsum Co.; Securock Roof Board

2.04 ACCESSORIES

- A. Sound Attenuation Batts/Blankets/Acoustic Insulation: ASTM C 665; 2.5 pcf nominal density, preformed mineral-fiber, friction fit type, unfaced. Thickness: [] inch. Fiber glass sound control batt insulation, unfaced, and must meet the performance requirements of ASTM C 665 "Standard Specification for Mineral Fiber Blanket, Thermal Insulation."
 1. Sound Attenuation Batts/Blankets/Acoustic Insulation: ASTM C 665; 2.5 pcf nominal density, preformed mineral-fiber, creased, friction fit type, unfaced. Creased batt width to be one inch wider than the on-center spacing of the studs. Refer to drawings for stud spacing.
 - a. Contractor option to provide creased batts/blankets or support batts/blankets with "tiger teeth, lightning rods, or wire stays" between studs or support batts with metal banding attached to the metal studs or metal wire threaded through the stud openings in a continuous manner.
 - 1) Acceptable Metal Banding Product:
 - (a) Insul-Hold Co., Inc. - Insul-Hold: www.insulhold.com
 - (1) Class D, ASTM 527-80, 24 gauge galvanized metal strapping with two-three inch long arrows to secure insulation.
 2. Contractor option to use one of the following products:
 - a. Mineral-Fiber Manufacturers: Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include:
 - 1) Owens Corning - Thermafiber SAFB: www.thermafiber.com
 - 2) Roxul Inc. - Roxul AFB: www.roxul.com
 - b. Fiber Glass Manufacturers: Subject to compliance with requirements manufacturers offering the following products that may be incorporated into the work include:
 - 1) JM -Sound Control Batts: www.jm.com
 - 2) Owens Corning ProPink Sound Attenuation Batts: www.owenscorning.com
- B. Sound Attenuation Batts/Blanket Product Requirements:
 1. Sound Attenuation Batts/Blankets/Acoustic Insulation Thickness: Minimum thickness 3 inch at 3-5/8" metal stud walls.
 2. Sound Attenuation Batts/Blankets/Acoustic Insulation Thickness: Minimum thickness 6 inch at 6 inch metal stud walls.
 3. Sound Attenuation Batts/Blankets/□Acoustic Insulation Width: Minimum width to be the same as the on-center stud spacing indicated on the drawings.

- C. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
 - 1. Types: As detailed or required for finished appearance.
- D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
 - 1. Ready-mixed vinyl-based joint compound.
- E. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inch in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.
- F. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion resistant.
- G. Screws: ASTM C 1002; self-piercing tapping type; cadmium-plated for exterior locations.
- H. Screws: ASTM C 954; steel drill screws for application of gypsum board to loadbearing steel studs.
- I. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.
- J. Compressible Filler: In lieu of coping gypsum board to deck profile and providing sound attenuation blanket material and acoustical sealant it is the contractor's option to provide and install cut to fit or premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane, EPDM, or PVC.
 - 1. Install at tops of non-rated, non-load-bearing metal stud walls running perpendicular or parallel to the metal deck . Place a bead of caulk 1/2 inch back from flute opening and on all sides of flute. Compress plug and slide into place.
 - a. Perpendicular to metal deck: Williams Products Inc. EVA 200G or 3000 Series Closure Flute Plugs or Strips: www.williamsproducts.net.
 - 1) Closed Cell plugs and strips per ASTM D-1171, ASTM D-925, ASTM D-412. Density: 12.8 lbs/ft

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
 - 1. Level ceiling and soffit system to a tolerance of 1/1200.
 - 2. Laterally brace entire suspension system.
- C. Studs: Space studs as indicated on the drawings.
 - 1. Align and secure top and bottom runners at 24 inches on center.
 - 2. Install studs vertically.
 - 3. Align stud web openings horizontally.
 - 4. Stud splicing is not permissible.
 - 5. Extend partition framing to underside of floor or roof deck. Attach extended leg top runner to deck, maintain clearance between top of studs and runner, and brace both flanges of studs with continuous bridging.

6. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track. Contractor option to use slotted track.
- D. Corners: Fabricate corners using a minimum of three studs.
- E. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- F. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.
- G. Brace stud framing system rigid.
- H. Access Panel Opening Framing: Coordinate with the following, but not limited to; mechanical, electrical, plumbing, communication/data contractors for access panel locations in walls and ceilings.
 1. If access panels are being furnished by other trades verify type of access panel being provided, and if gypsum board on the recess door panel is required.
- I. Standard Wall Furring: Install at masonry walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
- J. Blocking: See Section 061000 for wood blocking. Install wood blocking for support of:
 1. Cabinets, shelf, and countertop supports.
 2. Wall mounted cabinets.
 3. Wall brackets.
 4. Handrails and guardrails.
 5. Fire extinguisher cabinets, brackets, and valve cabinets.
 6. Grab bars.
 7. Toilet and bath accessories.
 8. Toilet and urinal partitions.
 9. Wall-mounted door hardware and stops.
 10. Chalkboards, tackboards, and marker boards.
 11. Wall paneling and trim.
 12. Joints of rigid wall coverings that occur between studs.
 13. Locker base and wall attachment.
 14. Interior and exterior wall openings to receive metal frame system; window, door, etc.
 15. Access panels.
 16. Framed openings.
 17. Plumbing fixtures.
 18. Ceiling mounted projection screens and projector mounts.
 19. Wall mounted projection screens and projector mounts.
 20. Wall and ceiling mounted items indicated as N.I.C. and/or Owner provided and Owner installed.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

- A. Sound Attenuation Batts /Acoustic Insulation: Friction fit, by placing tightly within on-center stud spacing, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant/Sound Caulk: Install per requirements of 079005 - Joint Sealers

3.04 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as follows:
 - 1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
 - 2. At exterior soffits, not more than 30 feet apart in both directions.
- B. Corner Beads: Install at external corners, using longest practical lengths.

3.05 LEVELS OF GYPSUM BOARD FINISH

- A. Paper Faced Gypsum Board: Use paper or fiberglass joint tape, bedded with powder-type or ready-mixed vinyl-based joint compound and finished with powder-type or ready-mixed vinyl-based joint compound.
- B. Finish gypsum board in accordance with levels defined in GA-214 and ASTM C 840, as follows:
 - 1. Level 5: Walls to receive eggshell, semi-gloss, gloss paint or wallcovering.
 - a. All regularly inhabited rooms or areas.
 - 2. Level 4: Walls, ceilings and soffits to receive flat, eggshell, semi-gloss or gloss paint.
 - 3. Level 2: Behind cabinetry, FRP panels in janitorial/custodial rooms and on backing board to receive tile finish.
 - 4. Level 1: Fire rated wall and non-rated wall areas above finished ceilings, whether or not accessible in the completed construction.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
 - 2. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.
 - 3. Taping, filling and sanding is not required at base layer of double layer applications.
- D. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.06 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 093000 - TILING**PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. This Section includes the following:
 - 1. Glass tile
 - 2. Unglazed quarry tile and base (including cooler and freezer locations)
 - 3. Porcelain paver tile and base
 - 4. Setting and grouting materials
 - 5. Transition strips
 - 6. Self-leveling system comprised of clips & wedges

1.02 RELATED REQUIREMENTS

- A. Section 012300 - Alternates: Refer to section for additional information.
- B. Section 013000 - Administrative Requirements - Submittal procedures
- C. Section 079005 - Joint Sealers: Acoustic sealant/sound caulk
- D. Section 090050 - Finish Legend
- E. Section 092116 - Gypsum Board Assemblies: Tile backer board

1.03 REFERENCE STANDARDS

- A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- B. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 1999 (Reaffirmed 2010).
- C. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2010 (Reaffirmed 2016).
- D. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-set Ceramic Tile and Dimension Stone Installation; 2014.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.
- F. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011.
- G. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2013.
- H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2014.
- I. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.
- J. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.
- K. ICC (IBC) - International Building Code; 2012, with Kentucky Amendments; current edition.
- L. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2015.
- M. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data: Provide manufacturer's data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Shop drawings indicating tile patterns and locations and widths of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
 - 1. Locate precisely each joint and crack in tile substrates by measuring, record measurements on shop drawings, and coordinate them with tile joint locations, in consultation with Architect.
- D. Samples for initial selection purposes in form of manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type and composition of tile indicated. Include samples of grout and accessories involving color selection.
- E. Samples for verification purposes of each item listed below, prepared on samples of size and construction indicated, products involve color and texture variations, in sets showing full range of variations expected.
 - 1. Each type and composition of tile and for each color and texture required, at least 12 inches square, mounted on plywood or hardboard backing and grouted.
 - 2. Full-size units of each type of trim and accessory for each color required.
- F. Master grade certificates for each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- G. Material test reports from qualified independent testing laboratory indicating and interpreting test results relative to compliance of tile and tile setting and grouting products with requirements indicated.
- H. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, plus other information specified.
- I. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
- J. Maintenance Materials: Furnish the following for Owner's use in maintenance of project:
 - 1. See Section 016000 - Product Requirements, for additional information.

1.05 QUALITY ASSURANCE

- A. Single-Source Responsibility for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
- B. Single-Source Responsibility for Setting and Grouting Materials: Obtain ingredients of a uniform quality from one manufacturer for each cementitious and admixture component and from one source or producer for each aggregate.
- C. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings".

- E. Maintain one copy of ANSI A108/A118/A136.1 and TCNA (HB) on site.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.
- B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.
- C. Handle tile with temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If despite these precautions coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.07 PROJECT CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.
- C. Maintain temperatures at 50 deg F (10 deg C) or more in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

1.08 SEQUENCING AND SCHEDULING

- A. Coordinate the work with all sections referencing this section.

1.09 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

1.10 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials that match products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to the following:
 - 1. Unglazed Quarry Tile:
 - a. Basis of Design: American Olean
 - b. Dal-Tile Corp.
 - c. Mid-State Tile Co.
 - d. Monarch Tile Manufacturing, Inc.
 - e. Summitville Tiles
 - 2. Porcelain & Glass Tile:

- a. American Olean Tile Co., Inc.
 - b. Crossville, Inc.
 - c. Dal-Tile Corp.
- 3. Latex-Emulsion Based-Portland Cement Mortars:
 - a. Boiardi Products Corp.
 - b. Bostik Construction Products Div.
 - c. C-Cure Chemical Co.
 - d. Custom Building Products
 - e. Dal-Tile Corp.
 - f. DAP, Inc. Div.; USG Corp.
 - g. H.B. Fuller
 - h. Laticrete International, Inc.
 - i. L&M Mfg., Inc.
- 4. High Performance Grout:
 - a. TEC Power Grout 550

2.02 PRODUCTS, GENERAL

- A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.
 - 1. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.
- B. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grouting.
- C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:
 - 1. Provide porcelain paver selections; refer to 2.03 Tile Products.
 - 2. Provide tile trim and accessories that match color and finish of adjoining flat tile unless otherwise indicated.
 - 3. Provide quarry tile selections; refer to 2.03 Tile Products.
- D. Factory Blending: For tile exhibiting color variations within the ranges selected during sample submittals, blend tile in factory and package accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples.
- E. Mounting: Where factory-mounted tile is required, provide back- or edge-mounted tile assemblies as standard with manufacturer unless another mounting method is indicated.
- F. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies that this type of mounting is suitable for these kinds of uses and has been successfully used on other projects.
- G. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating them with a continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.03 TILE PRODUCTS

A. CT1 - Ceramic or Porcelain Tile: Floor Tile & Base

1. Mfr: American Olean
2. Style: Creekwood
3. Color: Ash River CW99
4. Size: 6" x 36"
5. Grout: Floors - Laticrete Spectralock Pro or equal (do not blend grout manufacturers); color to be selected from manufacturer's full line.
6. Grout Mfr: Custom Building Products or Laticrete
7. Grout Color: Manufacturer's standard colors
8. Installation: 1/3 offset
9. Accessories
 - a. Provide Schluter-Jolly brushed stainless steel on top of cut base around the perimeter of the room.
 - b. Provide Schluter-Reno-Ramp/-K brushed stainless steel at the door threshold transition to existing corridor floor finish.
10. Note 1: Tile installation shall be similar to other restrooms renovated by RossTarant in the Burgin building.
 Note 2: The floor tile product with a Schluter-Jolly trim will be the wall base around the perimeter of the room including on the walls not receiving wall tile.
11. Location: Refer to drawings.

B. CT2 - Ceramic or Porcelain Tile: Wall Tile

1. Mfr: American Olean
2. Style: Urban Canvas
3. Color: Biscuit Matte 0092
4. Size: 4-1/4" x 12-3/4"
5. Grout: Walls - Laticrete Perma Color Select or equal (do not blend grout manufacturers); color to be selected from manufacturer's full line.
6. Grout Mfr: Custom Building Products or Laticrete
7. Grout Color: TBD
8. Base: 6" (CT1) tile base
9. Installation: Stack bond
10. Accessories
 - a. Provide Schluter-Quadec brushed stainless steel on all outside corners.
 - b. Provide Schluter brushed stainless steel cove base profile Dilex-EHK at intersection of floor and wall tile.
11. Note: Provide Schluter-Jolly brushed stainless steel on top of cut base.
12. Location: Refer to drawings.

- C. CT3 - Glass Tile: Accent Wall Tile
 - 1. Mfr: Crossville
 - 2. Style: Glass Blox
 - 3. Color: Dazzle Red
 - 4. Size: 1" x 1" mosaic
 - 5. Grout: Walls - Laticrete Perma Color Select or equal (do not blend grout manufacturers); color to be selected from manufacturer's full line.
 - 6. Grout Mfr: Custom Building Products or Laticrete
 - 7. Grout Color: Manufacturer's standard colors
 - 8. Installation: Stack bond
 - 9. Location: Refer to drawings.
 - 10. Note: There will be a 1" high accent stripe in both tiled walls of each restroom.
- D. QT1 - Unglazed Quarry Tile: Floor Tile & Base
 - 1. Mfr: American Olean
 - 2. Style: Quarry Naturals
 - 3. Color: TBD
 - 4. Size: 6" x 6"
 - 5. Grout Mfr: TBD
 - 6. Grout Color: TBD
 - 7. Installation: Monolithic
 - 8. Location: Kitchen and kitchen support areas
- E. Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with following requirements:
 - 1. Size: As indicated, coordinated with sizes and coursing of adjoining flat tile where applicable.
 - 2. Shapes: As follows, selected from manufacturer's standard shapes:
 - a. Internal Corners: Field-buttet square corners, except use coved base and cap angle pieces designed to member with stretcher shapes.

2.04 SETTING & GROUTING MATERIALS

- A. Portland Cement Mortar Installation Materials: Provide materials to comply with ANSI A108.1 as required for installation method designated, unless otherwise indicated.
- B. Latex-Portland Cement Mortar: Provide product complying with ANSI A108.1 and the following requirement for composition:
 - 1. Prepackaged dry mortar mix incorporating dry polymer additive in the form of a re-emulsifiable powder to which only water is added at the job site.
 - 2. Latex additive (water emulsion) of type described below, serving as a replacement for part or all of gauging water, added at job site to prepackaged dry mortar mix supplied or specified by latex manufacturer.
 - a. Latex Type: Manufacturer's standard.

C. Grouting Materials:

1. Dry Set Grout: Provide product complying with ANSI A118.6 of color indicated.
2. Prepackaged Dry Grout Mix incorporating dry polymer additive in the form of a re-emulsifiable powder to which only water is added at job site.
3. Grout Additive: Grout Boost Advanced Pro by H.B. Fuller Construction Products, Inc. Follow all manufacturer's instructions.
4. Latex Additive (water emulsion) serving as a replacement for part or all of gauging water, added at job site to prepackaged dry grout mix, with type of latex and dry grout mix complying with requirements indicated below:
 - a. Latex Type: Manufacturer's Standard.
 - b. Grout Type: Dry-set grout specified or supplied by latex manufacturer. Use latex additive without a retarder with dry-set grout.
 - c. Application: Use to grout joints in floor and wall tile unless otherwise indicated.
5. Note: Grout joints shall be 1/8" wide and the epoxy grout shall fill the joint space and be no lower than 1/32" of an inch from the top face of the tile.

2.05 ELASTOMERIC SEALANTS

- A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer indicated that comply with requirements of Division 7 Section "Joint Sealers," including ASTM C 920 as referenced by Type, Grade, Class, and Uses.
- B. The quarry tile and unglazed mosaic tile shall be sealed before grouting with Aqua Mix Inc. penetrating sealer following manufacturer's application recommendations.
- C. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.
- D. Multipart Pourable Urethane Sealant for Use T: Type M; Grade P; Class 25; Uses T, M, A, and as applicable to joint substrates indicated, O.
- E. Products: Subject to compliance with requirements, manufacturers offering products which may be incorporated into the Work include, but are not limited to, the following:
 1. Multipart Pourable Urethane Sealant:
 - a. "Chem-Calk 550"; Bostik Construction Products Div.
 - b. "Vulkem 245"; Mameco International, Inc.
 - c. "Urexpan NR-200"; Pecora Corp.
 - d. "THC-900"; Tremco Corp.

2.06 MISCELLANEOUS MATERIALS

- A. Transition Strips: Provide a metal stepless transition strip to match Schluter-Reno U or TK Series (or approved equivalent) at all exposed edges of tile installation.
- B. Temporary Protective Coating: Provide product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout, is compatible with tile and mortar/grout products, and is easily removable after grouting is completed without damaging grout or tile.
 1. Petroleum paraffin wax, fully refined, tasteless, odorless, containing at least 0.5 percent oil with a melting point of 120 deg F (49 deg C) to 140 deg F (60 deg C) per ASTM D 87.

2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as a temporary protective coating for tile.
- C. Self-Leveling System: Provide two-part leveling clips and wedges (1/8") as manufactured by one of the following:
 1. Raimondi - Leveling Solutions
 2. Tuscan - Leveling System
 3. QEP - Lash System

2.07 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates and areas where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 1. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.
 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Blending: For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- B. Field-Applied Temporary Protective Coating: Where indicated under tile type or needed to prevent adhesion or staining of exposed tile surfaces by grout, protect exposed surfaces of tile against adherence of mortar and grout by precoating them with a continuous film of temporary protective coating indicated below, taking care not to coat unexposed tile surfaces:
 1. Petroleum paraffin wax or grout release.
- C. Protect surrounding work from damage.
- D. Vacuum clean surfaces and damp clean.
- E. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- F. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.
- G. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.03 INSTALLATION - GENERAL

- A. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.
- B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated.
- C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile.
- E. Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths unless otherwise shown.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work.
- F. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.
 - 1. Locate joints in tile surfaces directly above joints in concrete substrates.
 - 2. Prepare joints and apply sealants to comply with requirements of Division 7 Section "Joint Sealers."
- G. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113 or F116 (epoxy).
 - 1. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method F122.
 - 2. Where epoxy bond coat and grout are indicated, install in accordance with TCNA (HB) Method F131.
- B. Over wood substrates, install in accordance with TCNA (HB) Method F150.
- C. Install tile-to-tile floor movement joints in accordance with TCNA (HB) Method EJ171F.

3.05 INSTALLATION - WALL TILE

- A. Over interior concrete and masonry install in accordance with TCNA (HB) Method W202, thin-set with dry-set or latex-Portland cement bond coat.

3.06 CLEANING AND PROTECTION

- A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove latex-portland cement grout residue from tile as soon as possible.
 2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
 3. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to brick and grout manufacturer. Trap and remove coating to prevent it from clogging drains.
- B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.
- C. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.
- D. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
- E. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.
- F. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION

SECTION 095113 - ACOUSTICAL PANEL CEILINGS**PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. This Section includes the following:
 - 1. Acoustical panels Type 1 (24" x 48")
 - 2. Acoustical panel Type 2 (24" x 48")
 - 3. Washable faced gypsum panel ceiling Type 3 (24" x 24")
 - 4. Exposed suspension system (15/16")
- B. All acoustical panel ceiling components and installation methods shall comply with seismic zone requirements of the Kentucky Building Code.
- C. Refer to the reflected ceiling plans A/A7.1 for location of existing panels and suspension system to remain.
- D. Refer to the Room Finish Schedule on Sheet A2.1 and the Ceiling Legend and Reflected Ceiling Plan on Sheet A7.0 for the locations of acoustical ceiling tile and grid types.

1.02 RELATED REQUIREMENTS

- A. Section 012300 - Alternates: Refer to section for additional information.
- B. Section 033000 - Cast-In-Place Concrete: Placement of special anchors or inserts for suspension system
- C. Section 053100 - Steel Decking: Placement of special anchors or inserts for suspension system
- D. Section 090050 - Finish Legend
- E. Section 211300 - Fire Suppression Sprinkler System: Sprinkler heads in ceiling system
- F. Section 233700 - Air Outlets and Inlets: Air diffusion devices in ceiling
- G. Section 265100 - Interior Lighting: Light fixtures in ceiling system
- H. Section 275116 - Public Address Systems: Speakers in ceiling system
- I. Section 284600 - Fire Detection and Alarm: Fire alarm components in ceiling system

1.03 DEFINITIONS

- A. CAC: Ceiling Attenuation Class.
- B. LR: Light Reflectance coefficient.
- C. NRC: Noise Reduction Coefficient.

1.04 REFERENCE STANDARDS

- A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2009a.
- B. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2013a.
- C. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
- D. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2014.

- E. ASTM E795 - Standard Practices for Mounting Test Specimens During Sound Absorption Tests; 2005 (Reapproved 2012).
- F. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2014.
- G. CAL (CHPS LEM) - Low-Emitting Materials Product List; California Collaborative for High Performance Schools (CHPS); current edition at www.chps.net/.
- H. GEI (SCH) - GREENGUARD "Children and Schools" Certified Products; GREENGUARD Environmental Institute; current listings at www.greenguard.org.
- I. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2015.
- J. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.
- K. UL (GGG) - GREENGUARD Gold Certified Products; current listings at <http://http://productguide.ulenvironment.com/QuickSearch.aspx>.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: For each type of product indicated.
- C. Samples for Initial Selection: For components with factory-applied color finishes.
- D. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
 - 1. Acoustical Panel: One set of 6-inch- (150-mm-) square Samples of each type, color, pattern, and texture.
 - 2. Exposed Suspension System Members, Moldings, and Trim: One set of 12-inch- (300-mm-) long Samples of each type, finish, and color.
- E. Qualification Data: For testing agency.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical panel ceiling.
- G. Research/Evaluation Reports: For each acoustical panel ceiling and components and anchor type.
- H. Maintenance Data: For finishes to include in maintenance manuals.
- I. NRC: Noise Reduction Coefficient.

1.06 QUALITY ASSURANCE

- A. Acoustical Testing Agency Qualifications: An independent testing laboratory, or an NVLAP-accredited laboratory, with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548. NVLAP-accredited laboratories must document accreditation, based on a "Certificate of Accreditation" and a "Scope of Accreditation" listing the test methods specified.
- B. Source Limitations
 - 1. Acoustical Ceiling Panel: Obtain each type through one source from a single manufacturer.
 - 2. Suspension System: Obtain each type through one source from a single manufacturer.
- C. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:

1. Fire-Resistance Characteristics: Where indicated, provide acoustical panel ceilings identical to those of assemblies tested for fire resistance per ASTM E 119 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
 - a. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another testing and inspecting agency.
 - b. Identify materials with appropriate markings of applicable testing and inspecting agency.
2. Surface-Burning Characteristics: Provide acoustical panels with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.08 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended

1.09 SEQUENCING AND SCHEDULING

- A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.10 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

1.11 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Acoustical Ceiling Panels: Full-size panels equivalent to 2.0 percent of quantity installed.
 2. Suspension System Components: Quantity of each exposed component equivalent to 2.0 percent of quantity installed.

PART 2 - PRODUCTS

2.01 WARRANTIES

- A. Panels shall not sag for 15 years. No limit to relative humidity, short of standing water and up to 120 degrees Fahrenheit.

2.02 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
 - 1. Products: Subject to compliance with requirements, provide one of the products specified.
 - 2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.03 ACOUSTICAL PANELS, GENERAL

- A. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E1264 classifications as designated by types, patterns, acoustical ratings, and light reflectance, unless otherwise indicated.
 - 1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches (400 mm) away from test surface per ASTM E 795.
- B. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
 - 1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

2.04 MINERAL-BASE ACOUSTICAL PANELS

- A. Ceiling Type -1: (24" x 48" x 3/4").
 - 1. Products:
 - a. Armstrong's School Zone "Fine Fissured" No. 1714.
 - b. USG: Clima Plus High NRC No. 22441.
 - c. CertainTeed "Fine Fissured" No. SFF-497 HNRC/HCAC.
 - 2. Classification: Provide Class A panels complying with ASTM E 1264 for type, form, and pattern as follows:
 - a. Type and Form: Type III, Form 2.
 - b. Pattern: CE (lightly textured).
 - 3. Color: White.
 - 4. LR: Not less than 0.84.
 - 5. NRC: Not less than 0.70, U.L. classified label on each carton.
 - 6. CAC: Not less than 35, U.L. classified label on each carton.
 - 7. Edge Detail: Square.
 - 8. Antimicrobial Treatment: Coating based to inhibit mold and mildew.
 - 9. Panels shall exceed ASTM C367 ball hardness test to 210 lbs.

2.05 MINERAL-BASE ACOUSTICAL PANELS

- A. Ceiling Type - 2: (24" x 48" x 3/4").
1. Products:
 - a. Armstrong's School Zone "Fine Fissured" No. 1824.
 - b. USG: Clima Plus High NRC No. 22360.
 - c. CertainTeed "Fine Fissured" SFF-494 HNRC/HCAC.
 2. Classification: Provide Class A panels complying with ASTM E 1264 for type, form, and pattern as follows:
 - a. Type and Form: Type III, Form 2.
 - b. Pattern: CE (lightly textured).
 3. Color: White.
 4. LR: Not less than 0.84.
 5. NRC: Not less than 0.70, U.L. classified label on each carton.
 6. CAC: Not less than 35, U.L. classified label on each carton.
 7. Edge Detail: Angled Tegular.
 8. Antimicrobial Treatment: Coating based to inhibit mold and mildew.
 9. Panels shall exceed ASTM C367 ball hardness test to 210 lbs.

2.06 WASHABLE FACE PANEL CEILING

- A. Ceiling Type:
1. Products:
 - a. USG Sheetrock Brand "Clima Plus, Vinyl".
 - b. Armstrong's Healthzone.
 - c. National Gypsum Gridstone Fire-Shield Clean Room and Hi-Strength.
 2. Color: White.
 3. Size: 24" x 24" x 3/4".
 4. Edge: Square.
 5. Grid: 15/16".

2.07 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.
- B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.
1. High-Humidity Finish: Comply with ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated.
- D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:

1. Zinc-Coated Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- (2.69-mm-) diameter wire.
3. Wire hangers shall be installed on two diagonal corners of each 2' x 4' ceiling grid opening, or equivalent. Refer to the electrical specifications for information concerning the suspension system for ceiling mounted equipment.

2.08 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILINGS

- A. Available Products:
 1. Armstrong Prelude XL
 2. USG DX/DXL 24 Series
 3. Chicago Metallic CMC 1200 Series
 4. Gordon, Inc.
- B. Wide-Face, Capped, Double-Web, Fire-Rated Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 (Z90) coating designation, with prefinished 15/16-inch- (24-mm-) wide metal caps on flanges. Note: Server 175, Kitchen 175A, Wear Wash 175G, and Dry Food Storage 175D require aluminum cap faced grid systems.
 1. Structural Classification: Intermediate-duty system.
 2. End Condition of Cross Runners: Override (stepped) or butt-edge type.
 3. Face Design: Flat, flush.
 4. Cap Material: Cold-rolled sheet.
 5. Cap Finish: Painted white.
 6. Width: 15/16".
 7. Corner trim: Pre-Manufactured.
- C. Radius Wall/Soffit Surfaces: Radius wall surfaces only shall receive Ultra-Flex flexible acoustical ceiling trim as manufactured by the Kenbeck Company. The appearance of the Ultra-Flex angle trim shall match the other typical angle trim.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.03 INSTALLATION, GENERAL

- A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic requirements indicated, per manufacturer's written instructions and Cisca's "Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
 - 4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 5. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, post-installed mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 - 6. Do not attach hangers to steel deck tabs.
 - 7. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 - 8. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.
- C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
 - 1. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- E. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit. Where the unfinished/unpainted cut edge of a tile is exposed the edge shall be repainted to achieve a "finished" appearance.
 - 1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
 - 2. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 - 3. For reveal-edged panels on suspension system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension system surfaces and panel faces flush with bottom face of runners.

3.04 INSTALLATION - ACOUSTICAL UNITS

- A. Fit border trim neatly against abutting surfaces.
- B. Cutting Acoustical Units:

1. Cut to fit irregular grid and perimeter edge trim.
2. Make field cut edges of same profile as factory edges.
3. Double cut and field paint exposed reveal edges.

3.05 FIELD QUALITY CONTROL

- A. Remove and replace acoustical panel ceiling hangers where test results indicate that they do not comply with specified requirements.
- B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.06 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touch up of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 096500 - RESILIENT TILE FLOORING**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. This Section includes the following:
 - 1. Vinyl composition tile (VCT).
 - 2. Vinyl composition tile pattern diagram. The flooring Contractor will be responsible for submitting a complete measured floor pattern diagram for all areas to receive a floor tile pattern. The diagram will locate all floor tile pattern locations for approval prior to beginning work.
 - 3. Classroom B101 has both existing VCT and terrazzo. After the VCT is removed, fill all areas to provide a smooth surface and prepare the existing terrazzo to receive new VCT.
 - 4. Classroom B104, FRYSC B105, and Restroom B105A have existing terrazzo. Portions of the terrazzo will be demolished during construction. Fill all surfaces to provide a smooth surface for new VCT and ceramic tile.
- B. Floor Slab Preparation: The installer is required to prepare all areas of floor slabs by utilizing a self leveling material equivalent to Mapei M-20 with T-2 primer, Schonox XM or TEC Level Set 300, as required over the entire floor surface. Following the manufacturer's directions completely before installing tiles.

1.02 RELATED REQUIREMENTS

- A. Section 012300 - Alternates: Refer to section for additional information.
- B. Section 013000 - Administrative Requirements: Submittal procedures.
- C. Section 090050 - Finish Legend.
- D. Section 096513 - Resilient Wall Base and Accessories, for resilient wall base, reducer strips and other accessories installed with resilient floor tile.

1.03 REFERENCE STANDARDS

- A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.
- C. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014.
- D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- E. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011.
- F. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2014.
- H. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.
- I. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

- A. Product data for each type of product specified.
- B. Samples for Initial Selection: For each type of resilient floor tile indicated.
- C. Samples for Verification: Full-size units of each color and pattern of resilient floor tile required.
- D. Maintenance Data: For resilient products to include in maintenance manuals.

1.05 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide products identical to those tested for fire-exposure behavior per test method indicated by a testing and inspecting agency acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store tiles on flat surfaces.

1.07 PROJECT CONDITIONS

- A. Substrate Conditions: Use the method described below to determine the dryness as required to ensure initial and long-term success.
 - 1. ASTM F 2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs using In Situ Probes.
 - a. Three tests should be conducted for areas up to 1,000 square feet and one additional test should be conducted for each additional 1,000 square feet of flooring.
 - b. Results must not exceed 75% when tested to ASTM F 2170. A diagram of the area showing the location and results of each test shall be submitted to the Interior Designer/Architect. If the test results exceed the limitations, the installer must not proceed until the problem has been corrected.
- B. The flooring contractor shall verify in writing to the owner, a minimum of thirty (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, per ASTM F 1869-89 requirements.
 - 2. Alkalinity: Maximum pH of 9.
- C. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- D. After post-installation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
- E. Close spaces to traffic during floor covering installation.
- F. Close spaces to traffic for 48 hours after floor covering installation.
- G. Install resilient products after other finishing operations, including painting, have been completed.

1.08 SEQUENCING AND SCHEDULING

- A. Coordinate the work with all sections referencing this section.

1.09 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

1.10 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color and pattern of floor tile installed.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Armstrong World Industries
 - 2. Azrock
 - 3. Congoleum

2.02 COLORS AND PATTERNS

- A. Colors and Patterns: As selected by Interior Designer from manufacturer's full range.

2.03 VINYL COMPOSITION TILE ADDITIONAL REQUIREMENTS

- A. Wearing Surface: Smooth
- B. Thickness: 1/8"
- C. Size: 12" by 12" (305 by 305 mm)
- D. Fire-Test-Response Characteristics:
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm per ASTM E 648

2.04 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
- C. Feature Strip: Install 1" wide vinyl composition tile feature strip at all door ways that divide two areas/rooms to receive resilient floor tile centered under door. Install 1" wide vinyl composition tile feature strips at floor tile pattern areas in longest lengths available from the manufacturer. Refer to the floor plans for locations. Material(s) for feature strips may be selected from 12" x 12" vinyl composition floor tile.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content and other conditions affecting performance.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale and foreign deposits that might interfere with adhesion of resilient products.
 - 2. The flooring Contractor shall prepare floor slabs to receive new floor covering to prevent telegraphing of irregular slab conditions per the floor covering manufacturer's recommendations.
 - 3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM E 710.
 - 1. Where irregular slab conditions occur, utilize POZ patch self leveling material as required (or approved equivalent) to return the slab to a smooth, level surface.
 - 2. Verify that substrates are dry and free of curing compounds, sealers and hardeners.
- C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- D. Use trowelable leveling and patching compound to fill cracks, holes and depressions in substrates. Prepare all slabs to receive new floor covering to prevent telegraphing of irregular slab conditions per the floor covering manufacturer's recommendations.
- E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
 - 1. Do not install resilient products until they are same temperature as space where they are to be installed.
- F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation and dust. Proceed with installation only after unsatisfactory conditions have been corrected.
- G. Where any concrete slab expansion material has been utilized adjacent to walls, columns, etc. and the thickness exceeds 1/4" out from the vertical surface. The flooring installer shall remove the expansion material and clean out the void in the floor surface. The installer shall then place a 1/4" thick removable spacer along the vertical surface and fill the remaining void with POZ self-leveling material (or approved equivalent). After the leveling material has cured, remove the 1/4" spacer and install tile per manufacturer's recommendations.
- H. Where new VCT is to be installed over existing terrazzo, all surface contaminants, including wax, must be removed. The floor surfaces shall be scarified as required to provide a suitable substitute for the new leveler and VCT. Example areas include B104 and FRYSC B105.
- I. Where concrete patching is required, the floor surface shall receive a leveler to provide a smooth surface to receive new flooring.

3.03 TILE INSTALLATION

- A. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths at perimeter.

- B. Match tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 - 1. Lay tiles square with room axis unless otherwise indicated.
- C. Scribe, cut, and fit tiles to butt tightly to vertical surfaces, permanent fixtures, including pipes, outlets, edgings, door frames, thresholds and nosings. Tiles shall be installed under cabinets and casework.
- D. Extend tiles into toe spaces, door reveals, closets, and similar openings.
- E. 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.
- F. Install tiles on covers for telephone and electrical ducts, and similar items in finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers. Tightly adhere tile edges to substrates that abut covers and to cover perimeters..
- G. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, and puckering at joints. Telegraphing of adhesive spreader marks and other surface imperfections.
- H. Maintain tile coursing, ensure that all tile coursing runs true and even, at no time shall coursing be allowed to “grow” or “shrink” causing uneven joints. Notify Designer/Architect of problems with the tile sizes.
- I. Where floor tile borders/patterns occur, the center "field" tiles shall be full size tiles and the border tiles along the wall shall be cut to center the field tiles.

3.04 SEQUENCING AND SCHEDULING

- A. Install tiles and accessories per the work schedule set by the General Contractor.
- B. Do not install tiles over concrete slabs or areas of patching until all areas are sufficiently dry to bond with adhesive as determined by tile manufacturer’s recommended bond and moisture test.

3.05 CLEANING AND PROTECTION

- A. Perform the following operations immediately after completing resilient product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
 - a. Do not wash surfaces until after time period recommended by manufacturer.
- B. Protect resilient flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods indicated or recommended by tile manufacturer.
 - 1. Apply protective floor polish to horizontal surfaces that are free from soil, visible adhesive, and surface blemishes if recommended in writing by manufacturer.
 - a. Coordinate selection of floor polish with Owner’s maintenance service.
 - b. Provide two coats of floor polish.
 - 2. Cover products installed on horizontal surfaces with undyed, untreated building paper until Substantial Completion.
 - 3. Do not move heavy and sharp objects directly over surfaces. Place hard board or plywood panels over flooring and under objects while they are being moved. Slide or roll objects over

panels without moving panels.

END OF SECTION

SECTION 096513 - RESILIENT WALL BASE AND ACCESSORIES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. This Section includes the following:
 - 1. Resilient wall base - rolls only. Refer to the drawings and the room finish schedule for additional information.
 - 2. Resilient flooring accessories
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 012300 - Alternates, refer to section for additional information
 - 2. Section 090050 - Finish Legend
 - 3. Section 096502 - Resilient Tile Flooring

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements - Submittal procedures

1.03 REFERENCE STANDARDS

- A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement (replaced SG-971)
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013
- C. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014
- D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012
- E. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011
- F. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2014
- H. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009
- I. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition

1.04 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections:
 - 1. Product data for each type of product specified
 - 2. Samples for initial selection purposes of manufacturer's standard sample sets in form of pieces cut from each type of product specified showing full range of colors and patterns available

1.05 QUALITY ASSURANCE

- A. Single-Source Responsibility for Products: Obtain each type and color of product specified from a single source with resources to provide products of consistent quality in appearance and physical

properties without delaying progress of the Work.

- B. Fire Performance Characteristics: Provide products with the following fire performance characteristics as determined by testing products per ASTM test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
- C. Critical Radiant Flux: 0.45 watts per sq. cm or more per ASTM E 648.
- D. Smoke Density: Less than 450 per ASTM E 662.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to Project site in original manufacturer's unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.
- B. Store products in dry spaces protected from the weather with ambient temperatures maintained between 50 deg F (10 deg C) and 90 deg F (32 deg C).
- C. Move products into spaces where they will be installed at least 48 hours in advance of installation.

1.07 PROJECT CONDITIONS

- A. Maintain a minimum temperature of 70 deg F (21 deg C) in spaces to receive products specified in this Section for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. After this period, maintain a temperature of not less than 55 deg F (13 deg C).
- B. Do not install products until they are at the same temperature as that of the space where they are to be installed.
- C. Close spaces to traffic during installation of products specified in this Section.

1.08 SEQUENCING AND SCHEDULING

- A. Sequence installing products specified in this Section with other construction to minimize possibility of damage and soiling during remainder of construction period.

1.09 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials matching products installed as described below, packaged with protective covering for storage, and identified with labels clearly describing contents.
 - 1. Furnish not less than 10 linear feet for each 500 linear feet or fraction thereof of each different type and color of resilient wall base installed, on a continuous roll. One roll per color.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the products specified in each Product Data Sheet at end of this Section.

2.02 RESILIENT WALL BASE

- A. Vinyl Wall Base: Products complying with FS SS-W-40, Type I, and requirements specified in the Rubber Wall Base Product Data Sheet at end of this Section.

2.03 RESILIENT ACCESSORIES

- A. Vinyl Accessories: Products complying with requirements specified in Vinyl Accessory Product Data Sheet at end of this Section.

2.04 INSTALLATION ACCESSORIES

- A. Concrete Slab Primer: Nonstaining type as recommended by flooring manufacturer.
- B. Trowelable Underlayments and Patching Compounds: Latex-modified, portland- cement-based formulation provided or approved by flooring manufacturer for applications indicated.
- C. Adhesives: Water-resistant type recommended by manufacturer to suit resilient flooring product and substrate conditions indicated.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Examine areas where installation of products specified in this Section will occur, with Installer present, to verify that substrates and conditions are satisfactory for installation and comply with manufacturer's requirements and those specified in this Section.

3.02 PREPARATION

- A. General: Comply with manufacturer's installation specifications for preparing substrates indicated to receive products indicated.
- B. Use trowelable leveling and patching compounds per manufacturers directions to fill cracks, holes, and depressions in substrates.
- C. Remove coatings, including curing compounds, and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.
- D. Broom and vacuum clean substrates to be covered immediately before installing products specified in this Section. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.
- E. Apply concrete slab primer, if recommended by flooring manufacturer, prior to applying adhesive. Apply according to manufacturer's directions.

3.03 INSTALLATION

- A. General: Install products specified in this Section using methods indicated according to manufacturer's installation directions.
- B. All work required to put the wall and floor surface into acceptable condition to receive the specified products shall be the full responsibility of the installer. All surfaces shall be prepared to prevent the telegraphing of irregular substrate conditions onto/through the surface of the new wall base or other accessories.
- C. Apply resilient wall base to walls, columns, pilasters, casework, and other permanent fixtures in rooms and areas where base is required. Install wall base in lengths as long as practicable. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
 - 1. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
 - 2. Install inside and exterior corners before installing straight pieces.
 - 3. Form inside corners on job from straight pieces of maximum lengths possible by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce snug fit to substrate.
 - 4. Form outside corners on job from straight pieces of maximum lengths possible by shaving back of base at point where bending will occur. Remove a strip perpendicular to length of

base and only deep enough to produce a snug fit without bends whitening or removal of more than half the thickness of wall base.

5. Form radius corners for bullnose CMU as follows: The installer shall use a section of 2" diameter plastic pipe to aid in altering the shape of the wall base profile to ease the installation of the material. Simply drape the wall base profile over the pipe with the toe of the wall base facing up. Heat the wall base along the radius of the pipe with a hot air gun or torch until pliable. While holding the wall base section firmly in contact with the pipe, quench the heated wall base area with a water dampened cloth until the wall base is cool. (This process only takes a few seconds to perform). The wall base will maintain the shape of the pipe when removed. Cut the wall base to the desired length of the return and install with cove base adhesive. Use contact bond adhesive for extremely short returns. Roll with a 2" hand roller to ensure proper adhesion.
- D. Place resilient accessories so they are butted to adjacent materials of type indicated and bond to substrates with adhesive. Install reducer strips at edges of flooring that otherwise would be exposed.

3.04 CLEANING AND PROTECTION

- A. Perform the following operations immediately after completing installation:
 1. Remove visible adhesive and other surface blemishes using cleaner recommended by manufacturers of resilient product involved.
 2. Sweep or vacuum floor thoroughly.
 3. Do not wash floor until after time period recommended by manufacturer.
 4. Damp-mop resilient accessories to remove black marks and soil.
- B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods indicated or recommended by manufacturer of resilient product involved.
 1. Apply protective floor polish to resilient accessories that are free from soil, visible adhesive, and surface blemishes.
 - a. Use commercially available metal, cross-linked, acrylic product acceptable to resilient accessory manufacturer.
 - b. Coordinate selection of floor polish with Owner's maintenance service.
- C. Clean products specified in this Section not more than 4 days prior to dates scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Clean products using method recommended by manufacturer.
 1. Strip protective floor polish that was applied after completing installation, prior to cleaning.
 2. Reapply floor polish after cleaning.

3.05 VINYL WALL BASE PRODUCT DATA SHEET

- A. Vinyl Wall Base Designation: VWB-1
- B. Style: Cove with top-set toe
- C. Minimum Nominal Thickness: 1/8"
- D. Height: 4" and 6"
- E. Lengths: Coils in lengths standard with manufacturer, but not less than 100 feet
- F. Exterior Corners: Pre-molded or formed on job

- G. Interior Corners: Pre-molded or formed on job
- H. Ends: Pre-molded
- I. Color and Pattern: As selected by Architect/Designer from manufacturer's full range of colors and patterns produced for vinyl wall base complying with requirements indicated. Provide up to two colors.
- J. Available Products:
 - 1. Roppe Corporation
 - 2. Flexco Div., Textile Rubber Co.
 - 3. Johnsonite

3.06 VINYL ACCESSORY PRODUCT DATA SHEET

- A. Vinyl Accessory Designation: Resilient Edge Strips
- B. Profile and Dimensions: 1/8" thick, homogeneous rubber composition, tapered or bullnose edge.
- C. Color: As selected by Architect/Designer from manufacturer's full range of colors produced for rubber accessories complying with requirements indicated. Provide up to two colors.

END OF SECTION

SECTION 096623 - EPOXY-RESIN TERRAZZO FLOORING**PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. This Section includes the following types of terrazzo:
 - 1. Patching of epoxy resin terrazzo to match the existing coloration, chip matrix, chip sizes, and appearance.
 - 2. Areas of possible patching are shown on the drawings. The possible areas of patching shall be field verified.
- B. Select finish required per the project requirements from the following:
 - 1. Finish required: Match the existing polished surface utilizing the appropriate grit required to duplicate the finish.
- C. Related Sections: The following sections contain requirements that relate to this Section:
 - 1. Division 3 Section "Concrete Work" for concrete substrate, including levelness tolerances.
 - 2. Division 7 Section "Joint Sealers" for furnishing and installing joint sealants.
 - 3. Division 15 Section "Drainage and Vent Systems" for furnishing and setting of floor drains.
 - 4. Section 012300 - Alternates: Refer to Section for additional information.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements - Submittal procedures
- B. Section 090050 Finish Legend

1.03 REFERENCE STANDARDS

- A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.
- C. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014.
- D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- E. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011.
- F. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2014.
- H. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.
- I. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of terrazzo, accessory item, and component material specified.

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- C. Shop Drawings: Showing layout of divider strips, control joint strips, and base and border strips.
- D. Samples: 6-inch-square samples of each different pattern, color, and type of terrazzo required. Provide minimum 6-inch-long samples of each type accessory item specified.
- E. Material Certification: Supplier's/manufacturer's written certification that terrazzo materials provided meet or exceed specified NTMA properties.
- F. Maintenance Instructions: Submit 2 copies of written instructions for recommended periodic maintenance of each type of terrazzo.
- G. Manufacturer Experience:
 - 1. Submit proof of Associate membership in NTMA.
 - 2. Submit a list of at least five (5) epoxy terrazzo projects using material being submitted for this project installed during the last five (5) years of the same scope, complexity and at least 50 percent of the square footage.
 - 3. Manufacturer shall provide history of providing primary materials for a minimum of ten (10) years.
- H. Qualification Data: For qualified installer.
 - 1. Submit proof of Contractor membership in NTMA.
 - 2. Furnish a list of at least five (5) epoxy terrazzo projects using material being submitted for this project installed during the last five (5) years of the same scope, complexity and at least 50 percent of the square footage.

1.05 QUALITY ASSURANCE

- A. NTMA Standards: Comply with specified provisions and recommendations of National Terrazzo and Mosaic Association, Inc. (NTMA) unless more stringent requirements are specified.
- B. Manufacturer Qualifications:
 - 1. Manufacturer shall be an associate member of NTMA.
 - 2. Engage an epoxy manufacturer with at least ten (10) years experience in the manufacture of epoxy flooring materials.
- C. Installer Qualifications:
 - 1. Installer shall be a contractor member of NTMA.
 - 2. Installer shall be certified in writing by terrazzo manufacturer as qualified to install manufacturer's products.
 - 3. Installer shall have at least five (5) years of satisfactory experience in installation of epoxy terrazzo. Installer shall demonstrate experience during last five (5) years by having completed at least five (5) projects of comparable scope and complexity of at least 50 percent of the total square footage of this project.
- D. Manufacturer's Instructions: In addition to specified requirements, comply with resin manufacturer's instructions and recommendations for substrate preparation, materials storage, mixing and application, finishing, and curing.
- E. Source Limitations for Marble: Obtain each color, grade, type, and variety of marble from one source with resources to provide materials of consistent quality in appearance and physical properties without delaying the Work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.
- B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.
- C. Handle tile with temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If despite these precautions coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.07 PROJECT CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.
- C. Maintain temperatures at 50 deg F (10 deg C) or more in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

1.08 SEQUENCING AND SCHEDULING

- A. Coordinate the work with all sections referencing this section.

1.09 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

1.10 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials that match products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size.

PART 2 - PRODUCTS

2.01 THIN-SET TERRAZZO MATERIALS

- A. Epoxy Resin Terrazzo Matrix: Thermosetting, amine-cured epoxy resin and hardener, mineral filler, and color pigment, complying with NTMA "Guide Specification for Epoxy Terrazzo" and as required to match Architect's sample.
- B. Acceptable manufacturers; subject to compliance with specified requirements:
 - 1. Basis of design: Terrazzo & Marble Supply Companies, Terroxy Systems Epoxy Matrix. (www.tmsupply.com).
 - 2. Quadrant Chemical Companies.
 - 3. TEC Specialty Construction Brands, Inc., Tuff-Lite Epoxy Terrazzo Systems.

2.02 PERFORMANCE REQUIREMENTS

- A. Aggregates: Natural, sound, crushed marble chips, colors selected and graded to match Architect's samples, but with maximum size within limits of workability for terrazzo thickness indicated.

- B. Substrate Primer: Two-component resin or other compound, recommended by matrix manufacturer, to penetrate and seal substrate and provide maximum bond of terrazzo to substrate.
- C. Finishing Grout: Resin-based grout with filler and pigments as recommended by matrix manufacturer.
- D. Flexible Epoxy Isolation Membrane: Epoxy-Resin Matrix Manufacturer's 100 percent solids epoxy membrane and fiberglass mesh for crack penetration. (10% - 15% of project).

2.03 EPOXY MATRIC TERRAZZO APPLICATIONS

- A. Mix: Comply with NTMA's "Terrazzo Specifications and Design Guide" and manufacturer's product data for matrix and aggregate proportions and mixing.
 - 1. Color and Pattern Schedule: Where the following designations are indicated, provide specified terrazzo matrices matching Interior Designer's samples:
 - 2. Sample shall be approved by Interior Designer.
 - 3. Adjustments of proportions to individual colors may be necessary to obtain the intended appearance. No additional cost shall be charged to Owner if overall proportions for entire project remain within the proportions specified above.
- B. Floors:
 - 1. Thickness: 3/8 inch, nominal.
 - 2. Color (s): Match existing. A second additional color may be required.
 - 3. Wall Base:
 - a. Thickness: Same as floors.
 - b. Color (s): Same as adjacent floor.
 - c. Color (s): As indicated on drawings.
 - d. Aggregate Type and Size: Same as floors.

2.04 TERRAZZO ACCESORIES

- A. Divider Strips: Depth and style required for terrazzo type and thickness. Width, material, and color as indicated. Angle or "T" -type for adhesive bonding to substrate.
 - 1. Unless otherwise indicated, use divider strips with 1/8-inch-wide top, as follows:
 - a. White zinc alloy.
- B. Control Strips: Double or split units, 1/8 inch wide, of same material and color as divider strips with 1/8-inch-wide full-depth filler, laminated between strips.
 - 1. Filler: Elastomeric sealant.
- C. Divider Strip Adhesive: Epoxy-Resin adhesive recommended by manufacturer for this use and acceptable to thin-set Terrazzo Resin manufacturer.
- D. Cleaner: Chemically neutral, liquid cleaner, with Ph factor between 7 and 10, of formulation recommended by sealer manufacturer for type of terrazzo used and complying with NTMA requirements.
- E. Interior Floor Sealer: Colorless, slip- and stain-resistant penetrating sealer with Ph factor between 7 and 10, that does not affect color or physical properties of terrazzo surface.
- F. Sealer: Slip and stain-resistant sealer that is chemically neutral with a pH factor between 7 and 10, that meets a standard coefficient of friction of 0.5 or higher, as measured by the James Machine (ASTM D-2047 Test Method), does not affect physical properties of terrazzo and complies with

NTMA's "Terrazzo Specifications and Design Guide."

1. TRX Water Based 2-K Urethane / Acrylic Coating (premium)
 2. WB Urethane
 3. WB Acrylic
- G. Thin-Set Terrazzo Primer: Two-component resin or other compound recommended by thin-set Terrazzo Resin manufacturer for priming substrate.
- H. Thin-Set Terrazzo Finishing Grout: Thin-Set Terrazzo Resin manufacturer's resin-based finishing grout.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Examine concrete substrate to ensure that surface levelness tolerances are within tolerance ranges required by NTMA for type of terrazzo application specified.
1. Notify Contractor of unsatisfactory levelness tolerances. Do not begin installation until unsatisfactory tolerances have been corrected and are ready to receive terrazzo.
 2. Verify that concrete substrates are visibly dry and free of moisture. Document the moisture level of concrete slab-on-grade surfaces prior to installation of terrazzo. Test moisture level with accord with ASTM F2170 (determining relative humidity in concrete slabs using in situ probes).
- B. Clean and prepare substrate to comply with NTMA specifications for type of terrazzo application indicated. Clean substrate of loose chips, foreign matter, oil, grease and curing compounds.

3.02 INSTALLATION, GENERAL

- A. For thin-set terrazzo, comply with resin manufacturer's recommendations for proportioning mixes, installing strips, and placing, curing, grinding, and finishing.
- B. Provide terrazzo without interruptions of seams, except where divider strips, control joints, and expansion joints are indicated. Place and finish terrazzo around obstructions to achieve continuous color, pattern, and finish.
- C. Install divider and accessory strips in adhesive setting bed, in accordance with manufacturer's instructions, without voids below strips. Provide mechanical anchorage as required for adequate attachment of strips to substrate.
- D. Provide control joints at all expansion joints where indicated or specified by installing angle-type divider strips back-to-back with neoprene rubber filler cemented between strips, flush with finish floor.
- E. Flexible Epoxy Isolation Membrane: Prepare and prefill substrate cracks with membrane material and install flexible epoxy isolation membrane according to manufacturer's written instructions. Prepare epoxy membrane according to manufacturer's written instructions before applying substrate primer.
- F. Provide flexible epoxy isolation membrane with fiberglass mesh as recommended by the epoxy resin manufacturer at all areas of slab cracking. The base bid amount will include 500 square feet of product and installation. Additional areas determined to require epoxy isolation membrane with fiberglass mesh must be pre-approved by the Designer/Architect and/or the Construction Manager prior to proceeding with the work.
- G. Cut out and replace terrazzo areas that evidence lack of bond with substrate or underbed, including areas that emit a "hollow" sound when tapped. Cut out terrazzo areas in panels defined by strips and

replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by Architect.

- H. Construction Tolerances: Limit terrazzo surfaces' variation from level to 1/4 inch in 10 feet (6.4 mm in 3 m).
- I. Where epoxy resin terrazzo terminates at floor covering changes, the installer shall utilize a Schluter Schiene Strip. Coordinate metal finish with Designer prior to installation.

3.03 THIN-SET TERRAZZO

- A. Comply with NTMA guide specifications previously referenced under "Thin-Set Terrazzo Materials" and with matrix manufacturer's directions for installing and finishing thin-set terrazzo. Match Architect's sample and provide total material thickness indicated.
- B. Exercise extreme care to ensure fluids from grinding operation do not react with divider or control strips to produce a stain on aggregate.
- C. Delay grinding and finishing until heavy trade work is completed and construction traffic through the area is restricted.

3.04 CLEANING & SEALING

- A. Clean terrazzo after installing and finishing operations are completed, complying with sealer manufacturer's instructions.
 - 1. Cleaner: Chemically neutral cleaner with pH factor between 7 and 12 that is biodegradable, phosphate free, and recommended by cleaner manufacturer for use on terrazzo type indicated.
 - 2. Sealer: Slip and stain-resistant, penetrating-type sealer that is chemically neutral with pH factor between 7 and 12, does not affect color or physical properties of terrazzo type indicated, is recommended by sealer manufacturer for this use, and complies with NTMA Guide Specification for terrazzo type indicated.
- B. Apply sealer to cleaned terrazzo surfaces to comply with sealer manufacturer's instructions.

3.05 FINAL CLEANING AND PROTECTION

- A. Clean terrazzo as recommended by manufacturer of sealer and machine buff if required when building is ready for occupancy.
- B. Protect terrazzo from damage and wear during construction operation.

END OF SECTION

SECTION 099000 - PAINTING**PART 1 - GENERAL****1.01 RELATED DOCUMENTS**

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

1.02 RELATED REQUIREMENTS

- A. Section 015721 - Indoor Air Quality Management
- B. Section 055000 - Metal Fabrications: Shop-primed items
- C. Section 090050 - Finish Legend
- D. Section 101100 - Visual Display Surfaces
- E. Section 220553 - Identification for Plumbing Piping and Equipment: Painted identification
- F. Section 260553 - Identification for Electrical Systems: Painted identification
- G. Section 321723.13: Pavement markings

1.03 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency
- B. ASTM D 16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications
- C. ASTM D 4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials
- D. GreenSeal GS-11 - Paints

1.04 SUMMARY

- A. This Section includes surface preparation and field painting of exposed exterior and interior items and surface preparation and primer.
 - 1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- B. VOC data: Submit Green Seal GS-11 and/or GC-03 compliance documents and description of the basis for compliance.
- C. Submit environmental data in accordance with Table 1 of ASTM E2129 for products provided under work of this Section.
- D. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
 - 1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.
 - 2. All exposed to view (from the ground) flashing are to be furnished prefinished where available. If items are not available prefinished, they are to be painted. Coordinate with Contractor on these items.
 - 3. Exposed copper piping shall receive a painting system.

4. **It shall be the full responsibility of the painter to verify all paint, types to determine if paint(s) system specified are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by painter/manufacturer based on testing and field experience. Special attention should be given to areas of glazed block that have been previously painted. All existing painted surfaces shall be tested to ensure product compatability and to ensure that the paint bond will not fail.**
 5. Painting shall include field painting pre-finished grilles, registers and diffusers located on gypsum board ceilings and soffits, which are to receive an accent paint color.
 6. Painting shall include field painting exposed unfinished countertop and shelving brackets.
 7. Exterior items to receive a painting system include but are not limited to the following:
 - a. Roof ladders
 - b. Bollards
 - c. Lintels
- E. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
1. Prefinished items include the following factory-finished components:
 - a. Architectural woodwork
 - b. Finished mechanical and electrical equipment
 - c. Light fixtures
 2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Furred areas
 - b. Ceiling plenums
 - c. Pipe spaces
 - d. Duct shafts
 3. Finished metal surfaces include the following:
 - a. Anodized aluminum
 - b. Stainless steel
 - c. Chromium plate
 - d. Bronze and brass
 4. Operating parts include moving parts of operating equipment and the following:
 - a. Valve and damper operators
 - b. Linkages
 - c. Sensing devices
 - d. Motor and fan shafts
 5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- F. Related Sections include the following:

1. Division 5 Section "Structural Steel" for shop priming structural steel
2. Division 5 Section "Metal Fabrications" for shop priming ferrous metal
3. Division 8 Section "Steel Doors and Frames" for factory priming steel doors and frames
4. Division 9 Section "Gypsum Drywall" for surface preparation of gypsum board

1.05 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
 4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

1.06 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Certification: By manufacturer that all paints and coatings do not contain any of the prohibited chemicals specified; GreenSeal GS-11 certification is not required but if provided shall constitute acceptable certification.
- C. Manufacturer's Instructions: Indicate special surface preparation procedures.
- D. Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.
- E. VOC Content: Determine VOC (Volatile Organic Compound) content of solvent borne and waterborne paints and related coatings in accordance with EPA Method 24 or ASTM D3960.
- F. Product Data: For each paint system indicated. Include primers.
1. When proposing another manufacturers product other than product specified, a complete cross-reference list must be included with the submittal. Shop drawings will be automatically returned if the list is not included.
 2. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 3. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
- G. Samples for Initial Selection: For each type of finish-coat material indicated.
1. After color selection, Architect will furnish color chips for surfaces to be coated.
 2. The painter is required to submit drawdowns of each paint color for review of color and sheen match.

1.07 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

- B. Source Limitations: Obtain primers for each coating system from the same manufacturer as the finish coats.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
 1. Product name or title of material
 2. Product description (generic classification or binder type)
 3. Manufacturer's stock number and date of manufacture
 4. Contents by volume, for pigment and vehicle constituents
 5. Thinning instructions
 6. Application instructions
 7. Color name and number
 8. VOC content
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain storage containers in a clean condition, free of foreign materials and residue.
 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.

1.09 PROJECT CONDITIONS

- A. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F (10 and 32 deg C).
- B. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.
- C. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- D. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.10 EXTRA MATERIALS

- A. See Section 016000 - Product Requirements, for additional provisions.
- B. Supply 1 gallon of each color; store where directed.
- C. Label each container with color in addition to the manufacturer's label.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles or approved equivalent as manufactured by one of the following manufacturers.
- C. Paint Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. ICI Paints & Devoe High Performance Coatings (ICI)
 2. Sherwin-Williams Co. (Sherwin-Williams)
 3. Coronado Paint Company (Coronado)
 4. PPG Paints, Inc. (Pittsburgh & Porter Paints)
 5. Farrell Calhoun Paint
- D. Recycled Content: Minimum (20) (xxxx) percent post-consumer recycled content for light colors; minimum (50) (xxxx) percent post-consumer recycled content for dark colors.
- E. Toxicity/IEQ: Comply with applicable regulations regarding toxic and hazardous materials, and as specified. Paints and coatings must meet or exceed the VOC and chemical component limits of Green Seal requirements.
1. Interior paint: Comply with GS-11
 2. Exterior paint: Comply with GS-11

2.02 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

2.03 PAINTS AND COATINGS - GENERAL

- A. Toxicity/IEQ: Comply with applicable regulations regarding toxic and hazardous materials, and as specified. Paints and coatings applied on site shall comply with the following VOC content limits:
1. Interior paint: Comply with GS-11
 2. Exterior paint: Comply with GS-11
 3. Flat: 50 g/L
 4. Non-flat: 150 g/L
 5. Floor Coatings: 100 g/L
- B. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 2. Supply each coating material in quantity required to complete entire project's work from a single production run.
 3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

- C. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- D. Chemical Content: The following compounds are prohibited:
 - 1. Aromatic Compounds: In excess of 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings)
 - 2. Acrolein, acrylonitrile, antimony, benzene, butyl benzyl phthalate, cadmium, di (2-ethylhexyl) phthalate, di-n-butyl phthalate, di-n-octyl phthalate, 1,2-dichlorobenzene, diethyl phthalate, dimethyl phthalate, ethylbenzene, formaldehyde, hexavalent chromium, isophorone, lead, mercury, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, naphthalene, toluene (methylbenzene), 1,1,1-trichloroethane, vinyl chloride

2.04 PAINT SYSTEMS - EXTERIOR

- A. Exterior Primers:
 - 1. Exterior Ferrous Metal Primer: Factory formulated rust inhibitive metal primer for exterior application.
 - a. Sherwin-Williams Pro-Industrial Pro-Cryl Universal acrylic primer B66-310 series VOC less than 100 g/l 2.0-4.0 mils. DFT
 - b. Glidden Professional DTM P/F B66W1 applied at a dry film thickness of not less than 2.0 mils (0.051 mm)
 - c. PPG Industries Pitt-Tech Plus Int/Ext DTM Industrial Primer 90-912 series VOC < 100 g/l
 - d. Benjamin Moore & Co. Products
 - 1) Ferrous Metal, P06 Alkyd Metal Primer
 - 2. Exterior Galvanized Metal Primer: Factory formulated galvanized metal primer for exterior application.
 - a. Sherwin-Williams Pro-Industrial Pro-Cryl Universal acrylic Primer B66-310 series VOC less than 100 g/l 2.0-4.0 mils DFT
 - b. Glidden Professional; 4020 Devflex; DTM Flat Interior/Exterior Waterborne Primer and Finish applied at a dry film thickness of not less than 2.0 mils (0.051 mm)
 - c. PPG Industries Pitt-Tech Plus Int/Ext DTM Industrial Primer 90-912 series VOC < 100 g/l
 - d. Benjamin Moore & Co. Products
 - 1) Galvanized Metal, P04 Acrylic Metal Primer
 - 3. Exterior Aluminum Metal Primer: Factory formulated enamel oil primer.
 - a. Sherwin-Williams All Surface Enamel Oil Primer
- B. Exterior Finish Coats:
 - 1. Exterior Semigloss Acrylic Enamel: Factory formulated semigloss waterborne acrylic_latex enamel for exterior application.
 - a. Sherwin-Williams Exterior Super Paint Latex Satin A89 Series VOC 114 g/l 1.44 mils DFT
 - b. Glidden Professional Exterior Latex Gloss A8W151 100 percent acrylic semi-gloss finish applied at a dry film thickness of not less than 1.3 mils (0.033 mm)

- c. PPG Industries Speedhide Exterior 100% Acrylic Semi-Gloss 6-900XI series VOC < 50 g/l
 - d. Exterior Semigloss Acrylic Semigloss, N449 Ultra Spec Exterior Gloss Finish
 - e. Benjamin Moore & Co. Products
 - 1) Exterior Semigloss Acrylic Semigloss, N449 Ultra Spec Exterior Gloss Finish
- C. Exterior Finish Coats - Galvanized and Ferrous Metal: Factory formulated water based alkyd urethane enamel:
- 1. Sherwin Williams; Pro-Industrial, number B53-1050 series, gloss (B53-1150 semi-gloss, B53-1250 low sheen) VOC 50 g/l less than 0.42 lb/gal, wet mils 4.0 - 5.0, dry mils 1.4 - 1.7
 - 2. PPG Industries 1506-0110 Lifemaster Oil Interior/Exterior semi-gloss
- D. Exterior Finish Coats - Aluminum: Factory formulated enamel oil base:
- 1. Sherwin-Williams All Surface Oil Base Enamel

2.05 PAINT SYSTEMS - INTERIOR

- A. Interior Primers:
- 1. Interior Concrete Primer: Factory formulated alkali resistant acrylic latex interior primer for interior application
 - a. Sherwin-Williams PrepRite Block Filler B25W25 VOC 42 g/l 8.0 mils. DFT
 - b. Glidden Professional GP 3010
 - c. PPG Industries Speedhide Int/Ext Hi Fill Block Filler 6-15 VOC < 50 g/l
 - d. Benjamin Moore & Co. Products
 - 1) Interior Concrete Primer, N068 Super Spec Masonry High Build Primer
 - 2. Interior Gypsum Board Primer: Factory formulated latex based primer for interior application
 - a. Sherwin-Williams Promar 200 Zero VOC Latex Primer B28W2600 VOC 2 G/L 1.5 DFT
 - b. Glidden Professional GP 1000
 - c. PPG Industries Speedhide Zero Latex Primer 6-4900 Zero VOC
 - d. Benjamin Moore & Co. Products
 - 1) Interior Gypsum Board Primer, N534 Ultra Spec 500 Interior Primer
 - 3. Interior Wood Primer for acrylic enamel and semigloss alkyd enamel finishes: Factory formulated alkyd or acrylic latex based interior wood primer
 - a. Sherwin-Williams Multi-Purpose Latex Primer B51W8020 VOC 96 G/L 1.4 mils DFT
 - b. Glidden Professional Multi-Purpose Latex Primer B51W8020
 - c. PPG Industries Seal-Grip Int/Ext Universal Acrylic Primer 17-921 VOC > 100 g/l
 - d. Benjamin Moore & Co. Products
 - 1) Interior Wood Primer, 023 Fresh Start All Purpose Primer

4. Interior Ferrous Metal Primer: Factory formulated quick drying rust inhibitive alkyd based metal primer
 - a. Sherwin-Williams Pro-Industrial Pro-Cryl Universal acrylic Primer B66-310 series VOC 110 g/l 2.0-4.0 mils DFT
 - b. Glidden Professional 4020 DTM P/F
 - c. PPG Industries Pitt-Tech Plus Int/Ext DTM Industrial Primer 90-912 series VOC < 100 g/l
 - d. Benjamin Moore & Co. Products
 - 1) Interior Ferrous Metal Primer, P06 Alkyd Metal Primer
5. Interior zinc-coated metal primer: Factory formulated galvanized metal primer
 - a. Sherwin-Williams Pro-Cryl Universal Water Based Primer B66-310 Series VOC 110 g/l 2.0-4.0 mils DFT
 - b. Glidden Professional; 4020 Devflex DTM Flat Interior/Exterior Waterborne Primer and Finish applied at a dry film thickness of not less than 2.0 mils (0.051 mm)
 - c. PPG Industries Pitt-Tech Plus Int/Ext DTM Industrial Primer 90-912 series VOC < 100 g/l
 - d. Benjamin Moore & Co. Products
 - 1) Interior Zinc-Coated Metal Primer, P04 Acrylic Metal Primer

B. Interior Finish Coats:

1. Interior Finish Coats - Metal: Factory formulated water based alkyd urethane enamel:
 - a. Sherwin Williams; Pro-Industrial, number B53-1050 series, gloss (B53-1150 semi-gloss, B53-1250 low sheen) VOC 50 g/l < 0.42 lb/gal, wet mils 4.0 - 5.0, dry mils 1.4 - 1.7
 - b. Benjamin Moore & Co. 79301 Advance waterborne interior alkyd semi-gloss
 - c. PPG Industries 1506-0110 Lifemaster Oil interior/exterior semi-gloss
2. Interior Flat Acrylic Paint: Factory formulated flat acrylic emulsion latex paint for interior application
 - a. Sherwin-Williams Promar 200 Zero VOC Interior Latex Flat B30W2651 VOC 2 G/L 1.6 DFT
 - b. Glidden Professional 1210-XXXX Ultra-Hide Flat
 - c. PPG Industries Speedhide Zero Interior Latex Flat 6-4110 series Zero VOC
 - d. Benjamin Moore & Co. Products
 - 1) Interior Flat Acrylic, N536 Ultra Spec 500 Interior Flat
3. Interior Semigloss Acrylic Enamel: Factory formulated semigloss acrylic latex enamel for interior application
 - a. Sherwin-Williams Promar 200 Zero VOC Interior Latex Semi-gloss B31W2600 Series 0 g/l 1.6 mils DFT. If using above product for trim areas, this is the more durable product.
 - b. Glidden Professional; 1416-XXXX Ultra Hide Latex Semi-gloss Interior Wall and Trim Enamel applied at a dry film thickness of not less than 1.5 mils (0.038 mm)

- c. PPG Industries Speedhide Zero Interior Latex Semi-Gloss 6-4510 series Zero VOC
- d. Benjamin Moore & Co. Products
 - 1) Interior Semigloss Acrylic Enamel, N539 Ultra Spec 500 Interior Semigloss
- 4. Interior Eggshell Acrylic Paint: Factory formulated eggshell acrylic latex paint for interior application:
 - a. Sherwin Williams Promar 200 Zero VOC Interior Latex Eggshell B20W2600 applied as a dry film thickness
 - b. PPG Industries Speedhide Zero Interior Latex Eggshell 6-4310 series Zero VOC
 - c. Benjamin Moore & Co. Products
 - 1) Interior Eggshell Acrylic Paint, N538 Ultra Spec 500 Interior Eggshell
- 5. Interior Exposed Metal Decking and Bar Joists:
 - a. Glidden Spraymaster Alkyd Flat Dry Fall 1380-1200 with subsequent coats only as required for complete, proper and full coverage
 - b. PPG Industries Speedhide Super Tech WB Interior Dry-Fog 6-725XI, VOC < 100 g/l
 - c. Sherwin - Williams Pro Industrial Waterborne Acrylic Dryfall - Flat, White B42W181 with subsequent coats only as required for complete, proper and full coverage
 - d. Benjamin Moore & Co. Products
 - 1) Interior Expose Decking and Bar Joists, N110 Super Kote 5000 Dry Fall Latex Flat
- C. All walls, Gypsum board ceilings, metal deck, structural elements, conduit, all unfinished surfaces exposed after construction is complete shall receive a paint system unless noted otherwise.
- D. All unfinished exterior surfaces including concrete block, steel lintels, etc. will receive a paint system. Refer to the specifications for additional information.

2.06 ACCESSORY MATERIALS

- A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.
- B. Patching Material: Latex filler
- C. Fastener Head Cover Material: Latex filler

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Test existing finishes for lead before sanding, scraping, or removing. If lead is present, conform to procedures applicable when hazardous or contaminated materials are discovered.
- B. Substrate: Install formaldehyde-free MDF, particle board, or straw particle board.
- C. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application. Comply with procedures specified in PDCA P4.

1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.
- D. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.
- E. Indoor Air Quality: Provide temporary ventilation during work of this section.
- F. Waste Management: As specified in Section 01351 - Waste Management and as follows:
1. Coordinate with manufacturer for take-back program. Set aside scrap to be returned to manufacturer for recycling into new product. Close and seal all partially used containers of paint to maintain quality as necessary for reuse.

3.02 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.
1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
 2. **Required Surface Preparation:**
 - a. **Step 1 - Dust wall and other surfaces to receive paint by working down with a dust mop, static duster, or feather duster.**
 - b. **Step 2 - Clean surface with a mild detergent using a sponge or soft cloth. Avoid using cleaners containing alcohol on latex paint, as alcohol can dissolve and damage the paint film.**
 - c. **Step 3 - Wash surfaces from the bottom up to avoid water running down the wall over the dirt.**
 - d. **Step 4 - Rinse out the sponge in clean water until the cleaning solution is removed. Use the cleaned sponge to thoroughly rinse the washed area. Residual cleaner will interfere with adhesion of paint applied subsequently.**
 - e. **Step 5 - Use a soft cloth or towel to blot excess water off the paint film.**
 - f. **Refer to Item C below for additional requirements.**
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
1. Provide barrier coats over incompatible primers or remove and reprime.

2. Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
 - a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
 - b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces if moisture content exceeds that permitted in manufacturer's written instructions.
 - c. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.
 3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 - b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.
 - c. If transparent finish is required, backprime with spar varnish.
 - d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.
 - e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery. Revise first subparagraph and associated subparagraphs below to suit Project.
 4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
 - a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.
 5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- D. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 3. Use only thinners approved by paint manufacturer and only within recommended limits.

- E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.03 APPLICATION

- A. Paint Strippers: Compounds that do not contain methylene chloride tend to be slower-acting than conventional paint strippers and may take from one hour to overnight to work. Comply with manufacturer's recommendations for application.
- B. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
 - 1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
 - 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 - 3. Provide finish coats that are compatible with primers used.
 - 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
 - 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
 - 7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 - 8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 - 9. Sand lightly between each succeeding enamel or varnish coat.
- C. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
 - 1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 - 2. Omit primer over metal surfaces that have been shop primed and touchup painted.
 - 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 - 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.
- D. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
- E. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.
- F. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.
- G. Mechanical items to be painted include, but are not limited to, the following:
1. Uninsulated metal piping.
 2. Uninsulated plastic piping.
 3. Pipe hangers and supports.
 4. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
 5. Duct, equipment, and pipe insulation having "all-service jacket" or other paintable jacket material.
 6. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
- H. Electrical items to be painted include, but are not limited to, the following: List below contains electrical items that are usually field painted. Add other items to suit Project.
1. Switchgear.
 2. Panelboards.
 3. Electrical equipment that is indicated to have a factory-primed finish for field painting.
- I. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque 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.
- K. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.
- L. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.04 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Refer to Section 220553 and Section 260553 for schedule of color coding of equipment, duct work, piping, and conduit.
- B. Paint shop-primed equipment, where indicated.

- C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- D. Finish equipment, piping, conduit, and exposed duct work in utility areas in colors according to the color coding scheme indicated.
- E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.05 INDOOR AIR QUALITY

- A. Wear protective clothing and respirators when applying oil-based paints or using spray equipment with any paints.
- B. Maximize ventilation during application and drying.
- C. Isolate area of application from rest of building.
- D. Vacate space for as long as possible after application. Wait a minimum of 48 hours before occupying freshly painted rooms.

3.06 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.07 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
 - 1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.08 EXTERIOR PAINT SCHEDULE

- A. Concrete Unit Masonry: Provide the following finish systems over exterior concrete unit masonry:
 - 1. Semigloss Acrylic-Enamel Finish: Two finish coats over a block filler
 - a. Block Filler: Concrete unit masonry block filler
 - b. Finish Coats (Minimum Two): Exterior semigloss acrylic enamel
- B. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
 - 1. Semigloss Acrylic-Enamel Finish: Two finish coats over a rust-inhibitive primer
 - a. Primer: Exterior ferrous-metal primer
 - b. Finish Coats (Minimum Two): Exterior semigloss acrylic enamel
- C. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated metal surfaces:
 - 1. Semigloss Acrylic-Enamel Finish: Two finish coats over a galvanized metal primer
 - a. Primer: Exterior galvanized metal primer
 - b. Finish Coats (Minimum Two): Exterior semigloss acrylic enamel

D. Wood: Provide the following finish systems over exterior wood:

1. Primer: Exterior wood primer
2. Finish Coats: (Minimum two): Exterior semi-gloss latex

3.09 INTERIOR PAINT SCHEDULE

A. Concrete: Provide the following finish systems over interior concrete masonry:

1. Semigloss Acrylic-Enamel Finish: Two finish coats over a primer
 - a. Primer: Interior CMU Primer
 - b. Finish Coats (Minimum Two): Interior semigloss acrylic enamel

B. Gypsum Board Ceilings & Soffits: Provide the following finish systems over interior gypsum board surfaces:

1. Flat Acrylic Finish: Two finish coats over a primer
 - a. Primer: Interior gypsum board primer
 - b. Finish Coats (Minimum Two): Interior flat acrylic paint

C. Gypsum Board (Walls): Provide the following finish systems over interior gypsum board surfaces:

1. Finish: Two finish coats.
 - a. Primer: Interior gypsum board primer
 - b. Finish Coats (Minimum Two): Interior Egg Shell Enamel

D. Wood and Hardboard: Provide the following paint finish systems over new interior wood surfaces:

1. Semigloss Acrylic-Enamel Finish: Two finish coats over a wood undercoater
 - a. Primer: Interior wood primer for acrylic-enamel and semigloss alkyd-enamel finishes
 - b. Finish Coats (Minimum Two): Interior semigloss acrylic enamel

E. Ferrous Metal: Provide the following finish systems over ferrous metal:

1. Semigloss Acrylic-Enamel Finish: Two finish coats over a primer
 - a. Primer: Interior ferrous-metal primer
 - b. Finish Coats (Minimum Two): Interior semigloss acrylic enamel

F. Zinc-Coated Metal: Provide the following finish systems over interior zinc-coated metal surfaces:

1. Semigloss Acrylic-Enamel Finish: Two finish coats over a primer
 - a. Primer: Interior zinc-coated metal primer
 - b. Finish Coats (Minimum Two): Interior semigloss acrylic enamel

G. Interior Exposed Metal Decking and Bar Joists:

1. First and Second Coats: Alkyd flat dry fall
2. Subsequent coats only as required for complete, proper and full coverage

H. Aluminum Metal: Provide the following finish systems over exterior aluminum metal. Primer is not required on shop-primed items.

1. Gloss Enamel Finish: Two finish coats over a primer
 - a. Primer: Exterior all surface enamel primer

- b. Finish Coats (Minimum Two): Exterior gloss enamel oil base

3.10 WASTE MANAGEMENT

- A. Separate waste in accordance with the Waste Management Plan. Set aside extra paint for future color matches, or reuse by Owner. Where local options exist for leftover paint recycling, collect all waste paint by type and provide for delivery to recycling or collection facility.
- B. Close and tightly seal all partly used paint and finish containers and store protected in well-ventilated, fire-safe area at moderate temperature.
- C. Place empty containers of solvent-based paints in areas designated for hazardous materials.
- D. Do not dispose of paints or solvents by pouring on the ground. Place in designated containers for proper disposal.

END OF SECTION

SECTION 101101 - VISUAL DISPLAY BOARDS**PART 1 GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 1 Specification Sections, apply to this Section.
- B. Section 090050 - Finish Legend.

1.02 SUMMARY

- A. This Section includes the following types of visual display boards:
 - 1. Porcelain enamel markerboards (for liquid chalk)
 - 2. Note: Any markerboards in gym should not receive trays.
 - 3. Note: If any matt (low gloss) boards are required
 - 4. Vinyl-fabric-faced cork tackboards and tack strips
- B. Display board installation will utilize "Z" or "L" clip mounting bars top and mounting angles - bottom only. Adhesives used for mounting display boards will not be acceptable.
- C. Where visual display boards are too wide for the location indicated, the supplier shall notify the designer and modify the width accordingly.
- D. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Division 6 Section "Miscellaneous Carpentry" for wood blocking and grounds

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data: Include manufacturer's data substantiating that products comply with requirements indicated.
- C. Shop Drawings: Provide shop drawings for each type of markerboard, and tackboard required. Include sections of typical trim members and dimensioned elevations. Show anchors, grounds, reinforcement, accessories, layout, and installation details.
- D. Samples: Provide the following samples of each product for initial selection of colors, patterns, and textures, as required, and for verification of compliance with requirements indicated.
 - 1. Samples for initial selection of color and pattern
 - a. Porcelain Enamel Markerboard: Manufacturer's color charts consisting of actual sections of porcelain enamel finish showing the full range of colors available for each type of markerboard required
 - b. Vinyl-fabric-faced Cork Tackboards: Manufacturer's color charts consisting of actual sections of vinyl fabric, showing the full range of colors, textures, and patterns available for each type of vinyl-fabric-faced cork tackboard indicated
- E. Certificates: In lieu of laboratory test reports, when permitted by the Designer/Architect, submit the manufacturer's certification that vinyl-fabric-faced cork tackboard materials furnished comply with requirements specified for flame spread ratings.

1.04 QUALITY ASSURANCE

- A. Manufacturer: Furnish all markerboards, tackboards and tackstrips from a single manufacturer for the entire project.
- B. Fire Performance Characteristics: Provide vinyl-fabric-faced tackboards with surface burning characteristics indicated below, as determined by testing assembled materials composed of facings and backings identical to those required in this section, in accordance with ASTM E 84, by a testing organization acceptable to authorities having jurisdiction.
 - 1. Flame Spread: 25 or less
 - 2. Smoke Developed: 10 or less
- C. Design Criteria: The drawings indicate sizes, profiles, and dimensional requirements of visual display boards. Other visual display boards having equivalent performance characteristics with deviations from indicated dimensions and profiles may be considered, provided deviations do not change the design concept or intended performance. The burden of proof of equality is on the proposer.

1.05 WARRANTY

- A. Porcelain Enamel Markerboard Warranty: Furnish the manufacturer's written warranty, agreeing to replace porcelain enamel markerboards that do not retain their original writing and erasing qualities, become slick and shiny, or exhibit crazing, cracking, or flaking, provided the manufacturer's instructions with regard to handling, installation, protection, and maintenance have been followed.
 - 1. Warranty Period: 50 years

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Visual Display Board Manufacturer: Subject to compliance with requirements, provide products including, but are not limited to one of the following:
 - 1. Porcelain Enamel Markerboards:
 - a. American Display Products
 - b. American Visual Display
 - c. Best-Rite Chalkboard Company
 - d. Claridge
 - e. Ghent Manufacturing
 - f. Lemco Company
 - g. Marsh Company
 - h. Platinum Visual Systems
 - i. Polyvision
 - j. Weber Costello Company
 - 2. Tackboards and Tackstrips:
 - a. American Display Products
 - b. American Visual Display
 - c. Best-Rite Chalkboard Company
 - d. Claridge
 - e. Ghent Manufacturing

- f. Marsh Company
- g. Neil, Inc.
- h. Platinum Visual Systems
- i. Polyvision
- j. Weber Costello Company

2.02 MATERIALS

- A. Porcelain Enamel Markerboards: Provide balanced, high-pressure-laminated porcelain enamel markerboards of 3-ply construction consisting of face sheet, core material, and backing.
 - 1. Face Sheet: Provide face sheet of 24-gage enameling grade steel especially processed for temperatures used in coating porcelain on steel. Coat the exposed face and exposed edges with a 3-coat process consisting of primer, ground coat, and color cover coat, and the concealed face with a 2-coat process consisting of primer and ground coat. Fuse cover and ground coats to steel at the manufacturer's standard firing temperatures, but not less than 1200 deg F (649 deg C).
 - 2. Markerboard Cover Coat: Provide the manufacturer's standard light-colored special writing surface with gloss finish intended for use with liquid felt-tipped markers.
 - a. Color shall be as selected by Designer/ Architect from full range of standard colors.
 - 3. Core: Provide the manufacturer's standard 3/8-inch-thick particleboard core material complying with the requirements of ANSI A208.1, Grade 1-M-1.
 - 4. Backing Sheet: Provide the manufacturer's standard 0.015-inch-thick aluminum sheet backing.
 - 5. Laminating Adhesive: Provide the manufacturer's standard moisture-resistant thermoplastic-type adhesive.
- B. Vinyl-Fabric-Faced Tackboards: Provide mildew-resistant, washable, vinyl fabric complying with FS CCC-W-408, Type II, weighing not less than 13 ounces per square yard, laminated to 1/4-inch-thick cork sheet. Provide fabric that has a flame spread rating of 25 or less when tested in accordance with ASTM E 84. Provide color and texture as scheduled or as selected from the manufacturer's standards.
 - 1. Backing: Make panels rigid by factory laminating cork face sheet under pressure to 1/4-inch-thick hardboard backing.
- C. Tackstrips: Provide Exhibit and Display Rail constructed of aluminum frame with cork insert. Provide only fabric that has a flame spread rating of 25 or less when tested in accordance with requirements of ASTM E84. Size shall be 2" wide x lengths as indicated on drawings. Provide color and texture as selected from the manufacturer's full range of standard colors.

2.03 ACCESSORIES

- A. Metal Trim and Accessories: Fabricate frames and trim of not less than 0.062-inch-thick aluminum alloy, size and shape as indicated, to suit type of installation. Provide straight, single-length units wherever possible; keep joints to a minimum. Miter corners to a neat, hairline closure.
 - 1. Where the size of boards or other conditions exist that require support in addition to the normal trim, provide structural supports or modify the trim as indicated or as selected by the Architect from the manufacturer's standard structural support accessories to suit the condition indicated.

2. Tray: Furnish the manufacturer's standard continuous, solid extrusion-type aluminum tray with ribbed section and smoothly curved exposed ends, for each markerboard.
3. Map Rail: Furnish map rail at the top of each unit, complete with the following accessories:
 - a. Display Rail: Provide continuous cork display rail approximately 1 or 2 inches wide, as indicated, integral with the map rail.
 - b. End Stops: Provide one end stop at each end of the map rail.
 - c. Map Hooks: Provide 2 map hooks with flexible metal clips for each 4 feet of map rail or fraction thereof.
 - d. Flag Holder: Provide one flag holder for each room.

2.04 FABRICATION

- A. Porcelain Enamel Markerboards: Laminate facing sheet and backing sheet to core material under pressure with manufacturer's recommended flexible, waterproof adhesive.
- B. Assembly: Provide factory-assembled markerboard and tackboard units, except where field-assembled units are required.
 1. Make joints only where total length exceeds maximum manufactured length. Fabricate with the minimum number of joints, balanced around the center of the board, as acceptable to the Designer/Architect.
 2. Provide the manufacturer's standard vertical joint system between abutting sections of markerboard.
 3. Provide manufacturer's standard mullion trim at joints between markerboard and tackboard.

2.05 FINISHES

- A. General: Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.
- B. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.
- C. Class II Clear Anodized Finish: AA-M12C22A31 (Mechanical Finish: as fabricated, nonspecular; Chemical Finish: etched, medium matte; Anodic Coating: Class II Architectural, clear film thicker than 0.4 mil).

PART 3 EXECUTION

3.01 PREPARATION

- A. Field Measurements: Take field measurements prior to the preparation of shop drawings and fabrication where possible, to ensure proper fitting of the work. Allow for trimming and fitting wherever taking of field measurements before fabrications might delay work.

3.02 INSTALLATION

- A. Deliver factory-built markerboard and tackboard units completely assembled in one piece without joints, wherever possible. Where dimensions exceed panel size, provide 2 or more pieces of equal length as acceptable to the Designer/Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site. Use splines at joints to maintain surface alignment.
- B. Installer must examine the areas and conditions under which units are to be installed and notify the Designer/Architect in writing of conditions detrimental to the proper timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner

acceptable to the installer.

- C. Markerboards and tackboards shall be installed in strict accordance with manufacturer's recommendations, using concealed hangers at the top and wall angle at the bottom. Installation shall not require grounds.
- D. Provide blocking pads behind all boards at 16" o.c.
- E. Install units in locations and at mounting heights indicated and in accordance with the manufacturer's instructions. Keep perimeter lines straight, plumb and level. Provide all grounds, clips, backing materials, brackets, anchors, trim and accessories necessary for a complete installation.
- F. Boards shall not be installed until the walls have been painted. Any damage to the painted walls shall be corrected.

3.03 **ADJUST AND CLEAN**

- A. Verify that accessories required for each unit have been properly installed and that operating units function properly.
- B. Clean units in accordance with the manufacturer's instructions.

END OF SECTION

SECTION 101424 - SIGNS**PART 1 GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 1 Specification Sections, apply to this Section.
- B. Division 9 Section 090050 - Finish Legend

1.02 SUMMARY

- A. This Section includes the furnishing of Specialty Signs. Extent of Specialty Signs is shown on the Drawings and in this section.
- B. Forms of Specialty Signs required include the following:
 - 1. Interior Panel signs (mechanical attachment)
 - 2. Cast metal plaques
 - 3. Frameless display wall mounted graphic panel
 - 4. Fabricated letters (exterior)
 - 5. Plastic letters
 - 6. Tactile Exit Signs
- C. Work not included in this section:
 - 1. Illuminated exit signs are specified in Division 16.
 - 2. Handicapped parking signs are specified in Division 10 - Exterior Post & Panel Signs.
 - 3. Exterior post and panel signs are specified in Division 10 - Exterior Post and Panel Signs.

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data: Include manufacturer's construction details relative to materials, dimensions of individual components, profiles, and finishes for each type of sign required.
- C. Shop Drawings: Provide shop drawings for fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, reinforcement, accessories, layout, and installation details.
 - 1. Provide message list for each sign required, including large-scale details of wording and layout of lettering.
 - 2. For signs supported by or anchored to permanent construction, provide setting drawings, templates, and directions for installation of anchor bolts and other anchors to be installed as a unit of Work in other Sections.
 - 3. Furnish full-size rubbings for metal plaques.
 - 4. Furnish full-size spacing templates for individually mounted dimensional letters and numbers.
 - 5. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.

- a. Samples for verification of color, pattern, and texture selected, and compliance with requirements indicated:
 - 1) Panel Sign Cast Acrylic Sheet and Plastic Laminate: Provide a sample panel not less than 8-1/2 inches by 11 inches for each material indicated. Include a panel for each color, texture, and pattern required. On each panel include a representative sample of the graphic image process required, showing graphic style, and colors and finishes of letters, numbers, and other graphic devices.
 - 2) Plastic Dimensional Letters: Provide full-size representative sample of letter type required, showing style, color and material finish and method of attachment.

1.04 QUALITY ASSURANCE

- A. Single-Source Responsibility: For each separate type of sign required, obtain signs from one source from a single manufacturer.
- B. Design Criteria: The drawings indicate size, profiles, and dimensional requirements of signs and are based on the specific type and model indicated. Signs by other manufacturers may be considered provided that deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.
- C. ADA Regulations: All signage specified herein shall comply with the minimum sign requirements as outlined by the most current Americans with Disabilities Act (ADA).
 - 1. Manufacturer shall be responsible for complying with all applicable requirements of ADA whether specifically specified or not. Notify Architect of any discrepancies between ADA requirements and the contract documents.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products of one of the following:
 - 1. Manufacturers of Interior Panel Signs:
 - a. APCO Architectural Sign Systems
 - b. ASI Modulex
 - c. Best Manufacturing Co.
 - d. Contemporary Plastics, Inc.
 - e. Fastsigns of Louisville
 - f. Innerface Sign System
 - g. Inpro
 - h. J. Gemini, Inc.
 - i. Mohawk Signs
 - j. Nelson-Harkins
 - k. Serigraphics Sign Systems, Inc.
 - l. Signcraft
 - 2. Manufacturers of Cast Plaques:

- a. American Graphics, Inc.
 - b. Andco Industries Corp.
 - c. A.R.K. Ramos Manufacturing Company, Inc.
 - d. ASI Modulex
 - e. Best Manufacturing Co.
 - f. Fastsigns of Louisville
 - g. Gemini, Inc.
 - h. Metal Arts, Division of L & H Manufacturing Co.
 - i. Mohawk Signs
 - j. Nelson Harkins
 - k. Signcraft
 - l. The Southwell Company
3. Manufacturers of Fabricated Letters :
- a. APCO Architectural Sign Systems
 - b. ASI Modulex
 - c. Best Manufacturing Co.
 - d. Contemporary Plastics, Inc.
 - e. Fastsigns of Louisville
 - f. Innerface Sign System
 - g. Inpro
 - h. J. Gemini, Inc.
 - i. Mohawk Signs
 - j. Nelson-Harkins
 - k. Serigraphics Sign Systems, Inc.
 - l. Signcraft
4. Manufacturers of Frameless Display Wall Mounted Graphic Panels:
- a. Basis of Design: Nova Display
 - b. ASI Modulex
 - c. Fast Signs of Louisville

2.02 MATERIALS

- A. Cast Acrylic Sheet: Provide cast (not extruded or continuous cast) methyl methacrylate monomer plastic sheet, in sizes and thicknesses indicated, with a minimum flexural strength of 16,000 psi when tested in accordance with ASTM D 790, a minimum allowable continuous service temperature of 176 deg F (80 deg C), and of the following general types:
- 1. Opaque Sheet: Where sheet material is indicated as "opaque," provide colored opaque acrylic sheet in colors and finishes as selected from the manufacturer's standards.

2. Aluminum Extrusions: Provide aluminum extrusions of alloy and temper recommended by the aluminum producer or finisher for the type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B 221 for 6063-T5.
3. Aluminum Castings: Provide aluminum castings of alloy and temper recommended by the aluminum producer and finisher for the casting process used and for the use and finish indicated.
4. ABS Plastic: Provide high-impact thermoplastic composed of copolymers of acrylonitrile, butadiene, and styrene.
5. Fasteners: Use concealed fasteners fabricated from metals that are not corrosive to the sign material and mounting surface.
6. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.03 PANEL SIGNS

- A. Panel Signs: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
 1. Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.
 2. Material: Plastic
 3. Corner Condition: Square corners
 4. Panel Thickness: 1/8" minimum
 5. Attachments: Mechanical
 6. Size: 8" x 8"
 7. Copy: Final signage copy shall be provided on the shop drawings; for bidding purposes the bidder shall assume that the room name(s) and their three digit room numbers shall be listed.
 8. Where panel signs are indicated to be mounted to window surfaces, the signage fabricator shall provide a matching blank backer panel.
- B. Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.
- C. Raised Copy: Provide sign plaque with raised copy (1/32") and grade 2 braille as an integral part of the plaque. Use photo etching process or reverse engraved process. Other methods to achieve raised and braille will require pre-approval. Sign surface color must be durable and scratch and vandal resistant. Applied copy and braille strips are not acceptable.
- D. Room Number and Title: Titles shall be 3/4" Sans Serif Typestyle, centered horizontally and vertically. Numbers shall be 2" Sans Serif Typestyle, centered horizontally and vertically.
- E. Changeable Message Inserts: Fabricate signs to allow insertion of 1" x 8" changeable messages in the form of transparent covers with paper inserts printed by Owner.
 1. Furnish insert material and software for creating text and symbols for PC-Windows computers for Owner production of paper inserts.

- F. Special Symbols: Handicap symbol shall be 3" high. Men/Women symbols shall be 4" high. Locate as directed by Architect.
1. Equivalent raised written description must be placed directly below symbol.
- G. See room finish schedule for sign locations and copy. Size shall be nominal 8" x 8" or as indicated. Manufacturer's standard sizes incorporating minor size variations will be accepted.

2.04 CAST METAL PLAQUES

- A. Plaques: Castings shall be free from pits, scale, sand holes, or other defects. Comply with requirements specified for metal, border style, background texture, and finish and with requirements shown for thickness, size, shape, and copy. Hand-tool and buff borders and raised copy to produce the manufacturer's standards satin polished finish. Refer to "Finish" article for other finish requirements.
1. Metal: Aluminum
 2. Border Style: As selected by Architect/ Designer
 3. Background Texture: Manufacturer's standard pebble texture
 4. Background Finish: Provide the manufacturer's standard baked enamel finish
 5. Layout: Refer to plaque layout sheet
 6. Size: 1'-9" W x 2'-8" H

2.05 FABRICATED LETTERS (Base of Design: ASI Modulex LF Series)

- A. Fabricated Characters: Fabricate letters and numbers to required sizes and styles, using metals and thicknesses indicated. Form exposed faces and sides of characters to produce surfaces free from warp and distortion. Include internal bracing for stability and attachment of mounting accessories. Comply with requirements indicated for finish, style and size.
1. Aluminum Sheet: Face, not less than 0.090 inch (2.30 mm) thick, .063 returns, .063 welded loose fit backs
 2. Thickness: 2"
 3. Character Height: 30"
 4. Character Style: "Arial"
 5. Script: "BURGIN INDEPENDENT"
 6. Finish: Aluminum

2.06 PLASTIC LETTERS

- A. Form injection molded letters from plastic (cellulose acetate butyrate-cab).
1. Style: Refer to A/A2.0 and C/A2.1
 2. Character Height: Refer to A/A2.0 and C/A2.1
 3. Character Style: Refer to A/A2.0 and C/A2.1
 4. Colors: Selected from manufacturer's standards
 5. Script: Refer to A/A2.0 and C/A2.1
 6. Quantity: Refer to A/A2.0 and C/A2.1
 7. Note: Flat cut acrylic on projecting stud mounts is not acceptable

2.07 FRAMELESS DISPLAY WALL MOUNTED GRAPHIC PANELS

ITEM NUMBER	ITEM DESCRIPTION & SPECIFICATION
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	KASP-001 Insert size 8.5" x 11" Qty 12
18ASP-Custom	1/8" Non-glare Acrylic Panel - Polished edges w/holes for mounting supports. Panel hole size 3/8"; insert size 8.5" x 11"; panel size 11" x 13.5".
18ASP-Custom	1/8" Clear Acrylic Panel - Polished edges w/holes for mounting supports. Panel hole size 3/8". Insert size 8.5" x 11". Panel size 11" x 13.5".
WSO12-1/TP SC	Sign Support, Tamper Proof - 1/2" dia. x 1" length. Solid brass w/satin chrome finish.
P50-TWL	Twist-N-Lock Threaded Drywall Anchors - 50lb max. Drills into drywall, installs flush against wall. No predrilling.
	KASP-002 Insert size 11" x 14" Qty 9
18ASP-Custom	1/8" Non-glare Acrylic Panel - Polished edges w/holes for mounting supports. Panel hole size 3/8"; insert size 11" x 14"; panel size 13.5" x 16.5".
18ASP-Custom	1/8" Clear Acrylic Panel - Polished edges w/holes for mounting supports. Panel hole size 3/8"; insert size 11" x 14"; panel size 13.5" x 16.5".
WSO12-1/TP SC	Sign Support, Tamper Proof - 1/2" dia. x 1" length. Solid brass w/satin chrome finish.
P50-TWL	Twist-N-Lock Threaded Drywall Anchors - 50lb max. Drills into drywall, installs flush against wall. No predrilling.
	KASP-008 Insert size 18" x 24" Qty 2
18ASP-Custom	1/8" Non-glare Acrylic Panel - Polished edges w/holes for mounting supports. Panel hole size 3/8" - 5/8" offset; insert size 18" x 24"; panel size 20.5" x 26.5".
18ASP-Custom	1/8" Clear Acrylic Panel - Polished edges w/holes for mounting supports. Panel hole size 3/8" - 5/8" offset; insert size 18" x 24"; panel size 20.5" x 26.5".
WSO12-1/TP SC	Sign Support, Tamper Proof - 1/2" dia. x 1" length. Solid brass w/satin chrome finish.
P50-TWL	Twist-N-Lock Threaded Drywall Anchors - 50lb max. Drills into drywall, installs flush against wall. No predrilling.
0.04PAKG	Fragile Acrylic Pack
0.02CONF	SIGNATURE REQUIRED / FAX TO 800-753-0856
	A signed copy of this acknowledgment must be received by Nova Display Systems to initiate processing of your order (All pages must be signed). *Please provide a receiver name, phone number and email address for tracking (shipment notifications). *All expedited requests must be provided in writing at the time the order is confirmed. *All residential deliveries on orders over \$100 require a signature.

2.08 FABRICATION - GENERAL

- A. General: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
- B. Design, fabricate, and install sign assemblies to prevent buckling, opening up of joints, and over-stressing of welds and fasteners.

- C. Mill joints to a tight, hairline fit. Form joints exposed to the weather to exclude water penetration.
- D. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.
- E. Create signage to required sizes and layout. Comply with requirements indicated for design, dimensions, finish, color, and details of construction.

2.09 FINISHES

- A. Colors and Surface Textures: For exposed sign material that requires selection of materials with integral or applied colors, surface textures or other characteristics related to appearance, provide color matches indicated, or if not indicated, as selected by the Architect from the manufacturer's standards.
- B. Metal Finishes: Comply with NAAMM "Metal Finishes Manual" for finish designations and applications recommendations.
 - 1. Aluminum Finishes: Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.
 - 2. Baked Enamel Finish: AA-M4xC12C42R1x (Mechanical Finish: Manufacturer's standard, other nondirectional textured; Chemical Finish: Chemical conversion coating, acid chromate-fluoride-phosphate pretreatment; Organic Coating: as specified below). Apply baked enamel in compliance with paint manufacturer's specifications for cleaning, conversion coating, and painting.
 - 3. Organic Coating: Thermosetting modified acrylic enamel primer/topcoat system complying with AAMA 603.8 except with a minimum dry film thickness of 1.5 mils, medium gloss.
 - 4. Color: As selected by the Architect from the manufacturer's standard colors.

PART 3 EXECUTION

3.01 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
 - 1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
- B. Wall Mounted Panel Signs: Attach panel signs to wall surfaces using the methods indicated below:
 - 1. Mounting: Use expansion bolt anchoring device as recommended by manufacturer to attach signs to concrete block walls. Provide minimum 4 fasteners for 8" x 8" signs.
 - 2. Mount interior signs with centerline one foot from latch side of door frames, and top of sign five feet above finish floor. Note: Lower signs as required to meet all ADA requirements.
 - 3. 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 location for such signage shall be so that a person may approach within 3 inches (76 mm) of signage without encountering protruding objects or standing within the swing of a door.
 - 4. Where a tactile sign is provided at a door, the sign shall be alongside the door at the latch side. Where a tactile sign is provided at double doors with one active leaf, the sign shall be located on the inactive leaf. Where a tactile sign is provided at double doors with two active leaves, the sign shall be to the right of the right-handed door. Where there is no wall space on the latch side of a single door, or to the right side of double doors, signs shall be on the nearest adjacent wall. Signs containing tactile characters shall be located so that a clear floor area 18 inches (455 mm) minimum by 18 inches (455 mm) minimum, centered on the tactile characters, is provided beyond the arc of any door swing between the closed position and 45

degree open position.

5. Tactile characters on signs shall be located 48 inches (1220 mm) minimum above the finish floor or ground surface, measured from the baseline of the lowest tactile character and 60 inches (1525 mm) maximum above the finish floor or ground surface, measured from the baseline of the highest tactile character.

- C. Cast Metal Plaques: Mount Plaques using the standard method recommended by the manufacturer for the type of wall surface indicated.
 - D. Concealed Mounting: Mount plaques by inserting threaded studs into tapped lugs on the back of the plaque. Set in predrilled holes filled with quick-setting cement.
 - E. Dimensional Letters and Numbers: Mount letters and numbers using standard fastening methods recommended by the manufacturer for letter form, type of mounting, wall construction, and condition of exposure indicated. Provide heavy paper template to establish letter spacing and to locate holes for fasteners. Locate as directed by Architect.
1. Flush Mounting: Mount letters with backs in contact with the wall surface.

3.02 **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.

SECTION 101453 - TRAFFIC SIGNAGE**PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Single post type exterior signs.

1.02 RELATED REQUIREMENTS

- A. Section 015000 - Temporary Facilities: Temporary project identification signs.

1.03 SUBMITTALS

- A. Product Data: Include manufacturer's construction details relative to materials, dimensions of individual components, profiles, and finishes for each type of sign required. Provide manufacturer's recommendations for maintenance and cleaning requirements for exterior sign surfaces.
- B. Shop Drawings: Include plans, elevations, and not less than 3/4-inch scale sections of typical members and other components. Show anchors, reinforcement, accessories, layout, and installation details.
 - 1. Provide message list, including not less than half-size details of wording and lettering layout. Include full-size details of special graphics.
- C. Samples: For each sign component provide the following samples showing finishes, colors, and surface texture.
 - 1. Aluminum: Samples of each finish type and color, on not less than 4-inch squares of sheet or plate.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who is an authorized representative of the sign manufacturer and has completed installation of exterior post and panel signs similar in material, design, and extent to those indicated for the Project and that has resulted in construction with a record of successful in-service performance.
- B. Single-Source Responsibility: Obtain exterior post and panel signs from one source from a single manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Provide protective covering or crating as recommended by the manufacturer to protect sign components and surfaces against damage during transportation and delivery.
- B. Handle signs carefully to prevent breakage, surface abrasion, denting, soiling, and other defects. Comply with the manufacturer's handling instructions for unloading components subject to damage.
 - 1. Inspect sign components for damage upon delivery. Do not install damaged sign components. Repair minor damage to signs, provided the finished repair is equal in all respects to the original work and is acceptable to the Architect; otherwise remove and replace damaged sign components.

1.06 WARRANTY

- A. Aluminum Sign Panel Warranty: Submit a written warranty signed by the manufacturer agreeing to repair or replace signs that fail due to coating degradation or fading.
 - 1. Warranty Period: 5 years.
 - 2. The warranty submitted under this Section shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and is

in addition to and runs concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: The drawings indicate the size, profiles, and dimensional requirements of single post signs and are based on the specific type and model indicated. Signs by other manufacturers may be considered provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

2.02 SYSTEM PERFORMANCE REQUIREMENTS

- A. Design Criteria: Design, fabricate, and install exterior single post signs to withstand a wind pressure of 100 mph on the total sign area in all directions.

2.03 MATERIALS

- A. Sheet Aluminum: Provide alloy 6061-T6, 5052-H36, 5052-H38 or recycled aluminum meeting alloy 3105, as specified in ASTM B 209. All sheet aluminum receive chromate conversion coating conforming to ASTM B 449, Class 2. Protect all panels at all times from contact or exposure to oils, grease, dirt, dust or other contaminants.
- B. Concrete: Provide concrete for post holes consisting of Portland cement complying with ASTM C 150, aggregates complying with ASTM C 33, and clean water. Mix the materials to obtain concrete with a minimum 28-day compressive strength of 3000 psi. Use at least 4 sacks of cement per cubic yard, 1-inch maximum size aggregate, maximum 3-inch slump, and 4 to 6 percent entrained air.
- C. Fasteners: Unless otherwise indicated, use fasteners fabricated from stainless steel that are non-corrosive to either the sign material or the mounting surface.
- D. Retroreflective Sheeting: Use "Premium Grade" reflective sheeting for all backgrounds. If borders, symbols and lettering are to be sheeting products, they shall also adhere to the above requirements. Approved products include:

2.04 COMPONENTS

- A. Posts: Provide the manufacturer's standard 0.125-inch-thick structural aluminum tubing extruded from 6063-T5 alloy. Include post caps, fillers, spacers, and related accessory items required for a complete installation. Comply with the following requirements for post shape, finish, and mounting method:
 - 1. Post Shape: 2 1/4" Diameter.
 - 2. Finish: Galvanized or as selected by the Architect / Designer.
 - 3. Post Mounting Method: Provide sign posts of length required for permanent installation by the direct-burial mounting method.
- B. Aluminum Panels: Provide smooth, even, level sign panel surfaces constructed to remain flat under installed conditions.
 - 1. Panel Material: Sheet thickness to be 0.080 for sign up to 18-inches wide and 0.125 for signs over 18-inches wide.
 - 2. Corner Condition: Rounded corners.
- C. Fasteners: All components to be stainless steel. Bolts and/or screws to be tamper resistant with lock nuts.

2.05 FABRICATION

- A. General: Provide the manufacturer's standard double post, single-panel-type post, and panel signs. The completed sign assembly shall consist of a message panel supported between two posts. Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
 - 1. Allow for thermal movement resulting from a maximum ambient temperature change (range) of 100 deg F (55.5 deg C). Design, fabricate, and install post and panel sign assemblies to prevent buckling, opening up of joints, and overstressing welds and fasteners.
 - a. Base design on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.
 - 2. Welded Connections: Comply with AWS for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of the exposed side. Clean exposed welded surfaces of welding flux and dress on all exposed and contact surfaces.
 - 3. Mill joints to a tight, hairline fit. Form joints exposed to the weather to exclude water penetration.
 - 4. Preassemble post and panel signs in the shop to the greatest extent possible to minimize field assembly. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in a location not exposed to view after final assembly.
 - 5. Conceal fasteners where possible; otherwise locate fasteners where they will be inconspicuous.
- B. Posts: Fabricate posts to lengths required for mounting method and height indicated.
 - 1. Direct Burial: For permanent sign installation, provide posts 36 inches longer than height of sign indicated to permit direct embedment in concrete foundations. Perforated tube posts are to be sleeved.
- C. Panels: Form panels to required size and shape. Comply with requirements indicated for design, dimensions, finish, color, and details of construction.
 - 1. Background: Reflective sheeting to be applied to properly prepared base panel with mechanical equipment.
- D. Colors: Colors to be as required below:
 - 1. Stop Sign - Red background with White border and text.
 - 2. Do Not Enter - White background with Red symbol and White text.
 - 3. Accessible Parking - White background with Blue border, text and symbol.
 - 4. Traffic Direction Signage: White background with Black border, symbol and text. Includes the following signs:
 - a. Student Drop Off

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
- B. Excavation: In firm undisturbed or compacted soil, drill or (using a post-hole digger) hand-excavate holes for each post to the minimum diameter recommended by the sign manufacturer, but not less

than 12-inches in diameter.

1. Excavate hole depths approximately 3 inches lower than the required post bottom, with bottom of posts set not less than 36 inches below finished grade surface.
- C. Setting Posts: Center and align posts in holes 3 inches above bottom of the excavation.
 1. Protect portion of posts above ground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment and hold in position until concrete has achieved its initial set.
- D. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

3.02 **CLEANING**

- A. At completion of the installation, clean soiled surfaces of sign units in accordance with the manufacturer's instructions.

3.03 **PROTECTION**

- A. Protect installed sign units from damage until acceptance by the Owner.

END OF SECTION

SECTION 102600 - WALL AND CORNER GUARDS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Corner guards. Corner guards to be installed on all gypsum board outside wall corners.

1.02 REFERENCES

- A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities, International Code Council; 2003.
- B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2007.
- C. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2007.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.
- C. Samples: Submit two sections of wall and corner guards, 24 inch long, illustrating component design, configuration, color and finish.

1.04 PROJECT CONDITIONS

- A. Coordinate the work with wall or partition sections for installation of concealed blocking or anchor devices.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Wall and Corner Guards:
 - 1. Alpar Architectural Products
 - 2. Arden Architectural Specialties, Inc.: Product equivalent to IPC 160 BN
 - 3. Construction Specialties, Inc.: Product equivalent to IPC 160 BN
 - 4. C/S Group
 - 5. IPC/InPro Corporation; Product 160 BN
 - 6. Koroseal Interior Products Group
 - 7. Substitutions: See Section 016000 - Product Requirements

2.02 COMPONENTS

- A. Corner Guard - Surface Mounted: High impact vinyl with extruded aluminum full height retainer and integral impact absorbing device.
 - 1. Color: As selected from manufacturer' s standard colors
 - 2. Length: One piece
 - 3. Preformed end caps

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that rough-in for components are correctly sized and located.

3.02 INSTALLATION

- A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to wall framing members only.
- B. Position corner guard 4 inches above finished floor to 48 inches high.

END OF SECTION

SECTION 102800 - TOILET AND BATH ACCESSORIES**PART 1 GENERAL****1.01 RELATED DOCUMENTS**

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

1.02 SUMMARY

- A. This Section includes the following toilet accessory items:
 1. Grab bars (toilets and showers)
 2. Electric hand dryer with anti-microbial wall guards
 3. Mirrors - stainless steel frame
 4. Mop and broom holder (located at each mop sink)
 5. Shower curtain, hooks and rod
 6. Folding shower seat
 7. Sanitary napkin disposal unit (surface-mounted)
 8. Underlavatory guard
 9. Soap dish - shower
 10. Robe hook
 11. Hat and coat hook

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specifications Sections.
- B. Product Data for each toilet accessory item specified, including details of construction relative to materials, dimensions, gages, profiles, method of mounting, specified options, and finishes.
- C. Setting Drawings: Where cutouts are required in other work, provide templates, substrate preparation instructions, and directions for preparing cutouts and for installation of anchorage devices.

1.04 QUALITY ASSURANCE

- A. Inserts and Anchorages: Furnish inserts and anchoring devices that must be set in concrete or built into masonry; coordinate delivery with other work to avoid delay.
- B. Single-Source Responsibility: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise acceptable to Architect.
- C. ADA Compliance: Provide products which comply with applicable provisions of the Americans with Disabilities Act.

1.05 PROJECT CONDITIONS

- A. Coordination: Coordinate accessory locations, installation, and sequencing with other work to avoid interference and to assure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.06 WARRANTY

- A. Special Project Warranty: Provide manufacturer's written 5-year warranty against silver spoilage of mirrors, agreeing to replace any mirrors that develop visible defects within warranty period.

PART 2 PRODUCTS**2.01 ACCEPTABLE MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide toilet accessories excluding the electric hand dryer by one of the following including, but not limited to:
1. A & J Washroom Accessories
 2. American Specialties, Inc.
 3. Bobrick Washroom Equipment, Inc.
 4. Bradley Corporation
 5. General Accessory Manufacturing Co.
 6. Royce Rolls Ringer Co.
 7. Columbia Accessories
 8. Saniflow
 9. Gamco
 10. Searchrome

2.02 MATERIALS, GENERAL

- A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 22-gage (.034-inch) minimum thickness, unless otherwise indicated.
- B. Brass: Leaded and unleaded, flat products, ASTM B 19; rods, shapes, forgings, and flat products with finished edges, ASTM B 16, Castings, ASTM B-30.
- C. Sheet Steel: Cold-rolled, commercial quality ASTM A 366, 20-gage (.040-inch) minimum, unless otherwise indicated. Surface preparation and metal pretreatment as required for applied finish.
- D. Galvanized Steel Sheet: ASTM A 527, G60.
- E. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.
- F. Mirror Glass: Nominal 6.0 mm (0.23 inch) thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and protective organic coating.
- G. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.
- H. Fasteners: Screws, bolts, and other devices of same material as accessory unit or of galvanized steel where concealed.
- I. Keys: Unless otherwise indicated, provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply, etc. Provide minimum of six (6) keys to Owner's representative and obtain receipt.

2.03 GRAB BARS

- A. Stainless Steel Type: Provide grab bars with wall thickness not less than 18 gage (.050 inch) and as follows:
1. Mounting: Concealed, manufacturer's standard anchorages
 2. Clearance: 1-1/2 inches clearance between wall surface and inside face of bar
 3. Gripping Surfaces: Smooth, satin finish
 4. Heavy-Duty Size: Outside diameter of 1-1/2 inches

5. Anchorage: Grab bar and anchorages shall have capacity to withstand minimum 250 lb. pull in any direction of aluminum duration of 5 minutes.
 6. Product: Bobrick B-6806 or approved equivalent
 7. Refer to drawings for sizes and quantities.
- B. Grab Bars at Showers: Provide grab bars with wall thickness not less than 18 gage and as follows:
1. Mounting: Concealed, manufacturer's standard flanges and anchorages
 2. Clearance: 1-1/2 inches clearance between wall surface and inside face of bar
 3. Gripping Surfaces: Smooth, satin finish
 4. Heavy-Duty Size: Outside diameter of 1-1/2 inches
 5. Anchorage: Grab bar and anchorages shall have capacity to withstand minimum 250 lb. pull in any direction of aluminum duration of 5 minutes.
 6. Product: Bobrick B-5861 or as required for shower size and configuration to meet ADA Guidelines.

2.04 MISCELLANEOUS ACCESSORIES

- A. Mop and Broom Holder: 18-gage (.050-inch) Type 304 stainless steel "hat" channel with spring-loaded rubber cam-type mop/broom holders that grips handles 7/8" to 1-1/4" diameter. Provide 24" long unit with 3 holders.
1. Product: Bobrick B-223 or approved equivalent

2.05 MIRROR UNITS

- A. Stainless Steel Framed Mirror Units: [Type 430 Stainless Steel 1/2" x 1/2" x 3/8" channel with 1/4" return at rear with bright polish finish. Provide locking devices to secure mirror to concealed wall hanger. Utilize concealed philips-head locking screws to securely fasten mirror to wall hanger.]
1. Size:
 - a. 24" w x 36" h
 - b. 24" w x 60" h
 2. Product: Bobrick No. B-165 or approved equivalent

2.06 ELECTRIC HAND DRYER

- A. Base of Design: Excel Dryer XLERATOR Hand Dryer Model XL-W
- B. Hand Dryer: High speed, energy efficient, electric hand dryer; surface mounted; entire dryer internally grounded
1. Saniflow Machflow M09A with ADA Recessed Kit
- C. Warranty Period: 5 years; limited warranty
- D. Manufacturing: MADE IN USA Certified, verify certification number.
- E. Sound Level: Operational sound level less than 80 dB
- F. Noise Reduction Nozzle: 1.1 inch radius noise reduction nozzle lowers usage decibel level by 9 dB and reduces air deflection noise.
- G. Motor and Blower: 5/8 HP, 20,000 RPM. Air flow rate: 19,000 linear feet per minute.
- H. Heater: 900 watts mounted inside blower housing to be vandal proof with Air Temperature of 135 degrees F measured at average hand position of 4 inches below air outlet.

- I. Controls: Completely sealed control board and optics, automatic operation, activated by infrared optical sensor.
- J. Size: 11-3/4" wide by 12-11/16" high by 6-11/16" deep.
- K. Cover: One piece, heavy duty, rust resistant, rib-reinforced, die-cast zinc alloy.
- L. Finish: Electrostatically applied, chip resistant, white paint.
- M. Recess Kit: ADA compliant recess kit is fabricated at 22 GA 18-8 type 304 stainless steel with #4 satin finish with 16 GA 18-8 type 304 stainless steel dryer mounting plate. All welded construction. 16-3/8 inches (416 mm) wide by 26 inches (660 mm) high by 3-3/8 inches (86 mm) deep.
- N. Anti-Microbial Wall Guards: Provide one #89W white wall guard at each handryer location.

2.07 SHOWER ACCESSORIES

- A. Vinyl Shower Curtain: (Width of opening + 12") x 72" high by minimum 8 mils thick, opaque matte vinyl material with hemmed edges and corrosion-resistant grommets at minimum 6 inches on center through top hem. Furnish in white color unless otherwise indicated.
 - 1. Product: Bobrick No. 204.3 or approved equivalent.
- B. Shower Curtain Hooks: Chrome plated or stainless steel spring wire curtain hooks with snap fasteners, sized to accommodate curtain rod size provided with shower. Provide one hook per grommet.
 - 1. Product: Bobrick No. 204.1 or approved equivalent.
- C. Shower Curtain Rod, Heavy Duty: 1 inch o.d., 20-gage (.040 inch) stainless steel, satin finish; furnish with 1-5/8 inch o.d., chrome plated brass flanges, polished finish; designed for concealed fasteners.
 - 1. Product: Bobrick B-207 or equivalent.
- D. Folding Shower Seat: One piece, 1/2" thick, solidly fused plastic laminate with matte finish melamine surface which cannot delaminate. Frame: 18-85, Type 304 stainless steel with satin finish. 16-gauge, 1-1/4" square tubing and 18 gauge 1" diameter seamless tubing.
 - 1. Product: Bobrick B-5191 or equivalent.

2.08 SANITARY NAPKIN DISPOSAL UNIT (SURFACE-MOUNTED)

- A. Sanitary Napkin Disposal Unit: Where this designation is indicated, provide stainless steel sanitary napkin disposal unit complying with the following:
 - 1. Products: Available products include the following:
 - a. American Specialties, Inc., No. 0852 or approved equivalent.

2.09 UNDERLAVATORY GUARD

- A. Underlavatory Guard: Handicapped sink locations will receive underlavatory guard complying with the following:
 - 1. Products: Available products include the following:
 - a. Insulating Piping Coverings: White, anti-microbial, molded-vinyl covering for supply and drain piping assemblies intended to use at accessible lavatories to prevent direct contact with burns from piping. Provide components as required for applications indicated with flip tops at valves that allow service access without removing coverings.

2.10 ROBE HOOK

- A. Heavy duty robe hook with concealed mounting equivalent to Bobrick B-2116 or approved equivalent.

2.11 HAT AND COAT HOOK

- A. Satin-finished stainless steel hat and coat hook with concealed, 19 gauge stainless steel mounting bracket. All welded construction. Secured to wall plate with a stainless steel set screw. Hat and coat hook shall be equivalent to Gamco Model Number 76827 or equivalent.

2.12 FABRICATION

- A. General: No names or labels are permitted on exposed faces of toilet and bath accessory units. On either interior surface not exposed to view or on back surface, provide identification of each accessory item by either a printed, waterproof label or a stamped nameplate indicating manufacturer's name and product model number.
- B. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.
- C. Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all welded construction, without mitered corners. Hang doors or access panels with full-length stainless steel piano hinge. Provide anchorage that is fully concealed when unit is closed.
- D. Framed Mirror Units, General: Fabricate frames for glass mirror units to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system that will permit rigid, tamper proof glass installation and prevent accumulation of moisture, as follows:
 - 1. Provide galvanized steel backing sheet, not less than 22 gage (.034 inch) and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.
- E. Mirror Unit Hangers: Provide system of mounting mirror units that will permit rigid, tamper proof, and theft-proof installation, as follows:
 - 1. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring special tool to remove.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install toilet accessory units in accordance with manufacturers' instructions, using fasteners appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations and at heights indicated.
- B. Secure mirrors to walls in concealed, tamper proof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, in accordance with manufacturer's instructions for type of substrate involved.

3.02 ADJUSTING AND CLEANING

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces in strict accordance with manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION

SECTION 104400 - FIRE PROTECTION SPECIALTIES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.
- C. Fire extinguisher brackets.

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements - Submittal procedures.
- B. Section 061000 - Rough Carpentry: Wood blocking product and execution requirements.
- C. Section 042000 - Unit Masonry: Roughed-in wall openings.

1.03 REFERENCE STANDARDS

- A. International Building Code; 2015 with Kentucky Amendments; current edition.
- B. IFC - International Fire Code; 2012.
- C. NFPA 10 - Standard for Portable Fire Extinguishers 2013.
- D. UL (DIR) - Online Certifications Directory Current Edition.

1.04 PERFORMANCE REQUIREMENTS

- A. Conform to International Fire code.
- B. Provide extinguishers classified and labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.
- C. Product Data: Provide extinguisher operational features.
- D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.06 FIELD CONDITIONS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Fire Extinguishers, Cabinets, Brackets and Accessories: Subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
 - 1. Basis of Design: concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - a. F.E. Cabinet - J. L. Industries; Academy 1027W10.

- b. Bracket - J. L. Industries; Bracket 10 lb; MB 846.
 - c. Bracket - J. L. Industries; Bracket 15 lb; MB 810.
 - d. Fire Extinguisher - J. L. Industries; Cosmic 10E (Class A, B, C).
 - e. Fire Extinguisher - J. L. Industries; Saturn 15 (Class K).
2. Products by other manufacturers (listed below) may be considered, provided deviations in dimensions, profiles, and formulations are minor and do not change the design concept as judged by the Architect:
- a. Activar Inc.; JL Industries, Inc: www.activarcpg.com/jl-industries
 - b. Larsen's Manufacturing Co: www.larsensmfg.com.
 - c. Potter-Roemer: www.potterroemer.com.

2.02 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
- B. Dry Chemical Type Fire Extinguishers: Heavy-duty steel tank, with pressure gage.
 - 1. Class A, B, C.Multi-purpose
 - 2. Size 10 pound.
 - 3. Tank Finish: Corrosion and impact resistant powder coat.
 - 4. Tank Color: Red.
 - 5. Location: All areas of building.
 - 6. Mounting Type: Refer to drawings for cabinet mount or bracket mount symbol.
- C. Wet Chemical Type Fire Extinguisher: Stainless steel tank, with pressure gage.
 - 1. Class K
 - 2. Size: 25 pound
 - 3. Location(s): Install at all kitchens/concessions/food service preparation areas within 30 feet of any hood located above cooking equipment or any cooking equipment involving solid fuels, vegetable or animal oils and fats whether or not located under a hood.
 - 4. Mounting Type: Bracket

2.03 FIRE EXTINGUISHER CABINETS

- A. Metal: Formed aluminum; #180 gauge minimum thickness.
- B. Cabinet Configuration: Recessed type.
 - 1. Trim: Returned to wall surface, 2-7/8" to 3" projection from wall, rolled edge, 3 inch wide face trim.
- C. Door: 0.036 inch thick, with pull handle and emergency opening cam lock to secure door.
 - 1. Cam Locks; J. L. Industries; Saf-T-Lok or equivalent.
 - 2. Cam locks to be keyed alike for all cabinets.
- D. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape and set in resilient channel glazing gasket.
- E. Finish of Cabinet Exterior Trim and Door: No. 4 - Brushed stainless steel.

- F. Finish of Cabinet Interior: White powder-coat.

2.04 BRACKETS AND ACCESSORIES

- A. Extinguisher Bracket: Formed steel, powder-coat paint finish.
 - 1. Color: Red

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level in wall openings.
- C. Install cabinets so the centerline of the cabinet handle is not more than 4 feet above the finished floor, and the top of the fire extinguisher is not more than 5 feet above the finished floor.
- D. Install brackets so the top of the fire extinguisher is not more than 4 feet above the finished floor.
- E. Secure cabinets and brackets rigidly in place.
- F. Place extinguishers in cabinets.
- G. All fire extinguishers to arrive at the job site fully charged.
 - 1. Some fire extinguisher manufacturers will not ship Class K fire extinguishers to the job site fully charged. If required, Class K fire extinguishers are to be charged at the job site by a qualified fire extinguishing professional.

3.03 SCHEDULES

- A. FE-1 Fire extinguisher and bracket.
- B. FE-2 Fire extinguisher and cabinet.
- C. FE-3 Fire extinguisher and bracket near range hood in kitchen.

END OF SECTION

SECTION 105000 - PRINTED DISPLAY MATERIALS**PART 1 - GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 1 Specification Sections, apply to this Section.
- B. Division 9 Section 090050 - Finish Legend

1.02 SUMMARY

- A. This Section includes the following: Printed display materials for installation on concrete masonry material surfaces.
 - 1. Wall-mounted printed display
 - a. Printing Method: Direct substrate printing utilizing HPLX 600 UV Printer
 - b. Substrate: Arlon DPF 6700 Vinyl Film Cast wall wrap film with over laminate, 2-mil (50 micron) cast highly conformable film
 - c. Image: High Resolution PDFs will be provided by Owner. Single-sided printing required.
 - d. Over Laminate: Arlon Series 3220 Overlaminates, 2-mil (50 micron) cast vinyl film
 - 1) Sheen: gloss, luster, satin, and matte
 - e. Location: Refer to the drawings, including A/A2.0.
 - f. Mounting: Mount graphics directly on concrete masonry material surfaces.

1.03 SUBMITTALS

- A. Shop Drawings: Detail fabrication and installation of the printed display items and hardware. Include printed strike-off, and details of hardware components and their connections.

1.04 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing printed display materials similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver printed display materials wrapped in protective coverings and strapped together in suitable packs or in heavy-duty cartons.
- B. Store products on elevated platforms in a dry location.

1.06 PROJECT CONDITIONS

- A. Field Measurements: Where printed display materials are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with printing without field measurements. Coordinate cutting of materials to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, provide products by one of the following, or approved equivalent:
1. ASI Signage Innovations
 2. Fastsigns of Louisville
 3. Lynn Imaging

2.02 APPROVED INSTALLATION CONTRACTORS

1. ASI Signage Innovations
 2. Fastsigns of Louisville
 3. Lynn Imaging
- A. Available Installers: Graphics must be installed by a 3M preferred installer who has been trained by 3M in the proper AACM techniques to reduce the risk of vinyl failure on low/no voc painted walls. Other installers proposed which meet the specific training standards required and have successfully completed installation for five years plus, shall submit their references not less than seven days prior to the bid date.

2.03 MISCELLANEOUS MATERIALS

- A. Fasteners (if required): Use fasteners fabricated from same basic metal and alloy as fastened metal, unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.
1. Provide concealed fasteners for interconnecting formed-metal fabrications and for attaching them to other work, unless otherwise indicated.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Examine substrates for compliance with requirements for moisture content and other conditions affecting performance of Work of this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation, including the proper AACM techniques to reduce the risk of vinyl failure on low/no VOC painted surfaces.
- B. Clean substrates of substances that could impair wall covering's bond, including mold, mildew, oil, grease, incompatible primers, and dirt.
- C. Check painted surfaces for pigment bleeding.
- D. Acclimatize vinyl film materials if required by removing them from packaging in the installation areas not less than 24 hours before installation.

3.03 INSTALLATION, GENERAL

- A. General: Comply with vinyl film manufacturers' written installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Install vinyl film with no gaps or overlaps.
- C. Install seams vertical and plumb at least 6 inches (150 mm) from outside corners and 3 inches (75 mm) from inside corners. No horizontal seams.
- D. Remove air bubbles, wrinkles, blisters, and other defects.

- E. Trim edges for color uniformity, pattern match, and tight closure at seams and edges. Butt seams.

3.04 **CLEANING**

- A. Remove excess adhesive at finished seams, perimeter edges, and adjacent surfaces.
- B. Use cleaning methods recommended by vinyl film manufacturer.
- C. Replace strips that cannot be cleaned.

3.05 **PROTECTION**

- A. Protect finishes from damage during construction period. Remove temporary protective coverings at time of Substantial Completion.

END OF SECTION

SECTION 105050 - METAL LOCKERS**PART 1 GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 1 Specification Sections, apply to this Section.
- B. Division 9 Section 090050 - Finish Legend

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Metal Lockers:
 - a. New Lockers: Double Tier Lockers (L1)
 - 1) Lockers with Owner-provided locks and sloping top, knocked-down construction
 - b. ADA Double Tier Lockers (L1*)
 - 1) Provide ADA compliant lockers with Digilocks.
- B. Related Sections include the following:
 - 1. Division 6 Section "Miscellaneous Carpentry" for wood furring and grounds

1.03 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of locker.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other Work.
 - 1. Show sloping tops, locker fillers, trim, base and accessories. Include locker-numbering sequence in student and kitchen staff lockers.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for units with factory-applied color finishes.
- D. Samples for Verification: For the following products, in manufacturer's standard sizes, showing the full range of color, texture, and pattern variations expected. Prepare Samples from the same material to be used for the Work.
 - 1. Lockers
- E. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals specified in Division 1.

1.04 QUALITY ASSURANCE

- A. Source Limitations: Obtain locker units and accessories through one source from a single manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver lockers until spaces to receive them are clean, dry, and ready for locker installation.
- B. Protect lockers from damage during delivery, handling, storage, and installation.

1.06 COORDINATION

- A. Coordinate size and location of concrete bases. Concrete, reinforcement, and formwork requirements are specified in Division 3 Section "Cast-in-Place Concrete."

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products by one of the following including, but not limited to:
 - 1. Art Metal Products
 - 2. DeBourgh
 - 3. List industries
 - 4. Lyon Metal Products, Inc.
 - 5. Penco Products, Inc.; Subsidiary of Vesper Corporation
 - 6. Republic Storage Systems Co., Inc.
- B. Products: Subject to compliance with requirements, provide one of the products indicated for each designation in the Metal Locker Schedule at the end of Part 3.

2.02 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 366/A 366M, matte finish, suitable for exposed applications, and stretcher leveled or roller leveled to stretcher-leveled flatness.
- B. Fasteners: Zinc- or nickel-plated steel, slotless-type exposed bolt heads, and self-locking nuts or lock washers for nuts on moving parts.

2.03 WARDROBE LOCKERS

- A. Body: Form backs, tops, bottoms, sides, and intermediate partitions from steel sheet; flanged for double thickness at back vertical corners. Comply with the following:
 - 1. Supply HDC - Heavy-duty Corridor Lockers with 14 gauge doors, 16 gauge top, bottom and shelves and 24 gauge sides and back.
- B. Frames: Form channel frames from minimum 0.0598-inch- (1.50-mm-) thick steel sheet; lapped and welded at corners. Form continuous integral door strike on vertical frame members. Provide resilient bumpers to cushion door closing.
 - 1. Latch Hooks: Form from minimum 0.1046-inch- (2.70-mm-) thick steel; welded or riveted to door frames.
 - 2. Cross Frames: Form intermediate channel cross frames between tiers from minimum 0.0598-inch- (1.50-mm-) thick steel sheet. Weld to vertical frame members.
 - 3. Frame Vents: Fabricate vertical face frames with vents.
- C. Doors: One-piece steel sheet, formed into channel shape at vertical edges and flanged at right angles at top and bottom edges. Fabricate to prevent springing when opening or closing, and to swing 180 degrees. Comply with the following:
 - 1. Reinforcement: Brace or reinforce inner face of doors more than 15 inches (381 mm) wide.
 - 2. Reinforcing and Sound-Dampening Panels: Brace or reinforce inner face of doors with manufacturer's standard reinforcing angles, channels, or stiffener panels.
 - 3. Acoustical Treatment: Fabricate lockers for quiet operation with manufacturer's standard rattle-free latching mechanism and moving components isolated to prevent metal-to-metal contact.
 - 4. Sound-Dampening Panels: Manufacturer's standard, designed to stiffen door surface and reduce sound levels when door is slammed, of die-formed metal with full perimeter flange

and sound-dampening material. Spot weld panel to inside of door.

5. Louvered Vents: Stamped, louvered vents in door face, as follows:
- D. Shelves: Provide hat shelf in single-tier units; fabricated from minimum 16 gauge thick, formed steel sheet; flanged on all edges.
- E. Continuous Hinges: Manufacturer's standard, steel continuous hinge mounted to door and frame.
- F. Recessed Handle and Latch: Manufacturer's standard housing, formed from 0.0359-inch- (0.90-mm-) thick nickel-plated steel or stainless steel, with integral door pull, recessed for latch lifter and locking devices; nonprotruding latch lifter; and automatic, prelocking, pry-resistant latch, as follows:
 1. Provide minimum three-point latching for each door more than 42 inches (1067 mm) high; minimum two-point latching for each door 42 inches (1067 mm) high or less.
 2. Provide single-point gravity or spring-actuated latch with padlock lug.

2.04 LOCKS

- A. Fabricate lockers to receive the following locking devices, installed on lockers using security-type fasteners:
 1. Owner Provided Combination Locks:
 - a. Bolt Operation: Manually locking dead bolt or automatically locking spring bolt, as standard with manufacturer.
 2. ADA compliant lockers shall receive Digilock iButton or approved equivalent.

2.05 LOCKER ACCESSORIES

- A. Interior Equipment: Furnish each locker with the following items, unless otherwise indicated:
 1. Hooks: Manufacturer's standard zinc-plated, ball-pointed steel. Provide one double-prong ceiling hook, and not fewer than two single-prong wall hooks. Attach hooks with at least two fasteners.
- B. Number Plates: Manufacturer's standard etched, embossed, or stamped, aluminum number plates with numerals at least 3/8 inch (9 mm) high. Number lockers in sequence indicated. Attach plates to each locker door, near top, centered, with at least two aluminum rivets.
- C. Recess Trim: Manufacturer's standard; fabricated from minimum 0.0478-inch- (1.20-mm-) thick steel sheet, minimum 2-1/2-inch (64-mm) face width, and finished to match lockers. Fabricate trim in lengths as long as practicable.
- D. Filler Panels: Manufacturer's standard; fabricated from minimum 0.0478-inch- (1.20-mm-) thick steel sheet in an unequal leg angle shape, and finished to match lockers. Provide slip joint filler angle formed to receive filler panel.
- E. Finished End Panels: Manufacturer's standard; fabricated from minimum 0.0239-inch- (0.60-mm-) thick steel sheet, finished to match lockers, and designed for concealing exposed ends of nonrecessed lockers.
- F. Continuously Sloping Tops: Manufacturer's standard, fabricated from minimum 0.0359 - inch- (.90 mm) thick steel sheet, for installation over lockers with separate flat tops. Fabricate tops in lengths as long as practicable, without visible fasteners at splice locations, finished to match lockers. Provide fasteners, filler plates, supports, and closures, as follows:
 1. Closures: Vertical-end type
 2. Sloped top corner fillers, mitered

2.06 FABRICATION

- A. Unit Principle: Fabricate each locker with an individual door and frame, individual top, bottom, back, and shelves, and common intermediate uprights separating compartments.
- B. Fabricate lockers square, rigid, and without warp, with metal faces flat and free of dents or distortion. Make exposed metal edges free of sharp edges and burrs, and safe to touch.
- C. Form locker-body panels, doors, shelves and accessories from one-piece steel sheet, unless otherwise indicated.

2.07 FINISHES, GENERAL

- A. Finish all steel surfaces and accessories, except prefinished stainless-steel and chrome-plated surfaces.
- B. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- D. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.08 STEEL SHEET FINISHES

- A. Surface Preparation: Clean surfaces of dirt, oil, grease, mill scale, rust, and other contaminants that could impair paint bond. Use manufacturer's standard methods.
- B. Baked-Enamel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard baked-enamel finish consisting of a thermosetting topcoat. Comply with paint manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 1.4 mils (0.036 mm) on doors, frames, and legs, and 1.1 mils (0.028 mm) elsewhere.
- C. Powder-Coated Finish: Immediately after cleaning and pretreating, electrostatically apply manufacturer's standard baked-polymer finish consisting of a thermosetting powder topcoat. Comply with paint manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 1 mil.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine concrete bases for suitable conditions where metal lockers are to be installed. **[Delete if not required]**
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install metal lockers and accessories level, plumb, rigid, and flush according to manufacturer's written instructions.
- B. Assemble knocked-down lockers with standard fasteners, with no exposed fasteners on door faces and face frames.
- C. Anchor lockers to floors and walls at intervals recommended by manufacturer, but not more than 36 inches (910 mm) o.c. Install anchors through backup reinforcing plates where necessary to avoid metal distortion, using concealed fasteners.
- D. Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.

- E. Attach boxed end panels with concealed fasteners to conceal exposed ends of nonrecessed lockers.
- F. Attach finished end panels with fasteners only at perimeter to conceal exposed ends of nonrecessed lockers.

3.03 **ADJUSTING, CLEANING, AND PROTECTION**

- A. Adjust doors and latches to operate easily without binding. Verify that integral locking devices operate properly.
- B. Clean interior and exposed exterior surfaces and polish stainless-steel and nonferrous-metal surfaces.
- C. Protect lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit locker use during construction.
- D. Touch up marred finishes, or replace locker units that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

3.04 **METAL LOCKER SCHEDULE**

- A. Metal Wardrobe Locker (L1): Where metal lockers of this designation are indicated, provide products complying with the following:
 - 1. Style: Double Tier
 - 2. Material: Cold-rolled steel sheet
 - 3. Back Material Thickness: 24 gauge
 - 4. Side Material Thickness: 24 gauge
 - 5. Door Material Thickness: 14 gauge
 - 6. Locker Arrangement: Double tier, refer to plans for locations and quantities.
 - 7. Backs: Solid
 - 8. Sides: Solid
 - 9. Door Style: Louvered vents
 - 10. Shelves: Solid
 - 11. Hinges: Side mounted continuous
 - 12. Handles/Latches: Recessed
 - 13. Locks: Owner-provided padlock
 - 14. Color: Selected from manufacturer's standards
 - 15. Size: 12" x 12" x 60" H
 - 16. Provide ADA compliant lockers at all (L1*) designations.

END OF SECTION

SECTION 107300 - ALUMINUM CANOPY**PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Wall supported manufactured aluminum canopy.
 - 1. Downspouts will be connected to the storm drainage system.
- B. Column supported manufactured aluminum canopy. Part of Alternate #5.
 - 1. Column/downspouts will be connected to the storm drainage system.

1.02 RELATED REQUIREMENTS

- A. Section 033000 - Cast-In-Place Concrete
- B. Section 042000 - Unit Masonry
- C. Section 076200 - Sheet Metal Flashing and Trim
- D. Section 079000 - Joint Sealants

1.03 REFERENCE STANDARDS

- A. AAMA 611 - Specification for Anodized Architectural Aluminum.
- B. AAMA 2604 - Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
- C. AAMA 2605 - Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- D. ASTM B 209 - Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- E. ASTM B 221 - Specification for Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire Profiles and Tubes.

1.04 SUBMITTALS

- A. Product Data: For the following:
 - 1. Wall supported canopy, canopy attachment to wall, metal deck, beams, and fascia.
 - 2. Column supported canopy, columns, column embedment, metal deck, beams and fascia.
- B. Shop Drawings: Detail fabrication and installation of all formed metal fabrications. Include dimensioned plans, elevations, sections, and details of components and their connections. Show anchorage and accessory items.
 - 1. Show downspout attachment to storm drainage system.
 - 2. Show column/downspout foundation attachment.
 - 3. Manufacturer to field verify project conditions for wall bracket attachments to ensure proper attachment is indicated in the shop drawings.
- C. Field Measurements: Where formed metal canopies are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- D. Design Data: Submit design calculations bearing the seal of a Registered Professional Engineer, licensed in Kentucky. Design calculations shall state that the canopy system design complies with the wind uplift requirements of ASCE 7, the stability criteria of the 2015 IBC with Kentucky

Amendments, and all other governing criteria.

- E. Selection Samples: Submit color chips representing manufacturer's full range of available colors and patterns. Submit actual samples not photo reproductions.

1.05 KENTUCKY DEPARTMENT OF HOUSING, BUILDINGS AND CONSTRUCTION (HBC) SUBMITTALS

- A. In addition to the shop drawings submitted to the Architect for review the pre-engineered metal canopy manufacturer shall also submit shop drawings to the pre-engineered canopy installer for shop drawings submittal to HBC for approval as a requirement of the building permit.
- B. Shop Drawings: Each sheet shall be identified with the project name and bear the seal and signature of a Kentucky licensed design professional. Section 107.1 2015 IBC with KY Amendments, current edition.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in the manufacture of canopy system, as specified, with minimum ten years of documented experience.
- B. Installer Qualifications: Canopies to be installed by the manufacturer. Third party installation is not acceptable, unless installer is certified through the manufacturer, or installs manufacturers canopies exclusively.
- C. Source Limitations: Obtain canopies through one source from a single manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver formed metal canopies wrapped in protective coverings and strapped together in suitable packs or in heavy duty cartons. Remove protective coverings before they stain or bond to finished surfaces.
- B. Store products on elevated platforms in a dry location.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, gloss reduction, chalking, or flaking.
 - 1. Provide if manufacturers standard finish is anodized or powder-coated.
- D. Provide ten year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.
 - 1. Provide if manufacturers standard finish is painted.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include:
- B. Basis of Design: design concept and the drawings indicate the size, profiles, dimensional requirements and aesthetics of the following:
 - 1. Superior Mason Products, LLC.
- C. Products by other manufacturers may be considered provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect.

1. Architectural Fabrication, Inc.: www.arch-fab.com
2. Childers Carports and Structures: www.childersonline.com
3. Mapes Industries: www.mapes.com
4. MASA Corporation: www.architecturalcanopies.com
5. Mitchell Metals, LLC: www.mitchellmetals.net
6. Peachtree Protective Covers: www.peachtreecovers.com
7. Superior Mason Products, LLC: www.superiormetalproducts.com
8. Tennessee Valley Metals: www.tvmetals.com
9. Rusco Custom Canopies: www.ruscocanopies.com

2.02 MATERIALS

- A. General: Provide materials without pitting, seam marks, roller marks, stains, discolorations, or other imperfections where exposed to view on finished units.
- B. Aluminum Members: Extruded aluminum, ASTM B 221, 6063 alloy, T6 temper.
- C. Deck Panels: Extruded .062 inch aluminum flush deck
 1. Panel Profile: Flat
 - a. Deck must be continuously flat across the entire canopy. Deck profile or deck attachment to not create any open spaces to allow bird nesting/roosting.
- D. Intermediate Gutters/Drain Beam: Extruded .125 inch aluminum with one end closed at the factory and be provided with top cap that is removable for cleaning.
 1. Intermediate Gutter Size: Manufacturers standard size or nominal, 0.188 inch thick, 3 inch wide x 6 inch deep.
- E. Fascia/Gutter: Full perimeter extruded .094 inch aluminum fascia/gutter.
 1. Fascia Size: Manufacturers standard size or nominal, 0.070 inch thick, 3 inch wide x 7 inch deep to interlock with decking and gutters.
- F. Downspouts that are not a supporting column: Fully welded, extruded aluminum tubing, minimum wall thickness of 0.125 inch. Minimum size 3 inch by 3 inch or size as indicated on the drawings.
- G. Fasteners: Use fasteners fabricated from same basic metal and alloy as fastened metal, unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.
 1. Provide concealed fasteners for interconnecting formed metal fabrications and for attaching them to other work, unless otherwise indicated.
 2. Fasteners to be provided in same finish and color as canopy components.
- H. Structural Anchors and Rods: All ferrous fasteners and hanging accessories shall be heavily galvanized or cadmium plated and finished in same finish and color as other canopy components.
- I. Columns: Extruded aluminum tubing, with radiused corners, to be ASTM A500 Grade B with a minimum yield stress of 46,000 ksi.
 1. Column Size: Manufacturer to provide standard size nominal 6 inch x 6 inch at 0.188 inch thick.
 2. Provide clear acrylic or bituminous paint protection between the aluminum column and the concrete footer.

3. Tombstone shaped water outlet holes are to be cut at the bottom of all draining columns with deflector plates installed inside, unless underground drainage is indicated. Circular drain holes are not allowed.
- J. Column Base Plates: ASTM A 36 - 1 inch structural steel plate with a minimum yield stress of 36,000 ksi. Plate to be minimum 3/4 inch A572 Grade 50 thick with welded gussets. Shop fabricate with pre-punched or pre-drilled bolt holes.
- K. Column Anchor Bolts: ASTM A 572 or A 490 Grade 50 threaded round stock with a minimum yield stress of 50,000 psi. Provide double nuts and washers for leveling.
- L. Column Top Plates: ASTM A 36 structural steel plate with a minimum yield stress of 36,000 ksi. Plate to be a minimum 3/4 inch thick with welded gussets. Shop fabricate with pre-punched or pre-drilled bolt holes.
- M. Flashing: Flashing shall be made of aluminum sheet in same finish and color as the other canopy components. Minimum flashing thickness to be 0.040 inch thick. Coordinate installation of flashing with masonry and/or roofing subcontractor to integrate flashing into throughwall flashing and reglets.
- N. Corrosion Control: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

2.03 ACCESSORIES

- A. Wire Ball Downspout Strainer: Install wire ball downspout strainer at each downspout location.

2.04 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble formed metal canopies in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- B. Coordinate dimensions and attachment methods of formed metal canopies with those of adjoining construction to produce integrated assemblies with closely fitting joints and with edges and surfaces aligned, unless otherwise indicated.
- C. Welding: In accordance with ANSI/AWS D1.2.
- D. Bent Construction: Factory weld beams to columns with neatly mitered corners to form one piece rigid bents. Make welds smooth and uniform using an inert gas shielded arc. perform suitable edge preparation to assure 100% penetration. Grind welds only where interfering with adjacent structure to allow for flush connection. Field welding is not permitted.
- E. Deck Construction: Fabricate from extruded modules that interlock in a self-flashing manner. fasten interlocking joints at on center spacing creating a monolithic structural unit capable of developing the full strength of the sections. Fastening to have minimum shear strength of 350 pounds each. Assemble deck with sufficient camber to offset dead load deflection.
- F. Form metal to profiles indicated, in maximum lengths to minimize joints. Produce flat, flush surfaces without cracking or grain separation at bends. Fold back exposed edges of unsupported sheet metal to form a 1/2 inch (12 mm) wide hem on the concealed side, or ease edges to a radius of approximately 1/32 inch (1 mm) and support with concealed stiffeners.
- G. Build in straps, plates, and brackets as needed to support and anchor fabricated items to adjoining construction. Reinforce formed metal units as needed to attach and support other construction.
- H. Provide support framing, mounting and attachment clips, splice sleeves, fasteners, and accessories needed to install formed metal fabrications.

2.05 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Apply organic and anodic finishes to formed metal after fabrication, unless otherwise indicated.

2.06 ALUMINUM FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.
- C. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- D. Canopy finishes: Due to differences in canopy manufacturer finishing standards provisions for clear and/or color anodized, painted and powder coated material is included. All finishes are acceptable and manufacturers are to provide their standard of ONE listed below.
 - 1. High-Performance Organic Finish (2-coat Fluoropolymer): AA-C12C40R1X (Chemical Finish): cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with AAMA 2605 and with coating and resin manufacturers' written instructions.
 - a. Color to be selected from manufacturers standard color chart. Minimum twenty colors.
 - b. All canopy components to be painted; fascia, deck, columns, wall hangers, accessories and drain beam.
 - c. Extruded deck to be painted the same color on the topside and underside.
 - 2. Powder Coated Finish: AAMA 2604 thermosetting resin of, 1.20 mils minimum, modified polyesters electrostatically applied to the aluminum profile. Profile to be baked in an oven where the powder particles are melted to a liquid state, fusing together to form a homogenous film.
 - a. Color to be selected from manufacturers standard color chart. Minimum sixteen colors.
 - b. All canopy components to be painted; fascia, deck, columns, wall hangers, accessories, and drain beam.
 - c. Extruded deck to be painted the same color on the topside and underside.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Locate and place formed metal fabrications level, plumb, and in alignment with adjacent construction.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where needed to protect metal surfaces and to make a weathertight connection.

- C. Form tight joints with exposed connections accurately fitted together. Provide reveals and openings for sealants and joint fillers as indicated.
- D. Corrosion Protection: Coat concealed surfaces of aluminum, zinc coated, and nonferrous metals that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.
- E. Entire unit shall be erected straight and true.
- F. Hanger rods shall be anchored using through bolt type anchors to support dead and live loads, as recommended by the manufacturer.

3.02 ADJUSTING

- A. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit or provide new units.

3.03 PROTECTION

- A. Protect finishes of formed metal canopies from damage during construction period. Remove temporary protective coverings at time of Substantial Completion.

END OF SECTION 107300

SECTION 114000 - FOOD SERVICE EQUIPMENT

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. General Provisions and Drawings including General and Supplemental conditions and Division I Specification Sections apply to this Section.

1.02 SUMMARY

- A. Questions concerning Drawings or Specifications shall be asked of the Architect in writing.
- B. Drawings and specifications assign work (labor and/or materials) to be provided by the General Contractor, Plumbing, Fire Suppression, HVAC, and Electrical Contractor. Understanding that the contractors for Division 11 are sub-contractors to the General Contractor such assignments are not intended to restrict the General Contractor in assignment of work among the Sub-Contractors to accommodate trade agreements and practices or the normal conduct of the construction work.
- C. Equipment of standard manufacture shall be of latest model (cooking equipment shall be of same manufacturer where possible). Custom fabricated equipment must be fabricated in the same shop. All work and materials, where possible, shall be listed by Underwriter Laboratories, Inc., National Sanitation Foundation, Inc., and conform to local and state ordinances, State Fire Marshall, National Fire Protection Assoc. codes, and other prevailing regulations, and codes of this area.
- D. Bids are to be presented as lump sum price including any and all applicable city, state, occupational, or government taxes. All cost of permits and licenses shall be included. Suppliers upon request are required to submit with this bid an itemized list of equipment manufacturers and prices by item. See form at end of this section. The owner reserves the right to omit any items or increase the quantities in order to bring the project into budget. Partial bids will not be accepted.
- E. Request for substitutions on specified equipment and/or materials must be submitted in writing to Architect no later than ten days prior to bid date.
- F. The Kitchen Equipment Contractor shall examine structural, mechanical, plumbing, and electrical drawings. Charges incurred due the selection of alternate items or substitutions that require changes to building structure or, mechanical, plumbing, and electrical systems as shown on original bid documentation shall be the responsibility of the Kitchen Equipment Contractor.

1.03 SCOPE

- A. Work Included by Kitchen Equipment Contractor
 - 1. Provide equipment, supervision, and labor required for delivering, uncrating, setting in place, leveling, and caulking all specified food service equipment with all related items necessary for the completion of work shown on the Contract Drawings and/or required by these specifications, exclusive of utility connections unless covered by Sub Paragraph 19 of 1.03, A, or/unless covered by line item description.
 - 2. Cutting of holes and ferrules in the equipment provided for running of piping, drains, electrical outlets, conduit, etc., required for the installation of work by other contractors.
 - 3. Verifying that all electrical equipment is correct type current for electrical supply at job site.
 - 4. Furnishing to Plumbing Contractor for installation, chrome plated faucets and drains with tailpieces as called for in specifications.
 - 5. Furnishing to Plumbing Contractor for installation, floor troughs as called for in specifications, as well as providing Plumbing Contractor with necessary documentation and supervision for proper installation of this piece of equipment. Floor troughs should be installed flush with the finished floor. If dispute arises with the installing plumber or the local Plumbing Inspector over the level at which the floor trough is installed the Kitchen Equipment Contractor is required to notify the Design Team immediately.
 - 6. When notified by General Contractor, Plumbing Contractor, or Electrical Contractor, Kitchen Equipment Contractor shall field measure structural, mechanical, plumbing, and

electrical rough-ins to verify compliance with Kitchen Equipment Contractors rough-in drawings. Relocation of rough-ins due to Kitchen Equipment Contractors failure to verify rough-ins, errors in verification of rough-in locations, or errors in Kitchen Equipment Contractor's drawings and brochures, shall be at the Kitchen Equipment Contractors expense.

7. Within 30 calendar days after awarding of the contract, the Kitchen Equipment Contractor must submit rough-in drawings, (minimum scale no less than 1/4" = 1'), showing the exact location of convenience outlets, mechanical and electrical services for each piece of equipment provided by Kitchen Equipment Contractor, Owner, and Vendors. Mechanical and electrical rough-ins must be on separate sheets. Equipment should be shown in a lighter line weight than Rough-ins, dimensions, and notations. With drawings provide an equipment brochure booklet containing manufacturers' spec sheets with electrical and mechanical requirements for each piece of equipment to be supplied. PDF files of all drawing pages and buy-out book pages are acceptable.
8. Within 30 calendar days after awarding of the contract, the Kitchen Equipment Contractor must submit complete shop drawings of all fabricated equipment. Scale must be 3/4" = 1' for plan view and elevations, and 1-1/2" = 1' for cross sections. Also include layouts with dimensions for any recesses required.
9. Kitchen Equipment Contractors rough-in and shop drawings shall be supplied in the following manner:
 - a. Provide submittal drawings as called for in General Conditions for this project for review, correction and approval.
 - b. Brochures on "buy-out" items shall contain manufactures specification sheets on each item preceded by type written page indicating quantity required, model number, mechanical requirements, and list of accessories required by the specifications.
10. Upon Kitchen Equipment Consultant's approval of drawings and brochure booklets Kitchen Equipment Contractor shall submit copies to the General Contractor for distribution. PDF files are also acceptable.
11. Any proposed substitution of materials or items must be submitted to the Architect for approval in writing.
12. Fabrication of custom equipment shall not begin until final approval has been received from Architect and until field measurements have been taken.
13. All equipment items shall be made to fit in the spaces provided.
14. At completion of final punch list Kitchen Equipment Contractor shall deliver to Architect for Owner; three binders. Each binder shall contain service and parts manuals, manufacture warranty information, and acetate bound lists of names and telephone numbers of applicable service agencies for each piece of equipment provided. Include in each binder, a CD containing the same information. The CD should be in a sleeve permanently attached to the inside of each binder, or in a three-ring sleeve. The spine of the binder shall be labeled "O&M Manual".
 - a. Include at the front of this binder a letter from each manufacturer that does not furnish as a standard, the warranties required by these specifications. This letter must include the serial number for each piece of equipment covered by the manufacturers "optional" warranties.
15. All debris accumulated by Kitchen Equipment Contractor in connection with the installation of his equipment shall be removed daily. The Kitchen Equipment Contractor shall clean, and turn over to Owner all equipment ready for use.
16. At owner's convenience, Kitchen Equipment Contractor shall schedule and provide live demonstrations and training for all equipment. Cooking demonstrations will be required for all cooking and holding equipment. Demonstrations and training to be performed by manufacturer's representatives. K.E.C. is responsible for coordinating demonstrations with the owner and G.C. Manufacturer's Representative shall be allotted adequate time frame to comprehensively demonstrate equipment. K.E.C. to verify that all equipment is fully operational and ready for demonstration.
17. If State or local codes require boiler inspections, the Kitchen Equipment Contractor shall

provide a licensed boiler installer who shall apply for all permits, reviews, and inspections by the Boiler Inspector for kitchen steam equipment specified as part of this contract. All fees incurred in providing these services shall be the responsibility of the Kitchen Equipment Contractor.

18. If required, Provide revit drawings of hood system and all components for coordination purposes.
19. Kitchen Equipment Contractor shall hire an Electrical Contractor and Plumbing Contractor to make all final connections between cooking equipment, including owner's supplied items, and E.D.S.
20. Kitchen Equipment Contractor must complete all punch list items no later than 14 days after receipt of punch list. Kitchen Equipment Contractor to notify, in writing, Joby Smith & Associates when all items are completed and that the kitchen is ready for the follow-up punch list. Items not completed on the original punch list will have to be inspected again by Joby Smith & Associates at Kitchen Equipment Contractor's expense.
21. When selecting equipment, unless otherwise called for in line-item description:
 - a. All steam equipment and tilt-skillets to be provided by same manufacturer.
 - b. Whenever possible, all reach-in and under-counter refrigeration to be provided by same manufacturer.
 - c. All heated cabinets to be provided by same manufacturer.
 - d. All shelving to be provided by same manufacturer.
22. Kitchen Equipment Contractor to verify with owner the location of existing equipment and move what is to be re-used to a storage location within the district designated by owner, then relocate equipment to new kitchen when site is ready for re-installation and set equipment in place per Food Service Equipment drawing sheets. Kitchen Equipment Contractor shall dispose of existing equipment that owner does not want to re-use or sell.

B. Work Included by General Contractor.

1. Provide all holes and recesses including wall openings required for condensate lines, refrigeration lines, floor drains, ducts, equipment, access to coolers, etc.
2. In area specified for walk-in cooler/freezer provide 10" recess in concrete floor. Kitchen Equipment Contractor will provide vapor retarder, vertical conduction barrier, and insulation for walk-in cooler/freezer floor. General Trades Contractor is then to fill remainder of recess with reinforced concrete and finish to match adjacent finish floor.
3. Provide all roof penetrations, curbs, and flashing required for gas piping, refrigeration lines, compressors, exhaust fans, etc. unless otherwise provided for in Item description.
4. Provide work as noted in Section 114000 specifications and on Hood Drawings for Items 10 under the heading "EXHAUST SYSTEM WORK BY OTHER TRADES".
5. General Contractor shall notify Kitchen Equipment Contractor when rough-ins are ready for verification.
6. Repair any building wall or roof penetrations left due to removal of existing equipment.
7. Remove existing hood canopy, duct work, fans and all related components not being re-used. Refer to kitchen hood systems drawing sheets for details.
8. Unless owner instructs otherwise; General Contractor is to dispose of existing hood canopy, duct work, fans and all related components not being re-used.

C. Work Included by Plumbing Contractor

1. Unless otherwise specified by Item description and Drawings; make all plumbing connections required between kitchen equipment components.
2. Unless otherwise specified by Item description and Drawings provide all hot and cold water piping with shutoffs between point of rough in and connections on equipment. Install pressure reducers supplied by the Kitchen Equipment Contractor for kitchen equipment.
3. Install all faucets, drains with tailpiece, and waste, incorporated in sinks, tables, etc., furnished by Kitchen Equipment Contractor.
4. Install all floor troughs furnished by Kitchen Equipment Contractor. The Plumbing Contractor shall coordinate with the Kitchen Equipment Contractor the proper installation of the floor trough. Per code, floor troughs can be installed flush with the finished floor. If dispute arises with Plumbing Inspector and these specifications over the level at which the

floor trough is to be installed the installing Plumbing Contractor is required to notify the Construction Manager, Kitchen Equipment Contractor, and Design Team of the disagreement before the floor trough is set. Failure to do so will result in the Plumbing Contractor incurring the cost of relocating the floor trough to meet code.

5. Except where specifically included in Kitchen Equipment Contractors responsibility by Item Specifications and Drawings; Provide all traps, stops and waste piping. Extend waste piping from sinks, disposers, and steam equipment to waste or floor sinks. All waste piping shall be hard copper except when specified otherwise.
 6. Provide all floor drains, and floor sinks shown on plumbing and kitchen drawings.
 7. Provide work as noted in Section 114000 specifications and on Hood Drawings for Items 10 under the heading "EXHAUST SYSTEM WORK BY OTHER TRADES".
 8. Plumbing Contractor shall notify General Contractor when rough-ins are ready for Kitchen Equipment Contractor verification.
 9. Verify with Kitchen Equipment Contractor proper procedure for mounting of mixing valves for hose reels. See detail drawing on plan sheets.
 10. Plumbing contractor to disconnect all existing kitchen equipment for relocating to new kitchen. Any loose parts to be reused shall be placed in a clear plastic bag and secured to the piece of equipment.
 11. Cap existing piping for equipment not being re-used.
- D. Work Included by HVAC Contractor
1. Unless otherwise specified by Item description and Drawings make all mechanical connections required between kitchen equipment components.
 2. Provide work as noted in Section 114000 specifications and on Hood Drawings for Items 10 under the heading "EXHAUST SYSTEM WORK BY OTHER TRADES".
 3. H.V.A.C. shall notify Construction Manager when rough-ins are ready for Kitchen Equipment Contractor verification.
- E. Work Included by Electrical Contractor
1. Unless otherwise specified by Item description and Drawings make all electrical connections required between kitchen equipment components.
 2. Provide rough-in of all electric services, conduit, wall receptacle, safety cut-off, starters, motor control panels, disconnects, wiring, etc., except where specifically included in Kitchen Equipment Contractors responsibility by Item Specifications and Drawings. Connections to equipment shall be made in accordance with National Electric Code.
 3. Provide electrical work as noted in Section 114000 specifications and on Hood Drawings for Items 10 under the heading "EXHAUST SYSTEM WORK BY OTHER TRADES".
 4. Electrical Contractor shall notify Construction Manager when rough-ins are ready for Kitchen Equipment Contractor verification.
 5. Electrical contractor to disconnect all existing kitchen equipment for relocating to new kitchen. Any loose parts to be reused shall be placed in a clear plastic bag and secured to the piece of equipment.
 6. Remove any electrical wiring and connections for equipment not being re-used.

1.04 SERVICE AND GUARANTEES

- A. All refrigeration equipment shall be installed in an approved manner meeting all State and Local codes. All compressors to be given a "Manufacturers" five-year minimum warranty and one year minimum service warranty. Dealer warranties are not acceptable when a Manufacturer's warranty is available.
- B. All equipment is to be given a "Manufacturer's" one-year minimum free service and parts warranty. Date of warranties to begin with final acceptance of project. Kitchen Equipment Contractor shall replace free of charge any equipment, work, parts, materials and/or workmanship which becomes defective (except that which becomes defective due to abuse) during this time period. Dealer warranties are not acceptable when a Manufacturer's warranty is available.

1.05 QUALITY ASSURANCE

- A. Manufacture and install equipment with strict compliance to all State and Local codes. If applicable, equipment must bear the seal of UL, NFPA, ANSI, OSHA, AGA, ASMA, NSF and NEMA.
- B. Approval of contractor's drawings and other data does not relieve Kitchen Equipment Contractor from responsibility of complying with codes and regulations.

PART 2 PRODUCTS

2.01 PLUMBING

- A. Work specified by this section shall include, but not be limited to the following.
 - 1. Faucets to be chrome plated, and provided with check valves, swing spouts, soft flow aerators (T&S B-0199-01F-20), and union coupling inlets. Faucets and components are to be as follows:
 - a. Pre Rinse - Splash Mount:
T&S B-2278-01-CR with B-0109 aerator or Chicago Faucet, Fisher Faucet, equal
 - b. Faucets - Deck mount:
T&S B-0300-CR with aerator or Chicago Faucet, Fisher Faucet, equal.
 - c. Faucet - Splash Mount:
T&S B-0231-CR with aerator or Chicago Faucet, Fisher Faucet, equal.
 - d. Quick Disconnect Assemblies:
T&S - Caddy - Avtec – Captive Aire - Dormont
 - e. Drain Valve Assemblies:
Klein 1750-1020-1000 or Fisher, Chicago Faucet equal
 - 2. Wastes to be chrome plated. Twist handles to be stainless steel. Overflows when specified shall be chrome plated. Overflows and components are to be as follows:
 - a. Lever Waste:
Standard Keil 1720-1620-1000 or Chicago Faucet, Fisher Faucet equal
 - b. Crumb Cup Waste:
Standard Keil 1840-1012-3251 or Chicago Faucet, Fisher Faucet equal
 - c. Open Waste:
Standard Keil 1836-1010-1000 or 1818-1410-168 or Chicago Faucet, Fisher Faucet equal
 - 3. Chrome plated vacuum breakers shall be on all fixtures where water inlets are placed below the water level. Vacuum breakers and components are to be as follows:
 - a. 1/2" Vacuum breakers on a flat surface:
T&S B-0456 vacuum breaker assembly or Chicago Faucet, Fisher Faucet equal.
 - b. 1/2" Vacuum breakers on a sloped surface:
T&S B-0455 vacuum breaker assembly or Chicago Faucet, Fisher Faucet equal.
 - 4. All piping extending through table and sink surfaces shall be chrome plated with chrome plated angle flanges, deck flanges, or wall flanges at penetration points.
 - 5. Back flow preventers are to be on pre-rinse units.
 - 6. All faucets, vacuum breakers, and hose reels to be of the same manufacturer.

2.02 ELECTRICAL

- A. Work specified by this section shall include, but not be limited to the following:
 - 1. All electrical equipment shall be of voltage specified by Item Description, Drawings, and Equipment Schedule. The Architect shall be notified of any discrepancies between Contract specifications and electrical characteristics at job site before equipment is ordered.
 - 2. Wiring in fabricated items must be in a raceway or conduit.
 - 3. Wiring in damp areas, (walk-in cooler interiors, under dish tables, etc.) must be in Sealtite type conduit and waterproof boxes.

2.03 FABRICATION

- A. Unless otherwise specified in item description all stainless steel is to be U.S. Standard Type 19-8 composition, Type 302 or 304 with #4 mil finish.

- B. Galvanized steel used shall be processed by hot dip method and be free of runs, blisters, spelter, hard spots and other surface defects. Any exposed galvanized surfaces shall be painted hammertone gray.
- C. Welding rods will be of same material being joined. Welds shall cover joint completely and be ground smooth and polished. Discoloration, warping, pitting, and depressions will not be acceptable.
- D. All equipment secured to or firmly secured against wall shall be sealed with clear silicone.
- E. Field joints should be used only if necessary and must be tight fitting.
- F. Depressions or discoloration at stud bolt locations will not be accepted.
- G. Stainless steel sink bowls, drainboards, and tops will be 14-gauge.
- H. All shelves to be 16-gauge stainless steel.
- I. Cabinet bodies and doors to be 16-gauge stainless steel.
- J. Unless otherwise stated in item description all tops are to be 14-gauge stainless steel. All work surfaces with exposed edges shall be turned down 1-1/2" and under 1/2" at a 45° angle. Corners shall be welded and polished to smooth finish. Splashes shall be turned up with 3/4" radius and back at 45° angle and down 1/2" minimum. Tops and work surfaces to have 12-gauge stainless steel channel under bracing for strength and to prevent warping. Tops to be sound deadened.
- K. Sinks and dish tables to have coved 3/4" radius at all horizontal and vertical corners. Sinks backs, bottoms and front shall be formed from one continuous piece. Sink bottoms to have slopping depression to drain outlet. Drainboards to slope 1/2" to sinks. Drainboards to be sound deadened.
- L. Chases, where mounted to table tops and rear splashes, shall have integral risers with coved 3/4" radius at table top. Top of riser to turn in 1/2" at 90° on all four sides with threaded studs centered on top of turn in. Bottom of chase should turn in 1/2" at 90° on all four sides with holes punched in center of turn in to accept riser studs.
- M. Legs under open base tables and sinks shall be constructed of 1-5/8" O.D. 16-gauge stainless steel tubing and cross braced with 1-1/4" O.D. stainless steel tubing welded to legs. Legs to be fitted with adjustable stainless steel feet at bottom and stainless steel gusset at top. Gusset to be welded to 12-gauge stainless steel channels where secured to table.
- N. Drawer assemblies, unless otherwise specified by item description, shall have 16 gauge double walled stainless steel faces with integral hand pulls and cylinder locks, stainless steel channel slides, 5" deep vinyl inserts, and full 18-gauge stainless steel enclosures. Rollers are to be stainless steel ball bearing type. All drawer slides are to have manual releases to remove drawers from housing. Drawer assembly must be mounted so that face of drawer is no less than 3/4" back from edge of table top.
- O. Removable undershelves to be 16-gauge with rolled edges contoured to fit pipe base. Undershelf sections to be no more than 24" wide and are to be turned down 1" on all edges between pipe rails where shelf sections butt.
- P. Stationary 16-gauge stainless steel shelving on open base tables and drainboards shall be turned down and under on all sides in the same manner as table tops. Shelves to be notched to fit tangent points on legs and welded into place. Shelves to be reinforced in same manner as tabletops.
- Q. Undershelves on tables that butt against walls will be turned up 2" on a 3/4" radius, on the sides adjoining the walls.
- R. Wall mounted shelves are to be 16-gauge with rear turned up 2". All exposed edges are to be constructed in same manner as tabletops.
- S. Custom manufactured equipment shall be of one of the following shops:
 - 1. Low Temp Industries, Jonesboro, Ga.
 - 2. Commercial Stainless, Bloomsburg, Pa.
 - 3. EMI Industried, Booneton, NJ.

4. IMC Teddy, Amityville, NY
5. DBS Stainless Fabrication, Hamilton Oh.

PART 3 EXECUTION

3.01 EQUIPMENT

ITEM 1 DUNNAGE RACK – DRY STORAGE -- TWO (2) REQUIRED.

Provide heavy duty dunnage rack constructed of type 6063-T5 extruded aluminum tubing 1-1/2" x 1-3/4" x .070 wall, with all joints heli-arc welded, and feet completely sealed. 2,000 Lb. minimum weight capacity. Platform level to be 12" above floor. See Food Service Equipment Floor Plan drawing for sizes and locations.

Dunnage racks to be of the same manufacturer as item 21.

MANUFACTURER & MODEL: NEW AGE

KELMAX, WINHOLT, and CHANNEL will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 2 SHELVING - DRY STORAGE -- ONE (1 LOT) EXISTING.

Existing, supplied by owner. K.E.C. to relocate as shown on Food Service Equipment Floor Plan drawing. See floor plan drawing for details.

ITEM 3 SHELVING - DRY STORAGE -- ONE (1 LOT) REQUIRED.

Provide four tier chrome finished wire shelving on 86" chrome finished posts with 5" casters and bumpers (2-with brakes at long side of shelving unit). Size per Food Service Equipment Floor Plan drawing. Bottom shelf to be 12" off floor.

Shelving to be of the same manufacturer as items 8 and 20.

MANUFACTURER & MODEL: METRO SUPER ERECTA BRITE

EAGLE and AMCO will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 4 UTILITY CART -- TWO (2) REQUIRED.

Provide 1000 lb. capacity stainless steel carts. Cart shelf to be 14-gauge stainless steel reinforced front and back with 16-gauge angles. Legs are to be 1/8" thick stainless steel angle. Wheels to be (2) 5" swivel and (2) 8" fixed with polyurethane tires. Provide with bumpers on legs and handle.

MANUFACTURER & MODEL: LAKESIDE (1) 943, (1) 944

STERIL-SIL and SAMMONS EQUIPMENT will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 5 CAN RACK -- TWO (2) EXISTING.

Existing, supplied by owner. K.E.C. to relocate as shown on Food Service Equipment Floor Plan drawing. See floor plan drawing for details.

ITEM 6 HAND SINK -- FOUR (4) REQUIRED.

Not in K.E.C. contract. To be provided by Plumbing Contractor.

ITEM 7 ICE MACHINE W/BIN -- ONE (1) REQUIRED.

Provide air-cooled, individual crescent cube, ice machine with 393 lb. production capacity in a 24 hr. period installed on a 300 lb. capacity ice storage bin. Ice machine to have stainless steel exterior. Storage bin to have stainless steel exterior with polyethylene interior liner. 115/60/1

Provide with the following option: stainless steel legs.

As part of this unit, provide the manufacturer's recommended water filtering system with standard components. Size filtering system for this machine. Along with components shipped with base system, furnish (1) additional cartridge. Secure filter system on wall as shown on drawing ready for P.C. to make final connections. P.C. to make final connection to water source and interconnect to ice machine.

K.E.C. to set in place. Plumbing Contractor to provide all plumbing connections. Electrical Contractor to provide all electrical connections.

MANUFACTURER & MODEL: HOSHIZAKI KM-350MAJ/B-300SF

MANITOWOC and ICE-O-MATIC, will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 8 SHELVING - POT & PAN -- THREE (3) REQUIRED.

Provide standard antimicrobial polymer, open grid, shelving on 63" post with non-marking casters (two w/locking brakes). Size per drawing. Bottom shelf to be 12" off floor.

Shelving to be of the same manufacturer as item 3 & 20.

MANUFACTURER & MODEL: METRO METROMAX

EAGLE and AMCO will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 9 OPEN NUMBER.**ITEM 10 HOOD SYSTEM – ONE (1) REQUIRED.**

Provide exhaust/tempered make up air system as shown on the drawings. Complete system to include: exhaust and make up air fans, make up air furnace, hood, fire protection system, connecting duct, start up/air balance/service. System to meet all requirements of NFPA Code 96, Kentucky Mechanical Code, U.L., and bear the NSF seal #908. Hood manufacturer must assume responsibility for installation of hoods, ductwork, fans, and all support equipment specified in this item description except where noted "WORK BY OTHER TRADES".

EXHAUST FAN: Provide one (1) roof exhaust blower of the upblast centrifugal, spun aluminum, belt driven type. Fan to be U.L. 762 listed for use with kitchen exhaust vapors. Rated at 4,470 CFM at 1.0" sp., 2.0 hp, 208/60/3. Fan must include a 22" wheel and not exceed 15.5 sones. Fan to include disconnect switch, tilting base, and grease catch trough.

SUPPLY FAN: Provide one (1) supply air fan of the centrifugal belt driven, side inlet type, rated at 3,576 cfm. at 1.5" sp., 2.0 hp. 208/60/3. Fan chosen must include a 15" wheel and not exceed 21.0 sones. Cabinet to be constructed of 18-gauge galvanized steel with painted enamel exterior finish. Blower inside case to be heavy gauge, rigid steel die stamped housing. Blower to be mounted for downblast discharge, Preslok wheel to have sealed sleeve bearings. Drive sheave and motor base plate to be adjustable. Motor to be open drip proof with ball bearings. Motor plate and bearings to be mounted on vibration isolators. Factory wired three phase disconnect switch in unit cabinet to be included. Provide motor starters for exhaust and supply fans in supply fan cabinet. Outside air intake shroud to

include four (4) washable aluminum outside air filters. Motorized backdraft damper to be mounted in unit make up air outlet. Damper to close when unit is turned off to prevent outside air infiltrating into building.

DIRECT FIRED GAS FURNACE: Provide (1) furnace to be direct fired, gas type, provided as a modular attachment to the supply fan, rated at 264,250 BTUH. Unit set for 7" WC minimum pressure at rated flow, 14" WC maximum, 1" gas supply connection. Burner box to be all galvanized steel material. Baffle plates to be installed in burner box to provide proper air flow across burner for ordered CFM. Control box to be all galvanized steel material. Cabinet door to be lift out type for easy access to controls. Burner to have cast iron supports and stainless steel perforated air foils. 30 to 1 turndown ratio for optimum energy efficiency. Spark ignition to be on all control systems. Controls include 50 to 90 degrees operating range. System to be ETL Listed per ANSI 283.4-1999 and 283.4a-2001 standards. All components are to be factory mounted in the furnace. Control voltage to be 115/60/1. Burner control to be electronic control system. Controls on-off so that standing pilot is not required. Wiring harness is included to provide control voltage from supply fan to furnace.

ROOF CURBS: Provide (2) roof curbs consistent with other curbs furnished for this project. Curb material to be 18 gauge, all welded galvanized construction. Curbs to be internally insulated with rigid fiberglass with foil backing. Provide (1) equipment support rail, to be same construction and material as curb with adjustable cap for leveling in the field.

HOOD: Provide wall mounted, Type I canopy exhaust hood, sized at 18'-6" long x 5'-0" wide x 24" high. Hood to be fabricated in two (2) sections. Factory to provide all fasteners required for assembly in the field. Hood body to be constructed of 18-gauge, type 304 stainless steel. U.L. Listed construction without exhaust dampers. Grease filter frames to be stainless steel. Integral bottom grease filter frame forms a pitched drip guard draining to a stainless steel drip pan. Provide (10) 25"x20"x2" UL Classified, stainless steel grease filters with stainless steel blank-off panels, as required. Hood lights: provide (4) 48" UL listed, recessed LED fixtures, constructed for use in grease laden environments. Factory to wire fixtures junction box on top of the hood. Provide (1) 9" wide rear spacer, constructed of same material as hood body, to facilitate passage of E.D.S. system utilities from below. Provide 3" high bulkhead between top of hood and ceiling on all exposed sides, constructed of same material as hood body.

FIRE PROTECTION SYSTEM: Provide one (1) U.L. 300 Listed, liquid agent type. System to provide hood, duct, plenum and required surface protection. Exposed piping to be chrome sleeved or stainless steel. Fire system to be mounted in cabinet on end of hood as shown on drawing. Provide (1) dual micro switch with system.

SYSTEM ACTUATION CONTROL and APPLIANCE INTERLOCK: Hood to include an "Auto-Start" control system as required by the International Mechanical Code, as adopted by state and local agencies. Control to monitor the differential between room ambient and hood interface temperature, activating the hood system fans if the temperature should exceed a preset limit. Hood system will turn off 30 minutes after hood temperature has cooled below the preset limit. Solid state control to monitor up to eight hood locations with all set point and time during adjustment made at a single point.

INSTALLATION: By this contractor to include hanging hoods, setting exhaust fan and supply fan/furnace on building roof, locate roof curbs, and equipment rail on shop drawings to be provided, fabricating and installing connecting ducts, fabricating and installing make up air plenum. Exhaust duct to be 16-gauge steel material. All seams to have continuous liquid-tight external welds. Provide clean-outs at every 10'-0" or at any change of direction for grease exhaust ducts. Make up air duct to be 24-gauge steel, and fabricated per SMACNA low pressure standards. Provide make up air plenums at ceiling for supply air, constructed of white clad steel. Provide stainless steel perforated face diffuser.

WORK BY OTHER TRADES:

NOTE: Control switches for hood lights, and exhaust/supply fans to be mounted on Energy Distribution System. Switches to be provided by E.D.S. manufacturer (See E.D.S. Drawings). Gas valve for fire protection system to be provided and installed by E.D.S. manufacturer.

KITCHEN EQUIPMENT CONTRACTOR: To coordinate with General, Electrical, HVAC and Plumbing contracts.

ROOFING CONTRACTOR: Provide roof deck openings as required. Set in place and flash (with cant if required) roof curbs and equipment support rail provided by the hood system manufacturer

STRUCTURAL CONTRACTOR: Frame roof openings as required. Cutout and frame wall and deck openings as required. Coordinate joist or structural member installation to provide required clearances for ductwork and rated assemblies.

ELECTRICAL CONTRACTOR: (Hood System Requirements) Provide 120/60/1 20-amp circuit, for hood lights and controls to junction box on top of hood. Provide 3 phase circuit (for fan motors) to disconnect switch mounted on exterior of supply fan cabinet. Extend power wiring from motor starter panel (mounted on exterior of supply fan) to connection point on exhaust fan. Provide conduit and four wires from switches mounted on face of E.D.S. system to terminal block on supply fan motor starter panel. This work must be in accordance with the N.E.C.

ELECTRICAL CONTRACTOR: (Fire Protection System Requirements) Provide conduit and three wires to micro-switch of fire protection system. Interlock wiring of the supply fans motor control device through the fire system micro switch, shutting off supply air in the event of fire system actuation. Furnish and install a 4" octagon box for the fire system pull station, mounting the centerline of the box at 48" above the finished floor. Run 1/2" only conduit (with no bends) from the top of the box to 6" above the ceiling. If installed in a wall the area around the 1/2" conduit should be notched or set back to allow the pulley elbow fitting for the pull station to be installed. Connections for the fire system wiring must be made in a junction box on the outside of the fire system cabinet. Furnish and install automatic power shut off devices (shunt trip breakers, or definite purpose contactors) with interlock to fire system micro switch, shutting off all power below the hood (including control voltage) in the event of fire system actuation. This work must be in accordance with N.F.P.A. 17A, and the N.E.C.

MECHANICAL CONTRACTOR: Provide net room air demand as indicated on the hood system drawings. This air volume is required only when hood system is in operation. Provide normal heating and cooling of the kitchen area. Install fire protection system gas valve (provided with E.D.S. system) in the main supply line serving the cooking equipment to shut off gas service to the cooking equipment in the event of fire system actuation. Provide and install gas service to furnace, regulated between 7" and 14" WC, on building roof.

Hood manufacturer shall file for all state and local permits.

Specific product names used in this specification are based on primary manufacturer's assembly of their system, but in no way restricts the alternate manufacturers from using other suppliers with equal components for construction of their systems.

MANUFACTURER & MODEL: MASTER AIR

HALTON and AVTEC will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 11 ENERGY DISTRIBUTION SYSTEM -- ONE (1) REQUIRED.

Provide energy distribution and management system, which shall be island mounted, pre-wired and pre-plumbed to one final connection point for electric, gas, and hot and cold water service to support the equipment items as shown on drawing. Additional connections shall be required of respective trades for connection of hood and fire suppression system components.

Compliance:

System to be Underwriters' Laboratories (U. L.) listed energy distribution system as a complete system manufactured according to the latest edition of NEC, NFPA Pamphlet No. 96 and No. 54, ANSI, ASME, Uniform Plumbing Code, NEMA, and OSHA, using only U. L. tested, Bureau of Mines rated, I. A. P. M. O. and A. G. A. certified components. System will meet N. S. F. standards and local building codes.

Construction:

The EDS System will be 18'-6" long x 9" wide, completely modular with riser and pedestal sections. End caps and exterior panels will be constructed of 16-gauge type 304 stainless steel #4 finish, and all removable riser and pedestal panels will be constructed of 18-gauge stainless steel. The pedestal will be secured to the floor with unexposed stainless steel angle interior reinforcing flanges. The plumbing compartment will be isolated and weatherproof sealed from the electrical compartment by a 16-gauge stainless steel divider. Doors and field joints will be fully sealed or gasketed, all electrical compartments will be NEMA type 4 or NEMA type 12 enclosures, and all receptacles, switches, and circuit breakers will be provided with a weatherproof cover compatible with and covering the accessible portion of the receptacle face, switch actuator, and circuit breaker actuator.

Provide and install Hydro Life 3002-5N water filter. Unit to be hard connected to equipment by K. E. C. at time of EDS installation. P. C. to make final connections to water source and interconnect equipment water supply line. K. E. C. is responsible for making sure P. C. connects system to equipment line only.

Provide and install water filter system sized to service all steam cooking equipment. Unit to be hard connected at factory to feed filtered water line within EDS. Along with components shipped with base system, furnish (2) additional pre-filter cartridges and (4) multi-purpose media cartridges. Kitchen Equipment Contractor to make final connection from filtered water line to each piece of steam equipment with quick disconnect water hoses provided by the UDS Manufacturer.

Wall mounted system will be provided with neoprene bumper strips and a 6" sloped top.

Electrical:

Main electrical feeders in system will be four conductor solid copper bus bars having balanced loads and phases with branch circuit locations directly behind each connection plate. Bus bars will be of capacity for a full load the entire length of system, mounted on non-conductive insulators spaced 14" to 24" centers, provided with solid copper connection lugs for main service and system equipment ground. Field joints will be connected by securing bolts in each bus bar through pre drilled holes. Branch circuit wiring for each electrical connection will be phase identified and sized according to the circuit breaker rated ampacity.

Safety and Control:

Provide a Caddy 16-gauge stainless steel gasketed connection plate for each electrical connection, equipped with a point-of-use circuit breaker with knob-type watertight actuator and dual-color (green-on, red-off) 24 volt LED type status indicator lights. On each connection plate furnish a U. L. tested adjustable trip, 24 volt power sensitive ground fault sensor and relay, which can be adjusted by maintenance personnel to eliminate any nuisance tripping should it ever occur. Regardless of voltage, amperage or phase, the equipment connected to the system that might develop an internal current leakage to ground or power supply, not detectable by the circuit breaker, will be automatically disconnected from its power source without affecting the operation of any other connected equipment. A ground fault test button will be provided on each plate to check for proper operation of this device. Connection plate will be individually grounded to system main frame and will be equipped with a grounding type receptacle having a specific NEMA polarized configuration. Each connection plate assembly will bear the U. L. label as having met Underwriters' Laboratories branch circuit requirements for voltages up to and including 480 volts.

Provide fire fuel shut off for individual pieces of equipment per NFPA No. 96. Shut off system will be pre-wired in the system, needing only on final connection by electrical contractor from the 120 volt power source in fire extinguishing system relay or micro switch. Manufacturer to provide manual resets for each individual electric connection, using no external contactors, relays or shunt trips.

Plates will be spaced on 12" centers and have a quick connect and quick disconnect means of separating each ground fault device, fire fuel shut off and all control wiring from the system to simplify changing of connection plates for future additions, deletions or changes of equipment. Provide U. L. tested matching special purpose power supply cord and twist-lock plug set for each connection plate; 125 volt and 250 volt cord sets more than 60 amps and all 480 volt cord sets will be shielded and non arcing type. All cords will be supplied with strain relief grips at the equipment connecting end.

Provide a recessed control panel mounted in an end cap of if island mounted system of which will include equipment status indicator lights numerically coded to indicator lights on each connection plate to show "power".

The control panel will also house the following controls: a ventilator light switch with a circuit breaker; and an exhaust fan breaker.

Provide a system disconnect switch that will shut down the electrical power to all the equipment on line without the need for getting to the main circuit breaker panel that is remote from the system.

No live electrical parts or wiring in panels will be accessible unless panels are removed requiring the use of security keys or tools. Permanently lettered metallic labels showing operational procedures and markings according to Underwriters' Laboratories, will be furnished as part of this system.

EDS manufacturer will install a connection plate provided by the hood manufacturer for the control of the hood lights, exhaust fan and make up air unit heat. Connection plate will contain three switches and be appropriately sized to the EDS manufacturer's design. The hood light switch will be powered by a breaker in the EDS and be wired by the EDS manufacturer to this breaker. The UDS manufacturer will provide flexible conduit with wire to be connected to the light junction box on top of the hood. Final hook up of this conduit, along with any miscellaneous material will be by the electrical contractor. Exhaust fan switch and make up air unit heat switch will be wired in the field by the electrical contractor per the drawings provided by the hood manufacturer.

Plumbing:

Provide direct reading combination pressure temperature gauges for incoming services for hot and cold water. Provide quarter turn ball type shut off valves for water main incoming services. To permit easy cleaning a non combustible, glass smooth, color coded plastic coating is to be applied to each water hose supplied with the system. All piping and disconnects will be color coded.

Hot and cold water piping will be hard temper type "1" copper tubing with copper sweat type solder fittings, wrapped with 1/8" thermal closed cell pipe insulation. Each branch outlet will be furnished with a safe tested, fully adjustable connector assembly consisting of a stainless steel braided restraining chain, complete with a solid brass two way quick disconnect device for instant removal.

Submittal Requirements:

At the time of submittal, to receive approval, the manufacturer must supply a copy of their U. L. test Report and U. L. listing Card to show compliance with the electric and plumbing services as required in this project, besides U. L. Cards for Ground Fault Sensing and Relaying Equipment, Panelboard Accessories (connection plate assembly), and Cord Sets and Power Supply Cords.

The manufacturer must submit samples, drawings and diagrams of the following system assemblies for evaluation and approval before the equipment contractor preparing his submittal: U. L. tested interchangeable connection plate assembly complete with circuit breaker and knob type watertight actuator, adjustable trip 24 volt ground fault sensor and relay, 24 volt fire fuel shut off mechanism, NEMA configuration outlet, 24 volt dual colored LED status indicator light and test button.

Provide twist lock plugs on all electric Combi Ovens with long enough cords for servicing.

Specific product names used in this specification are based on primary manufacturer's assembly of their system, but in no way restricts the alternate manufacturers from using other suppliers with equal components for construction of their systems.

MANUFACTURER AND MODEL: CADDY CW-WL-EGW-019

HALTON, AVTEC, and CAPTIVE AIRE will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 12 6-BURNER RANGE W/ GRIDDLE & OVENS -- ONE (1) EXISTING.

Existing, supplied by owner. K.E.C. to relocate as shown on Food Service Equipment Floor Plan drawing.
S/N: 481872292

B.T.U.: 278,000

MANUFACTURER & MODEL: VULCAN 60SS-6B-24G-N

ITEM 13 CONVECTION OVEN – DBL. STACK -- ONE (1) EXISTING.

Existing, supplied by owner. K.E.C. to relocate as shown on Food Service Equipment Floor Plan drawing.

S/N: N/A

B.T.U.: 100,000

MANUFACTURER & MODEL: VULCAN VC44GD

ITEM 14 COMBI OVEN – DBL. STACK -- ONE (1) REQUIRED.

Provide double stacked tabletop models, natural gas CombiMaster PLUS on casters. Ovens to have 304 stainless steel interior and exterior, and include: right-hinged door with rear-ventilated double-glass, door drip pan with automatic drain-off, plug-in type door gasket, magnetic door switch with automatic shut-off when opened and restart when closed, seamless hygienic cooking cabinet with coved corners and splash guard, halogen illuminated cooking cabinet, Care Control system with automatic cleaning and descaling of steam generator, 7 cleaning stages for unsupervised overnight cleaning and care, reversing programmable 5 speed fan, integral fan impeller brake, safety temperature limiter, high-performance fresh steam generator, automatic active rinsing and drainage of steam generator by pump, CombiMaster PLUS control panel, individual programming of 100 cooking programs with up to 6 steps each, diagnostic system with automatic service notices, mode and alarm displays, HACCP data output and software update via integral USB Interface, manual cleaning program, integral maintenance free grease extraction system, cool down system, automatic adaptation to the installation location (elevation, climate, etc), swiveling service door for service and monitoring, retractable hand shower with automatic rewind, separate solenoid valves for fresh or soft water, menu-guided descaling program, demand related power supply by means of modulating, low-noise high-performance blower burner system, and integral core temperature probe. Oven to be microprocessor controlled. 105,000 BTU 208/60/1 each oven

CombiMaster PLUS control panel to include: power on/off dial with pictograms for operation modes, cool down control, programming/program start button, humidity setting controls, LED illuminated clear display with dial for cooking cabinet temperature setting, fan speed control, LED illuminated clear display with dial and buttons to set and view cooking time (selection 0-24 hours with continuous run settings) and core temperature.

Provide with the following options: automatic drain cool down kit (cool down kit must be able to cool drain water down to a minimum of 140°), Combi-Duo stacking kit with four (4) heavy duty casters (two (2) with brakes). two (2) installation kits, container of 56.00.210A oven cleaner tablets, container of 56.00.562 care tablets, and certified Rational install.

E.D.S. manufacturer to provide steam equipment manufacturer approved water filter, filtered water line, and filtered water connections.

K.E.C. to set combi in place as shown on drawing and provide copper drain line to floor sink per manufacturer's specifications.

MANUFACTURER & MODEL: RATIONAL CM P 62G on CM P 62G

CONVOTHERM and HENNY PENNY will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 15 COMBI OVEN – ROLL-IN -- ONE (1) REQUIRED.

Provide roll-in model, natural gas CombiMaster PLUS on legs with adjustable feet. Oven to have 304 stainless steel interior and exterior, and include: right-hinged door with rear-ventilated double-glass, plug-in type door gasket, integral sealing mechanism for cooking cabinet, magnetic door switch with automatic shut-off when opened and

restart when closed, seamless hygienic cooking cabinet with coved corners and splash guard, halogen illuminated cooking cabinet, Care Control system with automatic cleaning and descaling of steam generator, 7 cleaning stages for unsupervised overnight cleaning and care, reversing programmable 5 speed fan, integral fan impeller brake, safety temperature limiter, high-performance fresh steam generator, automatic active rinsing and drainage of steam generator by pump, CombiMaster PLUS control panel, individual programming of 100 cooking programs with up to 6 steps each, diagnostic system with automatic service notices, mode and alarm displays, HACCP data output and software update via integral USB Interface, manual cleaning program, integral maintenance free grease extraction system, cool down system, automatic adaptation to the installation location (elevation, climate, etc), swiveling service door for service and monitoring, retractable hand shower with automatic rewind, separate solenoid valves for fresh or soft water, menu-guided descaling program, demand related power supply by means of modulating, low-noise high-performance blower burner system, integral core temperature probe, mobile oven rack with tandem casters, and handle mount for mobile oven rack. Oven to be microprocessor controlled. 336,000 BTU 208/60/1

CombiMaster PLUS control panel to include: power on/off dial with pictograms for operation modes, cool down control, programming/program start button, humidity setting controls, LED illuminated clear display with dial for cooking cabinet temperature setting, fan speed control, LED illuminated clear display with dial and buttons to set and view cooking time (selection 0-24 hours with continuous run settings) and core temperature.

Provide with the following options: one (1) extra mobile oven rack, forty-eight (48) 12" x 20" CombiFry baskets, automatic drain cool down kit (cool down kit must be able to cool drain water down to a minimum of 140°), certified Rational install, container of 56.00.210A oven cleaner tablets, container of 56.00.562 care tablets, and one (1) installation kit.

E.D.S. manufacturer to provide steam equipment manufacturer approved water filter, filtered water line, and filtered water connections.

K.E.C. to set combi in place as shown on drawing and provide copper drain line to floor sink per manufacturer's specifications.

MANUFACTURER & MODEL: RATIONAL CM P 202G

CONVOTHERM and HENNY PENNY will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 16 FLOOR TROUGH -- ONE (1) REQUIRED.

Provide floor trough 36" x 12" x 4" deep constructed of 14-gauge stainless steel type 304, completely welded and coved. All welds are to be ground and polished smooth. The four top edges are to be 1" wide and formed down 1" on the outside, integrally formed 1" wide x 1" deep interior ledges on long sides to support drain trough grate. The bottom is pitched to a central cup style waste drain fitted with removable stainless steel scrap basket. Drain pipe to be 4" outside diameter. Stainless steel tabs are to be included for securing the trough to the floor.

Furnish with three (3) equal length sections of subway style all welded grate constructed of 3/16" x 1" stainless steel bars set in a vertical position. Three 1/2" stainless steel rod supports, two (2) set in 3" from each edge, one (1) centered, shall pass through holes in the treads. Treads are then welded to the rods on 11/16" centers.

Top of floor trough to be mounted flush with finished floor (No Exceptions). If a dispute arises with the installing plumber or the local Plumbing Inspector over the level at which the floor trough is installed, the Kitchen Equipment Contractor is required to notify the Design Team. Kitchen Equipment Contractor to deliver floor trough to Plumbing Contractor for installation. Kitchen Equipment Contractor to furnish Plumbing Contractor with necessary documentation and supervision for proper installation of this piece of equipment.

All floor troughs shall be of the same manufacturer.

MANUFACTURER & MODEL: IMC TEDDY FT-1236

MADE-TO-DRAIN, GATES, and CUSTOM (must use same Manufacturer as chosen for rest of this project) will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 17 OPEN NUMBER.

ITEM 18 BUN PAN RACK -- THREE (3) EXISTING.

Existing, supplied by owner. K.E.C. to relocate as shown on Food Service Equipment Floor Plan drawing.

ITEM 19 WALK-IN COOLER/FREEZER – ONE (1) REQUIRED.

Provide combination walk-in cooler/freezer without floor as shown on drawings. Over-all dimension of 19'-0" long by 17'-0" wide by 8'-2 5/8" high. Cooler interior to be 8'-0" long by 16'-4" wide. Freezer interior to be 10'-0" long by 16'-4" wide. Nominal dimensions will not be accepted.

Ceiling, walls, and door panels to be 4" thick foamed-in-place urethane with a metal finish. Edges of panels to be foamed-in-place "Tongue and Groove" with cam locking assemblies foamed-in-place at time of panel fabrication. Bottom of wall panels to have female bottom rail that fits over sealer guide. Sealer guide to be fastened to wood vertical conduction barriers. Interior ceiling, and wall panels, to be white .040-gauge embossed mill finish aluminum. Exterior wall panels not exposed to kitchen to be 26-gauge embossed galvanized steel with aluminum coating. Exterior of ceiling panels to be 26-gauge smooth galvanized steel. Exterior walls exposed to kitchen to be 22-gauge smooth stainless steel with matching trim strips installed at walls, and matching closure panels at ceiling. Enclosure panels at ceiling, to provide access to walk-in roof for servicing, should be removable without the use of tools. Panel fire ratings must conform to State and Local codes. Upon request, walk-in manufacturer shall provide documentation and engineering for these issues.

Provide ceiling panel support system as recommended by manufacturer.

Provide on exterior wall as shown on Food Service Equipment Floor Plan one (1) stainless steel bumper channel to protect wall panels from carts.

Entry doors to be flush mount design in 48" wide panels with 36" x 78" high opening. Panel sections interior and exterior to have 22-gauge smooth stainless-steel finish. Door interiors and exteriors to have 18-gauge smooth stainless-steel finish. Doors to include heated fully coved doorjamb constructed of extruded structural anodized aluminum, heated threshold constructed of extruded aluminum, magnetic perimeter gasket, double sweep gasket, three cam lift hinges (one with spring assist), door closer, handle with inside release that includes deadbolt lock that locks with a key and/or padlock,, 14" x 24" tempered three pane glass observation window with heated frames and heated glass, door open sensor, Clear vinyl strip curtain doors. If curtain is shipped loose the walk-in manufacturer must pre-drill holes in door frame for curtain hanger brackets. Secure door thresholds to floor with stainless steel screws and caulk perimeter.

Door open sensors to be foamed into door jambs. Do not mount externally. K.E.C. is to wire sensor to Enviro-Control. Wiring to be routed from door frame across exterior of ceiling.

Provide on exterior of each compartment's door frame panel a flush mounted LED display thermometer with illuminated on/off light switch with battery back-up, and a factory flush mounted audible alarm wired by K.E.C. from Enviro Controllers. Interior of door frame panel to have a vapor proof all temperature LED light centered over door, passive infrared sensor that detects motion and turns lights on. Motion detector to include timer that is capable of being set in the field with a range of 15 seconds to 30 minutes to shut lights off when no motion is detected in the walk-in compartment after set amount of time.

Provide on walk-in box roof at front of walk-in (1) total telephone dialer. K.E.C. to wire to Enviro Controllers.

Provide each compartment with air pressure relief ports. Freezer relief port to be heated.

Provide each compartment with additional LED vapor proof ceiling light fixtures with all temperature bulbs and globes located over aisle and in such a quantity, and manner as to provide no less than 20 foot candles average of light when measured 40" above floor. Tube style light fixtures to be oriented perpendicular to low profile unit cooler. Lights to be controlled with same switch as door light. Conduit for all lights to be on exterior of ceiling.

In 10" recess provided by General Contractor, provide 15 mil. polyethylene sheet vapor retarder, two layers of 3" slab urethane, and a minimum of (2) 1 ½" wooden vertical conduction barriers as shown on detailed drawings in bid documents. **Vertical conduction barriers must be anchored to floor with ¾" x 3"x 3" steel angle brackets at 6'-0" O.C. See 'Walk-In Floor Detail' on floor plans.**

Walls to be erected in a manner to prevent lateral movement.

If finished floors are to be quarry tile; then panels should be erected to sit flush on concrete floor and anchored to thermal break with stainless steel screws prior to installation of tile.

Complete refrigeration systems, as specified hereafter shall be supplied as part of this contract. If an alternate manufacturer listed below is used, it is that manufacturer's responsibility to size the refrigeration systems according to standards they deem appropriate for proper operation of this size walk-in in this application. Changes in style of compressors will not be accepted. Any costs associated with changes in compressor sizes will be the responsibility of the K.E.C.

The pit insulation & erection of walk-in panels must be performed or supervised by the manufacturer. Refrigeration to be done by K.E.C.

MANUFACTURER & MODEL: NORLAKE

THERMO KOOL and CHRYSLER KOPPIN will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 19A & 19B REFRIGERATION SYSTEM - COOLER -- ONE (1) REQUIRED.

Provide rack mounted pre-assembled remote, air cooled, R-449 refrigerant, scroll condensing unit with a minimum system available capacity of no less than 5,710 BTU's per hour at 100°F ambient on welded steel frame. Size for 35°F operation. Include frame mounted factory pre-wired control box, starter, crank case heater, pump down receiver tank, weather hood, and all other components necessary for proper operation. See drawings for location of condensing unit. Inter-wire unit cooler to condensing unit circuit. 208/60/1

Provide as part of this system a Low-Profile Unit Cooler sized for proper operation with this application. Unit Cooler is to be installed per manufacturer specification and be provided with thermostat, solenoid, fan blade guards, aluminum housing, and all controls required for proper operation. Unit cooler to include manufacturer installed option Enviro-Control (or equal) electronic evaporator controller system with female CAT5 RJ45 ethernet port. 208/60/1

Supply and Install 3/4" copper condensation drain piping with "P" traps at exterior of box. Run piping from coil along wall to drain as shown on drawings. Drain piping should be held out 1" from walls and exit cooler approximately 11" above floor. PVC will not be accepted.

Refrigeration Lines must be type "ACR" hard copper tubing brazed with silver solder at all joints. Copper tubing must be nitrogen charged to prevent oxidation and scale formation. Include liquid line dehydrator and sight glass with moisture indicator at compressor end of line. Lines are to be purged, charged, tested, and insulated in accordance with state and local codes. On lines at exterior of building Insulation must be UV resistant and wrapped with reflective foil tape. Fees for any required inspections or test are to be part of this contract.

K.E.C. to supply to Roofing Contractor for installation, 18-gauge galvanized steel equipment support rails for compressor, insulated heavy gauge galvanized steel pipe curb assembly with integral base plate and all components to make a weather tight roof penetration for piping and control line. Equipment support rail lengths to be based on

Walk-in Manufacturer's compressor size. Before ordering Equipment Support Rails, K.E.C. to coordinate required height with roofing contractor. Support rail height to be 12" above finished roof. Rails to be equal to Pate ES-2 style. Coordinate with roofing contractor type of roof before ordering pipe curb.

Refrigeration shall be purchased from the same manufacturer as walk-in cooler/freezer.

Upon request, a Pressure Piping Permit must be provided, if required.

MANUFACTURER & MODEL: NORLAKE NEASJ75RL4-#BYHP "UL listed outdoor condensing unit with UL listed unit cooler".

THERMO KOOL and CHRYSLER KOPPIN will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 19C & 19D REFRIGERATION SYSTEM - FREEZER - ONE (1) REQUIRED.

Provide rack mounted pre-assembled remote, air cooled, type R-449A refrigerant, scroll condensing unit with a minimum system available capacity of no less than 7,870 BTU's per hour at 100°F ambient on welded steel rack. Size for -10°F operation. Include frame mounted factory pre-wired control box, starter, crank case heater, weather hood and all other components necessary for proper operation. See drawings for location of condensing unit. Inter-wire unit cooler to condensing unit circuit. 208/60/3

Provide as part of this system a Low-Profile Unit Cooler sized for proper operation with this application. Unit Cooler is to installed per manufacturers specification and be provided with electric defrost, drain pan heater, fan delay thermostat, thermostat, solenoid, heater tape for condensate drain line, fan blade guards, aluminum housing, and all controls required for proper operation. Unit cooler to include manufacturer installed option Enviro-Control (or equal) electronic evaporator controller system with female CAT5 RJ45 ethernet port. 208/60/1

Supply and Install 3/4" copper condensation drain piping with "P" traps at exterior of box. Run piping from coil along wall to drain as shown on drawings. Drain piping should be held out 1" from walls. Where freezer line manifolds to cooler condensate line, install trap just before manifold. PVC will not be accepted.

If freezer line does not manifold to cooler condensate line, install condensate "P" trap at exterior of box. Run line from coil along wall to drain as shown on drawings. Drain line should be held out 1" from walls and exit cooler approximately 11" above floor.

Refrigeration Lines must be type "ACR" hard copper tubing brazed with silver solder at all joints. Copper tubing must be nitrogen charged to prevent oxidation and scale formation. Include liquid line dehydrator and sight glass with moisture indicator at compressor end of line. Lines are to be purged, charged, tested, and insulated in accordance with state and local codes. On lines at exterior of building Insulation must be UV resistant and wrapped with reflective foil tape. Fees for any required inspections or test are to be part of this contract.

K.E.C. to supply to Roofing Contractor for installation, 18-gauge galvanized steel equipment support rails for compressor, insulated heavy gauge galvanized steel pipe curb assembly with integral base plate and all components to make a weather tight piping and control line roof penetration. Equipment support rail lengths to be based on Walk-in Manufacturer's compressor size. Before ordering Equipment Support Rails, K.E.C. to coordinate required height with roofing contractor. Support rail height to be 12" above finished roof. Rails to be equal to Pate ES-2 style. Coordinate with roofing contractor type of roof before ordering pipe curb.

Refrigeration shall be purchased from the same manufacturer as walk-in cooler/freezer.

Upon request, a Pressure Piping Permit must be provided, if required.

MANUFACTURER & MODEL: NORLAKE FASJ125RL-3 "UL listed outdoor condensing unit with UL listed unit freezer".

THERMO KOOL and CHRYSLER KOPPIN will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 20 SHELVING - COOLER/FREEZER -- ONE (1 LOT) REQUIRED.

Provide four tier standard antimicrobial polymer, open grid, shelving on 86" polymer posts with 5" casters and bumpers (2-with brakes at long side of shelving unit). Size per Food Service Equipment Floor Plan drawing. Bottom shelf to be 12" off floor.

Shelving to be of the same manufacturer as items 3 and 8.

MANUFACTURER & MODEL: METRO METROMAX Q

EAGLE and AMCO will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 21 DUNNAGE RACK – COOLER/FREEZER -- TWO (2) REQUIRED.

Provide heavy duty dunnage rack constructed of type 6063-T5 extruded aluminum tubing 1-1/2" x 1-3/4" x .070 wall, with all joints heli-arc welded, and feet completely sealed. 2,000 Lb. minimum weight capacity. Platform level to be 12" above floor. See Food Service Equipment Floor Plan drawing for sizes and locations.

Dunnage racks to be of the same manufacturer as item 1.

MANUFACTURER & MODEL: NEW AGE

KELMAX, WINHOLT, and CHANNEL will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 22 MILK CRATE DOLLY -- TWO (2) REQUIRED.

Provide a one-piece seamless milk crate dolly with double wall construction and shall have foamed-in-place high density polyethylene. Dolly shall have rounded corners and 3" diameter casters. Color to be Coffee Beige.

MANUFACTURER & MODEL: CAMBRO CD 1327

NEW AGE and CHANNEL will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 23 OPEN NUMBER.

ITEM 24 WORK TABLE W/SINK -- ONE (1) REQUIRED.

Provide custom 9'-0" long x 30" wide 14-gauge stainless steel table with 34" working height, rigidly reinforced top, sound deaden, stainless steel channel underbracing, stainless steel gussets, stainless steel legs with adjustable stainless steel bullet feet - two outside rear feet to be flanged, 16-gauge fully welded stainless steel under shelf, two (2) 20" x 20" stainless steel drawer assemblies with fully enclosed stainless steel drawer housing, vinyl insert, cylinder locks with all locks keyed the same as other tables, and welded stainless steel cross bracing under sink area.

In top, as shown on drawings, provide integral 16" x 20" x 10" deep cove cornered sink with bottom creased to crumb cup waste. Provide in deck a T&S B-0300-CR faucet with ceramic cartridges and B-0199-02 aerator.

See Food Service Equipment drawings for further details. Set in place as shown on drawings and secure flanged feet to floor with stainless steel screws.

MANUFACTURER & MODEL: CUSTOM FABRICATED

ITEM 25 WORK TABLE -- ONE (1) REQUIRED.

Provide custom 6'-6" long x 30" wide 14-gauge stainless steel table with 34" working height, rigidly reinforced top, sound deadened, galvanized channel underbracing, stainless steel gussets, stainless steel legs, 16-gauge fully welded stainless steel undershelf, two (2) 20" x 20" fully enclosed stainless steel drawer housings with vinyl inserts located as shown and cylinder locks keyed the same as other table drawers.

See drawings for dimensions and further details.

MANUFACTURER & MODEL: CUSTOM FABRICATED

ITEM 26 HOT WATER DISPENSER -- ONE (1) REQUIRED.

Provide counter top hot water dispenser which shall have a 12 gallon stainless steel tank with the capacity of dispensing 8 gallons of continuous hot water. Provide unit with the capability of dispensing 2, 3, or 4 quarts of hot water at a temperature ranging from 75°-200°F and shall have a manual dispensing button to allow for other water volume options. Unit shall be provided with electronic temperature controller, on-off switch, high temperature limit and a low water cut-off, and digital temperature read out. Water dispensing spout to be no more than 55" above finished floor. 208/60/1

Kitchen Equipment Contractor shall remove plastic legs and provide 4" high stainless steel or polished nickel legs with (2) adjustable flange feet installed diagonally.

Provide as part of this item: one (1) six-foot food safe rubber hot water drain hose, Rubbermaid FG321700 (2 quart) and FG321800 (4 quart) heat resistant polycarbonate pitcher. CAMBRO and CONTINENTAL will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

Set in place as shown on drawings and secure flange feet to table with stainless steel bolts and calibrate water flow to match preset dispensing buttons.

MANUFACTURER & MODEL: HATCO AWD-12

BUNN-O-MATIC H10X-80 and BLOOMFIELD will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 27 WORK TABLE -- ONE (1) REQUIRED.

Provide custom 2'-0" long x 30" wide 14-gauge stainless steel table with 34" working height (If Bunn Hot Water Dispenser is used table working height to be 22"), marine edge on front, ends and rear, rigidly reinforced top, sound deadened, galvanized channel underbracing, stainless steel gussets, stainless steel legs with adjustable stainless steel bullet feet - two feet to be flanged on diagonal corners and 16-gauge fully welded stainless steel undershelf.

Set in place as shown on drawings and secure flanged feet to floor with stainless steel bolts.

See drawings for dimensions and further details.

MANUFACTURER & MODEL: CUSTOM FABRICATED

ITEM 28 OPEN NUMBER.

ITEM 29 PREP SINK -- ONE (1) REQUIRED.

Provide custom 9'-0" long x 30" wide 14-gauge stainless steel table with 34" working height, marine edge at all worktop edges, knockouts in table top on 6" centers for vacuum breaker (supplied with garbage disposer), rigidly reinforced top, 20" x 20" fully enclosed stainless steel drawer housing with vinyl insert and cylinder lock keyed the same as other tables, stainless steel disposer control mounting bracket, sound deadening, stainless steel channel under bracing, stainless steel gussets, stainless steel legs with adjustable stainless steel bullet feet, (2) two stainless steel adjustable flanged feet on outside rear legs, welded stainless steel cross bracing under sink area, and 16-gauge stainless steel fully welded undershelves.

In top, as shown on drawings, provide two (2) integral 18" x 22" cove cornered sinks. Sink with disposer to be 10" deep. Other sink to be 12" deep with crumb cup waste. Both sinks to have bottoms creased to opening for waste.

In table top behind sink provide a 36" long x 4" wide x 4" high integral stainless steel riser. Provide riser with a 36" long x 4" wide chase to extend from top of riser to 4" above ceiling level. Chase is to be 18-gauge all welded stainless steel with removable rear access panel to allow for installation of faucet and necessary plumbing connections. Panel to be removable without the use of tools. Secure chase to riser with screws and secure a 2" stainless steel collar where chase extends through ceiling. Provide on chase a splash mounted T&S B-2278-01-CR-MOD pre-rinse with B-0970-FE vacuum breaker, ceramic cartridges, B-0230-K Splash Mount installation kit, B-CVV1-2 check valves, B-1420 squeeze valve w/quick connect socket, B-1421 quick connect spray and B-1428 quick connect fan jet spray heads, B-0044-H2A hose, 060X 8" swing nozzle and B-0199-01 aerator, and B-0109 wall bracket.

See drawings for further details.

Set in place as shown on drawings and secure to floor with stainless steel bolts.

MANUFACTURER & MODEL: CUSTOM FABRICATED

ITEM 30 DISPOSER -- ONE (1) REQUIRED.

Provide 1-1/4 hp adaptor mounted disposer with 6" reversible adjustable rotor/turntable, Series F sink assembly, splash guard, solenoid, flow control, sink stopper, and control panel with automatic reversing magnetic contactors, overload protection, alternator, automatic delay timer for motor and water run time, low voltage protection, emergency disconnect switch, and push button operation. 208/60/3

Furnish with the following option: T&S B-0456 (deck mount) vacuum breaker assembly.

K.E.C. to install disposer to sink adaptor, control panel on mounting brackets below drain board, and wire to solenoid and disposer.

All disposers must be from the same manufacturer.

MANUFACTURER & MODEL: MASTER F114-L-SK-RAC2

INSINGER and RED GOAT will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 31 WORK TABLE -- ONE (1) REQUIRED.

Provide custom 8'-3" long x 30" wide 14-gauge stainless steel table with 34" working height, rigidly reinforced top, sound deadened, galvanized channel underbracing, stainless steel gussets, stainless steel legs, 16-gauge fully welded stainless steel undershelf, two (2) 20" x 20" fully enclosed stainless steel drawer housings with vinyl inserts located as shown and cylinder locks keyed the same as other table drawers.

See drawings for dimensions and further details.

MANUFACTURER & MODEL: CUSTOM FABRICATED

ITEM 32 OPEN NUMBER.

ITEM 33 BAKER'S TABLE -- ONE (1) REQUIRED.

Provide custom 7'-0" long x 30" wide 14-gauge stainless steel top with 5" high double walled fully enclosed splash on rear, and both sides. Top to be 34" working height, and of integral construction, rigidly reinforced, stainless steel channel underbracing, and sound deadened.

Top to be secured at one end of table on an 18-gauge stainless steel enclosed cabinet with a tier of three (3) 20" x 20" drawers with 5" deep vinyl inserts. Cabinet to rest on four (4) 6" stainless steel legs with adjustable stainless steel bullet feet.

Balance of table to be mounted to welded open front stainless steel pipe base with one end of rear cross rail attached to cabinet base by use of stainless steel flange. Legs to be fitted with adjustable stainless steel bullet feet.

Over table, provide a 7'-0" long by 12" wide 16-gauge stainless steel shelf. Front to be turned down 1", and under 1/2". Rear, and ends to be turned up 2", then hemmed down 3", and under 1/2". Weld, and polish intersections. Mount on four 1" O.D. stainless steel legs secured to splash with expandable type mounting bolts.

Set in place as shown on drawings. See drawings for further details.

MANUFACTURER & MODEL: CUSTOM FABRICATED

ITEM 34 PASS-THRU REFRIGERATOR -- ONE (1) REQUIRED.

Provide two-section reach-in refrigerator with full length doors. Finish to be stainless steel interior and exterior. See drawing for door swing. Hinged front shroud condenser, V-Temp Controller to include an on/off switch, manual defrost, interior light switch, LED temperature indicator in °C or °F, a hi/lo audio/visual temperature alarm, power supply interruption, door ajar and "clean condenser" alarms. A manager's "lock-out" feature is provided to safeguard pre-determined control settings. A HACCP event indicator/memory feature announces and records up to nine (9) alarm events. Unit includes super cool down feature and the cabinet automatically reverts to the energy saving mode when there are no door openings for four hours. Provide unit with cord & plug. 115/60/1

Provide with the following options: Half size glass doors in lieu of full size solid doors on front and back, 5" diameter swivel casters (2 w/locking brakes), (18) sets Type "A/C" Universal Pan Slides per section, four (4) total shelves (18" x 26") for Type "A/C" Universal Pan Slides and two-year parts/labor warranty.

MANUFACTURER & MODEL: VICTORY RS-2D-S1-PT

TRAULSEN "R" SERIES and UTILITY will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 35 PASS-THRU HEAT & HOLD -- THREE (3) REQUIRED.

Provide pass-thru rethermalization oven with AquaTemp features. Unit to have solid state electronic control with digital readout and eighteen (18) programmable retherm and hold cycles. Each program must have capability to store time, temperature and humidity percentage. Unit to have the capability to cook at full power with six (6) blower fans or reduced power with four (4) blower fans. Cabinet to be 22-gauge stainless steel with 18-gauge stainless steel internal framework. Cabinet to have fully welded frame. Doors to be field reversible, 22-gauge stainless steel dutch doors with fully welded inner framework. Each door to have anti-microbial pull handle. Doors to be hinged as shown on drawing. Cooking compartment to be 22-gauge stainless steel, insulated and cove cornered for easy cleaning. Provide with eighteen (18) sets of stainless steel universal pan slides on 1-1/2" centers, capacity for thirty-six (36) 12 x 20 x 2-1/2" hotel pans or eighteen (18) full size sheet pans. Unit to be provided with 1-1/2"

cooking probe with probe cooking capability. Unit to have separate 2000 watt heater with separate humidity control. Unit to come standard with automatic fill system that can be used with or without incoming water line. Unit to have LED and water heater shut off when water level becomes critically low. Unit to have 2" of fiberglass insulation in sides and 1-½" in doors, top and base. Cooking range of 140°-350° F, holding range of 75°-250° F. Unit must be 12,000 watts. Oven to be mounted on 5" diameter swivel rubber casters (2 w/locking brakes). Place controls so they are facing the kitchen. 208/60/3

Provide with the following options: Half size glass doors in lieu of full size solid doors on front and back, 6" food temperature probe, perimeter bumper, 0840-068 cord and plug set with matching receptacle (cord set to exit top of cabinet), four-sided top shroud that matches adjacent refrigerator height, and extended 5 year parts warranty.

MANUFACTURER & MODEL: CRES COR RO-151-FPW-UA-18D-2083

ITEM 36 S/S TRIM – ONE (1 LOT) REQUIRED.

Provide u-shaped stainless steel trim caps to cover ends of walls, support column, and bottom of bulkhead. Also provide four (4) Stainless steel trim angles for wall corners at each side of bulkhead.

Trim caps and angles to be fabricated with 16-gauge type 304 stainless steel. The header trim cap, for the bulkhead, is to be sized so it can adjust up or down to provide a one-inch maximum gap between the bottom of the cap and the top of the refrigerator and heat & hold cabinets.

Caps and angles are to be secured to walls and bulkhead with stainless steel screws spaced every 12" on center.

Seal all seams, where stainless steel butts together, with metallic gray silicone caulk.

Seal all seams, where edge of caps meet building wall with clear silicone caulk.

See drawings for more details.

MANUFACTURER & MODEL: CUSTOM FABRICATOR

ITEM 37 HOSE REEL – 30 FT. -- ONE (1) REQUIRED.

Provide stainless steel enclosed wall mount hose reel with 30 Ft. of 3/8" I.D. heavy duty hose with adjustable hose bumper, 3/8" NPT female inlet, B-0107 spray valve, wall mount mixing faucet with 8" centers and control valve in riser, B-0963 vacuum breaker, HW-4B-48 (4 Ft.) connector hose, and retractable hose reel.

Furnish with the following options: ceramic cartridges, (2) B-CVV-½" vertical check valves, 004R finger hook, and #G019430-45 stainless steel swing mounting bracket.

Plumbing Contractor to mount mixing valve to wall per manufacturers' specification, then notify Kitchen Equipment Contractor that mixing valve is installed and ready for completion of hose reel assembly installation. Kitchen Equipment Contractor to install balance of piping to mixing valve and mount hose reel with parallel mounting bracket to wall using stainless steel bolts. See hose reel detail drawing of this item for installation details.

See detail drawing for center line of mixing valve and top point of hose reel mounting dimensions. If additional chrome piping is needed to place vacuum breaker at height as shown on drawing, then Kitchen Equipment Contractor shall provide additional length of piping.

K.E.C. to adjust hose stop so that nozzle height is to kitchen manager's preference.

Hose reel to be of the same manufacturer as all other faucets.

MANUFACTURER & MODEL: T&S B-1458-CR-MOD

CHICAGO FAUCET, FISHER, and SANIGUARD will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 38 MILK COOLER -- ONE (1) REQUIRED.

Provide single access, 49" milk cooler with stainless steel exterior and interior, reinforced stainless steel interior floor, heavy-duty epoxy coated steel wire floor rack, forced-air refrigeration system, exterior mounted digital thermometer, cylinder lock, interior bottom drain, and 4" swivel casters (2 with locks). Provide with one year parts and labor warranty. 115/60/1

Provide with the following options: wrap around bumper.

MANUFACTURER & MODEL: BEVERAGE-AIR SMF49-S

TRUE and TRAULSEN will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of specified Manufacturer.

ITEM 39 MILK COOLER -- ONE (1) REQUIRED.

Provide single access, 58" milk cooler with stainless steel exterior and interior, reinforced stainless steel interior floor, heavy-duty epoxy coated steel wire floor rack, forced-air refrigeration system, exterior mounted digital thermometer, cylinder lock, interior bottom drain, and 4" swivel casters (2 with locks). Provide with one year parts and labor warranty. 115/60/1

Provide with the following options: wrap around bumper.

MANUFACTURER & MODEL: BEVERAGE-AIR SMF58-S

TRUE and TRAULSEN will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of specified Manufacturer.

ITEM 40 HOT/COLD/FROZEN FOOD TABLE -- TWO (2) REQUIRED.

Provide four well, 66" hot/cold/freeze food table with 30" working height, individual drains that are manifold into a single drain, ball valve, solid "V" ridge tray slide on each side, double service buffet food protector, full length undershelf, hinged doors with louvered vents covering open base, line up locks, twist lock plug and matching receptacle, 5" diameter swivel casters (all w/locking brakes), two year service warranty and five year compressor warranty. **Tray slide height to be 28" AFF.**

Body to be a seamless molded fiberglass with smooth exterior surfaces, and rounded corners. Fiberglass to be flame retardant per specification ASTM E-162 having flame spread of 25 or less. On the interior of the body, provide 12-gauge galvanized channels extending from top, and running the full length of front, across the bottom, and up the full length of the back. Channels to be welded at the corners to form rigid structural framework supporting the fiberglass eliminating stress. On the outside bottom, provide 12-gauge stainless channels supporting the casters. Where possible, provide an intermediate shelf with the rear ends turned up, and secured to the interior liner. Provide removable louvers on front for ventilation.

Top to be 30" wide and fabricated from 14-gauge stainless steel with square turn down on all sides and corners fully welded, ground, and polished. Top to have #4 satin finish and all edges having a #7 mirror hi-lite finish.

Doors to be mounted on one side and shall be double pan construction with 18-gauge stainless steel interior liner and 20-gauge stainless steel exterior. All corners to be fully welded, ground, and polished. Doors to be vented, mounted with semi-concealed hinges, and fitted with hand pulls, positive catches, and cylinder locks.

Hot/cold/freeze food well to be dry/moist electric that can be switched over from hot to cold to frozen food temperatures. Wells to be 18-gauge stainless steel fully welded, ground, polished, and fully insulated with a 3/4"

open drain in each pan. Manifold individual drains into one extending to shut off ball valve below base. Wells are to be mounted from the bottom and have 12" x 20" opening with 1/4" raised beaded edge. Drop in wells will not be accepted. All wells to be centered on table top. Each well shall be provided with 500-watt heating element wired to a digital control panel for temperature control. When switched over to cold temperatures, wells will operate with compressor that will be hermetically sealed and R-507 refrigerant. 120/208/60/1

Food protector to be **double service buffet type for dual self-service operation**. Protector shall have a plexiglass sneeze guard along each long side with plexiglass end enclosures. Provide both sides of protector with plexiglass on pivot to hinge in 1" square stainless steel tube support brackets. A top cap shelf mounted over the edge of the guards shall be fabricated from a minimum of 16-gauge stainless steel with all sides turned down square and all corners fully welded, ground and polished. Unit to be secured on 1" stainless steel tubular supports. Shield to have adjustable height from 6" clearance to 12" clearance at 1" increments without the use of tools.

Food protectors for all tables to be by same manufacturer.

Solid tray slides to be 14-gauge stainless steel with three inverted "V" ridges on surface. Ends, and sides to be turned down square with all corners fully welded, ground, and polished. Support brackets to be stainless steel fold down type.

Line up locks to be barrel bolt and key slot design with cam locking action. Locks to be placed on opposing corners for maximum versatility.

In place of standard plug, manufacturer shall provide a twist lock plug with matching receptacle.

Verify fiberglass color with Architect before ordering. Architect to select color from Colorpoint, Formica, or Wilson Art standard solid color charts. All service line equipment to be of same color.

Set in place as shown on drawing and provide copper drain line from ball valve to floor drain.

MANUFACTURER & MODEL: COLORPOINT QSCHP-4-F

MULTITERIA USA and DUKE will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of specified Manufacturer.

ITEM 41 HOT/COLD/FROZEN FOOD TABLE -- ONE (1) REQUIRED.

Provide two well, 36" hot/cold/freezer food table with 30" working height, individual drains that are manifold into a single drain, ball valve, solid "V" ridge tray slide on each side, double service buffet food protector, full length undershelf, hinged doors with louvered vents covering open base, line up locks, twist lock plug and matching receptacle, 5" diameter swivel casters (all w/locking brakes), two year service warranty and five year compressor warranty. **Tray slide height to be 28" AFF.**

Body to be a seamless molded fiberglass with smooth exterior surfaces, and rounded corners. Fiberglass to be flame retardant per specification ASTM E-162 having flame spread of 25 or less. On the interior of the body, provide 12-gauge galvanized channels extending from top, and running the full length of front, across the bottom, and up the full length of the back. Channels to be welded at the corners to form rigid structural framework supporting the fiberglass eliminating stress. On the outside bottom, provide 12-gauge stainless channels supporting the casters. Where possible, provide an intermediate shelf with the rear ends turned up, and secured to the interior liner. Provide removable louvers on front for ventilation.

Top to be 30" wide and fabricated from 14-gauge stainless steel with square turn down on all sides and corners fully welded, ground, and polished. Top to have #4 satin finish and all edges having a #7 mirror hi-lite finish.

Doors to be mounted on one side and shall be double pan construction with 18-gauge stainless steel interior liner and 20-gauge stainless steel exterior. All corners to be fully welded, ground, and polished. Doors to be vented, mounted with semi-concealed hinges, and fitted with hand pulls, positive catches, and cylinder locks.

Hot/cold/freeze food well to be dry/moist electric that can be switched over from hot to cold to frozen food temperatures. Wells to be 18-gauge stainless steel fully welded, ground, polished, and fully insulated with a 3/4" open drain in each pan. Manifold individual drains into one extending to shut off ball valve below base. Wells are to be mounted from the bottom and have 12" x 20" opening with 1/4" raised beaded edge. Drop in wells will not be accepted. All wells to be centered on table top. Each well shall be provided with 500-watt heating element wired to a digital control panel for temperature control. When switched over to cold temperatures, wells will operate with compressor that will be hermetically sealed and R-507 refrigerant. 120/208/60/1

Food protector to be **double service buffet type for dual self-service operation**. Protector shall have a plexiglass sneeze guard along each long side with plexiglass end enclosures. Provide both sides of protector with plexiglass on pivot to hinge in 1" square stainless steel tube support brackets. A top cap shelf mounted over the edge of the guards shall be fabricated from a minimum of 16-gauge stainless steel with all sides turned down square and all corners fully welded, ground and polished. Unit to be secured on 1" stainless steel tubular supports. Shield to have adjustable height from 6" clearance to 12" clearance at 1" increments without the use of tools.

Food protectors for all tables to be by same manufacturer.

Solid tray slides to be 14-gauge stainless steel with three inverted "V" ridges on surface. Ends, and sides to be turned down square with all corners fully welded, ground, and polished. Support brackets to be stainless steel fold down type.

Line up locks to be barrel bolt and key slot design with cam locking action. Locks to be placed on opposing corners for maximum versatility.

In place of standard plug, manufacturer shall provide a twist lock plug with matching receptacle.

Verify fiberglass color with Architect before ordering. Architect to select color from Colorpoint, Formica, or Wilson Art standard solid color charts. All service line equipment to be of same color.

Set in place as shown on drawing and provide copper drain line from ball valve to floor drain.

MANUFACTURER & MODEL: COLORPOINT QSCHP-2-F

MULTITERIA USA and DUKE will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of specified Manufacturer.

ITEM 42. SOLID TOP TABLE -- ONE (1) REQUIRED.

Provide 50" long solid top table with 30" working height, solid "V" ridge tray slides on each side, double service buffet food protector, full length undershelf, hinged doors covering open base, line up locks, and 5" diameter swivel casters (all w/locking brakes). **Tray slide height to be 28" AFF.**

Body to be a seamless molded fiberglass with smooth exterior surfaces, and rounded corners. Fiberglass to be flame retardant per specification ASTM E-162 having flame spread of 25 or less. On the interior of the body, provide 12-gauge galvanized channels extending from top, and running the full length of front, across the bottom, and up the full length of the back. Channels to be welded at the corners to form rigid structural framework supporting the fiberglass eliminating stress. On the outside bottom, provide 12-gauge stainless channels supporting the casters. Where possible, provide open base understorage compartment lined with 18-gauge stainless steel and secure to liner a stainless steel intermediate shelf with the rear and ends turned up. Liner to have coved vertical and horizontal corners.

Top to be 30" wide and fabricated from 14-gauge stainless steel with square turn down on all sides, and corners fully welded, ground, and polished. Top to have #4 satin finish and all edges having a #7 mirror hi-lite finish.

Doors to be mounted on one side and shall be double pan construction with 18-gauge stainless steel interior liner and

20-gauge stainless steel exterior. All corners to be fully welded, ground, and polished. Doors to be mounted with semi-concealed hinges, and fitted with hand pulls, positive catches, and cylinder locks.

Food protector to be **double service buffet type for dual self-service operation**. Protector shall have a plexiglass sneeze guard along each long side with plexiglass end enclosures. Provide both sides of protector with plexiglass on pivot to hinge in 1" square stainless steel tube support brackets. A top cap shelf mounted over the edge of the guards shall be fabricated from a minimum of 16-gauge stainless steel with all sides turned down square and all corners fully welded, ground and polished. Unit to be secured on 1" stainless steel tubular supports. Shield to have adjustable height from 6" clearance to 12" clearance at 1" increments without the use of tools.

Solid tray slides to be 14-gauge stainless steel with three inverted "V" ridges on surface. Ends, and sides to be turned down square with all corners, fully welded, ground, and polished. Support brackets to be stainless steel fold down type.

Line up locks to be barrel bolt and key slot design with cam locking action. Locks to be placed on opposing corners for maximum versatility.

Verify fiberglass color with Architect before ordering. Architect to select color from Colorpoint, Formica, or Wilson Art standard solid color charts. All service line equipment to be of same color.

MANUFACTURER & MODEL: COLORPOINT 50-ST-F

MULTITERIA USA and DUKE will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of specified Manufacturer.

ITEM 43 CASHIER STATION -- ONE (1) REQUIRED.

Provide a 28" cashier stand with locking cash drawer, solid "V" ridge tray slide on each side, line up locks, 36" working height and 5" diameter swivel casters (all w/locking brakes). **Tray slide height to be 28" AFF.**

Body to be a seamless molded fiberglass with smooth exterior surfaces, and rounded corners. Fiberglass to be flame retardant per specification ASTM E-162 having flame spread of 25 or less. On the interior of the body, provide 12-gauge galvanized channels extending from top, and running the full length of front, across the bottom, and up the full length of the back. Channels to be welded at the corners to form rigid structural framework supporting the fiberglass eliminating stress. On the outside bottom, provide 12-gauge stainless channels supporting the casters.

Interior of cabinet where cashier sits to be lined with 18-gauge stainless steel with coved vertical and horizontal corners. A one-inch diameter 18-gauge stainless steel foot rest shall be secured to interior walls. Provide 14-gauge stainless steel removable, adjustable height, computer undershelf with 1½" turndown on rear & sides and down on front 1½" and under ½". Notch side turndowns to fit over footrest. On inside walls of knee area, provide a stainless steel bracket on rear & sides to support undershelf. Provide a 20 amp. duplex receptacle on inside wall of cashier station where shown on drawing.

Top to be 30" wide and fabricated from 14-gauge stainless steel with square turn down on all sides and corners fully welded, ground, and polished. Top to have #4 satin finish and all edges having a #7 mirror hi-lite finish. In top punch 3" knockout for data and power cords.

Cashier drawer to have 18-gauge stainless steel drawer face with cylinder locks, keys, and removable 3" deep ABS drawer liner mounted on stainless steel roller bearing slides.

Line up locks to be barrel bolt and key slot design with cam locking action. Locks to be placed on opposing corners for maximum versatility.

Solid tray slides to be 14-gauge stainless steel with three inverted "V" ridges on surface. Ends and sides to be turned down square with all corners, fully welded, ground and polished. Support brackets to be stainless steel fold down type.

Verify fiberglass color with Architect before ordering. Architect to select color from Colorpoint, Formica, or Wilson Art standard solid color charts. All service line equipment to be of same color.

MANUFACTURER & MODEL: COLORPOINT 28-CSE-F

MULTITERIA USA and DUKE will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of specified Manufacturer.

ITEM 44 P.O.S. SYSTEM -- ONE (1) REQUIRED.

Not in K.E.C. contract. To be provided by Owner.

ITEM 45 OPEN NUMBER.

ITEM 46 CASHIER STATION -- ONE (1) REQUIRED.

Provide a 36" cashier stand with locking cash drawer, solid "V" ridge tray slide, line up locks, 36" working height and 5" diameter swivel casters (all w/locking brakes). **Tray slide height to be 28" AFF.**

Body to be a seamless molded fiberglass with smooth exterior surfaces, and rounded corners. Fiberglass to be flame retardant per specification ASTM E-162 having flame spread of 25 or less. On the interior of the body, provide 12-gauge galvanized channels extending from top, and running the full length of front, across the bottom, and up the full length of the back. Channels to be welded at the corners to form rigid structural framework supporting the fiberglass eliminating stress. On the outside bottom, provide 12-gauge stainless channels supporting the casters.

Interior of cabinet where cashier sits to be lined with 18-gauge stainless steel with coved vertical and horizontal corners. A one-inch diameter 18-gauge stainless steel foot rest shall be secured to interior walls. Provide 14-gauge stainless steel removable, adjustable height, computer undershelf with 1½" turndown on rear & sides and down on front 1½" and under ½". Notch side turndowns to fit over footrest. On inside walls of knee area, provide a stainless steel bracket on rear & sides to support undershelf. Provide a 20 amp. duplex receptacle on inside wall of cashier station where shown on drawing.

Top to be 30" wide and fabricated from 14-gauge stainless steel with square turn down on all sides and corners fully welded, ground, and polished. Top to have #4 satin finish and all edges having a #7 mirror hi-lite finish. In top punch 3" knockout for data and power cords.

Cashier drawer to have 18-gauge stainless steel drawer face with cylinder locks, keys, and removable 3" deep ABS drawer liner mounted on stainless steel roller bearing slides.

Line up locks to be barrel bolt and key slot design with cam locking action. Locks to be placed on opposing corners for maximum versatility.

Solid tray slide to be 14-gauge stainless steel with three inverted "V" ridges on surface. Ends and sides to be turned down square with all corners, fully welded, ground and polished. Support brackets to be stainless steel fold down type.

Verify fiberglass color with Architect before ordering. Architect to select color from Colorpoint, Formica, or Wilson Art standard solid color charts. All service line equipment to be of same color.

MANUFACTURER & MODEL: COLORPOINT 36-CSE-F

MULTITERIA USA and DUKE will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of specified Manufacturer.

ITEM 47 P.O.S. SYSTEM -- ONE (1) REQUIRED.

Not in K.E.C. contract. To be provided by Owner.

ITEM 48 SOLID TOP TABLE -- ONE (1) REQUIRED.

Provide 36" long solid top with 36" working height, solid "V" ridge tray slide, full length undershelf, line up locks, and 5" diameter swivel casters (all w/locking brakes). **Tray slide height to be 28" AFF.**

Body to be a seamless molded fiberglass with smooth exterior surfaces, and rounded corners. Fiberglass to be flame retardant per specification ASTM E-162 having flame spread of 25 or less. On the interior of the body, provide 12-gauge galvanized channels extending from top, and running the full length of front, across the bottom, and up the full length of the back. Channels to be welded at the corners to form rigid structural framework supporting the fiberglass eliminating stress. On the outside bottom, provide 12-gauge stainless channels supporting the casters. Where possible, provide open base understorage compartment lined with 18 gauge stainless steel and secure to liner a stainless steel intermediate shelf with the rear and ends turned up. Liner to have coved vertical and horizontal corners.

Top to be 30" wide and fabricated from 14-gauge stainless steel with square turn down on all sides, and corners fully welded, ground, and polished. Top to have #4 satin finish and all edges having a #7 mirror hi-lite finish.

Solid tray slide to be 14-gauge stainless steel with three inverted "V" ridges on surface. Ends, and sides to be turned down square with all corners, fully welded, ground, and polished. Support brackets to be stainless steel fold down type.

Line up locks to be barrel bolt and key slot design with cam locking action. Locks to be placed on opposing corners for maximum versatility.

Verify fiberglass color with Architect before ordering. Architect to select color from Colorpoint, Formica, or Wilson Art standard solid color charts. All service line equipment to be of same color.

MANUFACTURER & MODEL: COLORPOINT 36-ST-F

MULTITERIA USA and DUKE will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of specified Manufacturer.

ITEM 49 ICE CREAM DISPLAY FREEZER -- ONE (1) REQUIRED.

Provide 28" slide slant top ice cream display freezer on 2-1/2" heavy-duty casters (2 w/locking brakes). Top to be an aluminum extrusion frame with sliding safety glass lids. Sliding doors to be removable and secured with a lock and key. Exterior to be white painted steel. Walls to have 2-3/8" and bottom to have 2" of insulation with an R-factor of 17.24 minimum. Interior to be white powder coat with a drain in the bottom. Provide interior with LED lighting and on/off switch. Cabinet shall have two (2) removable novelty baskets. Compressor to be 1/5 h.p. with R290 CFC free refrigerant and maintain a temperature of 10° F. Provide with six-foot cord and plug. 115/60/1

Provide with the following option: custom cabinet color matching other service equipment.

MANUFACTURER & MODEL: BEVERAGE AIR NC28HC

MASTER BILT and METALFRIO SOLUTIONS, INC. will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 50 HEATED DISPLAY MERCHANDISER -- ONE (1) REQUIRED.

Provide counter top hot food display cabinet with easily accessible heat and humidity controls. Cabinet shall be constructed of stainless steel with tempered glass sides and RH hinge door, and LED lighting. Unit to include 4-tier

circle rack and motor. Also provide cabinet with temperature monitor, low water indicator light, and a humidity cycle light. 120/60/1

Provide with the following option: One (1) 4-shelf multi-purpose rack #FDW4SMPACC and one (1) 3-tier pretzel tree #FDW3TPT

MANUFACTURER & MODEL: HATCO FDWD-1

STAR and MERCO will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of specified Manufacturer.

ITEM 51 TWIN COFFEE BREWER -- ONE (1) REQUIRED.

Provide twin automatic satellite server type coffee brewer with 266 8oz cup per hour capability. Brewer shall be constructed of all stainless steel and include, hot water tap, heat control automatic shut-off, splash protection funnels, on/off controls. Each warmer to be controlled individually. 120/208//60/1

Provide the following options: Two (2) 27850.0001 SH 1-1/2 gal. Servers, 27150.0000 drip tray kit, and 20138.1000 paper filter pack.

As part of this unit, provide the water filtering system recommended by manufacturer. Along with the base components and cartridges shipped with the filtering system, furnish (2) additional replacement cartridges. The filtering system is to be mounted to the wall where shown on drawing.

MANUFACTURER & MODEL: BUNN-O-MATIC DUAL SH SST 120/208V

CECILWARE and GRINDMASTER will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 52 WORK TABLE W/BACK SPLASH, & MARINE EDGE -- ONE (1) REQUIRED.

Provide custom "L" shaped, 6'-10" long x 30" wide x 5'-0" long x 30" wide 14-gauge stainless steel table with 34" working height, rigidly reinforced top, 8" back splash on rear, marine edge on front and sides, sound deadened, galvanized channel underbracing, stainless steel gussets, stainless steel legs, 16-gauge fully welded stainless steel undershelf, one (1) 20" x 20" fully enclosed stainless steel drawer housings with vinyl inserts located as shown and cylinder locks with all locks to be keyed the same.

Set in place as shown on drawings. See Food Service Equipment drawings for dimensions and further details.

MANUFACTURER & MODEL: CUSTOM FABRICATED

ITEM 53 DUAL SLUSHIE MACHINE -- ONE (1) REQUIRED.

Provide autofill dual hopper frozen beverage machine. Slushie machine shall be constructed of all stainless steel and include two (2) 3-gallon capacity hoppers, reversible augers, extended dispensing handle, LED lighting, and must be sanitation listed NSF 18 and NSF 6. 120/60/1

Provide the following options: 28086.0001 Drip tray assembly, and 32068.0001 drip tray cover.

As part of this unit, provide the water filtering system recommended by manufacturer. Along with the base components and cartridges shipped with the filtering system, furnish (2) additional replacement cartridges. The filtering system is to be mounted to the wall where shown on drawing.

MANUFACTURER & MODEL: BUNN-O-MATIC ULTRA-2 HP SST

CECILWARE and GRINDMASTER will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 54 GLASS DOOR MERCHANDISER -- ONE (1) EXISTING.

Existing, supplied by owner. K.E.C. to relocate as shown on Food Service Equipment Floor Plan drawing.

S/N: N/A

120/60/1

MANUFACTURER & MODEL: TRUE GDM-47-LD

ITEM 55 OPEN NUMBER.

ITEM 56 SOLID TOP TABLE – CONDIMENT STATION -- TWO (2) REQUIRED.

Provide 50" long solid top with 30" working height, solid "V" ridge tray slide located on both sides, full length undershelf, hinged doors covering open base, and 5" diameter swivel casters (all w/locking brakes). **Tray slide height to be 28" AFF.**

Body to be a seamless molded fiberglass with smooth exterior surfaces, and rounded corners. Fiberglass to be flame retardant per specification ASTM E-162 having flame spread of 25 or less. On the interior of the body, provide 12-gauge galvanized channels extending from top, and running the full length of front, across the bottom, and up the full length of the back. Channels to be welded at the corners to form rigid structural framework supporting the fiberglass eliminating stress. On the outside bottom, provide 12-gauge stainless channels supporting the casters. Where possible, provide open base understorage compartment lined with 18-gauge stainless steel and secure to liner a stainless steel intermediate shelf with the rear and ends turned up. Liner to have coved vertical and horizontal corners.

Top to be 30" wide and fabricated from 14-gauge stainless steel with square turn down on all sides, and corners fully welded, ground, and polished. Top to have #4 satin finish and all edges having a #7 mirror hi-lite finish.

Doors to be double pan construction with 18-gauge stainless steel interior liner and 20-gauge stainless steel exterior. All corners to be fully welded, ground, and polished. Doors to be mounted with semi-concealed hinges and fitted with hand pulls, positive catches, and cylinder locks.

Solid tray slide to be 14-gauge stainless steel with three inverted "V" ridges on surface. Ends, and sides to be turned down square with all corners, fully welded, ground, and polished. Support brackets to be stainless steel fold down type.

Verify fiberglass color with Architect before ordering. Architect to select color from Colorpoint, Formica, or Wilson Art standard solid color charts. All service line equipment to be of same color.

MANUFACTURER & MODEL: COLORPOINT 50-ST-F

MULTITERIA USA and DUKE will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of specified Manufacturer.

ITEM 57 TRAY & FLATWARE CART – TWO (2) REQUIRED.

Provide tray transport cart with frame constructed of all-welded 1" O.D. 18-gauge stainless steel tubing with integrally welded tubular brace at top. Shelf to be formed of 18-gauge stainless steel with raised die formed "V" edges. All sides turned down 1-1/4" and hemmed rigidly. All corners to be fitted with cast aluminum brackets to accommodate the uprights. Shelf to be 10" above floor. Cart is to be secured on 5" heavy duty double ball bearing swivel casters with non-marking tires (2 w/brakes). Over cart provide an all welded 18-gauge stainless steel flatware dispenser with canted top punched to accommodate ten (10) stainless steel silverware cylinders.

Provide with the following options: round corner bumpers.

As part of this item provide ten (10) Steril-Sil #S-500 high-capacity flatware cylinders. Units shall be custom 18-gauge, 300 series stainless steel, deep drawn cylinder with 1/6" high turned down lip and electro-polished finish. Must be straight-walled having a 3-3/4" wide footed-base to fit 6 dozen standard flatware forks. Total height not to exceed 5-3/8" with a net clearance of 5-1/8". Cylinder to fit 4-1/32" cutout. CUSTOM FABRICATION will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

MANUFACTURER & MODEL: LAKESIDE 213

CADDY and STERIL-SIL will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of specified Manufacturer.

ITEM 58 OPEN NUMBER.

ITEM 59 SOILED DISH TABLE W/SCRAP & POT SINKS -- ONE (1) REQUIRED.

Provide custom soiled dish table with landing shelf, pass through window, pre-rinse sink, pot and pan sink, and pot rack. Top to be 14-gauge stainless steel with stainless steel channel, stainless steel leg gussets, rear splash and sound deadening. 10" high rear splash to be turned up on 3/4" radius, turned back at the top 2" on a 45° angle, and down 1" at rear. Front rail to be 3" high, rolled on a 1-1/2" radius with front edge of roll to be turned down no less than 1". Table top, splash, rail, sinks, and pass through to be of integral construction 14-gauge stainless steel with all inside corners being coved and all welds ground and polished to a smooth surface. Top to be rigidly reinforced with 12-gauge stainless steel channel under bracing. Channels to have stainless steel leg gussets welded in place for securing of leg sets.

Pre-rinse section of table to have one 20" x 20" x 5" deep scrap sink with 8-1/4" disposer adaptor collar welded into bottom, removable stainless steel rack slide, and (2) holes punched in sink walls for water swirl nozzles. Splash behind sink to be punched on 6" centers for vacuum breaker supplied with garbage disposer. In rear splash where shown, punch holes for installation of B-1458-MOD 30 ft. hose reel mixing valve. Drain board at dishwasher end to be configured for machine specified in this contract.

Landing area of tabletop, and front rail to be of same configuration as soiled area. In rear splash weld in a 47" wide x 21 1/2" high pass through window. At customer side stainless steel window frame top and sides to be 2" wide x 1" deep, at bottom 3" wide x 1" deep frame at front, and be turned back flush with wall 4" on service side of wall. All corners and seams to welded, ground, and polished. Landing shelf to have 1-1/4" wide lip on front that drops 1/2" to tables surface at a 45° angle toward service side of table and have sides turned up 10". Under right side of landing area secure bracket for mounting control box for disposer. Provide stainless steel trim to cover wood used for leveling the stainless steel landing table. Also, if a gap between the concrete block wall and the stainless steel window frame is too large to caulk, secure stainless steel trim around perimeter of the window frame in the dish room and drop-off sides. Roll-down security door to be provided by others.

Pot sink section to have three 20" wide x 28 1/2" long x 14" deep cove cornered sinks with lever waste and over flows, stainless steel fully welded undershelf, and 36" drainboard at clean end. Drain board is to have 1" drop to sink for drainage. In rear splash over sink dividers punch holes for installation of T&S B-0231 faucets.

Entire unit except for area under 36" drainboard to be mounted on stainless steel legs with stainless steel tubular cross bracing, and adjustable stainless steel bullet feet. Area under drainboard to be mounted on stainless steel legs with stainless steel fully welded undershelf. Undershelf to have 2" turn up on rear. Outside corner legs to be provided with flanged feet.

Provide with the following options: Two (2) T&S B-0231-CR faucets with ceramic cartridges and B-0199-01 aerators and lever wastes with over flows.

Provide on wall above pot & pan sinks 8'-0" long x 16" deep x 14" high two-tier pot rack. Construction to be of 14-gauge stainless steel support brackets welded to 2" x 1/4" stainless steel slide bars with double sided sliding hooks installed on 8" centers.

See drawings for further details. Set in place as shown on drawing and secure flanged feet to floor with stainless steel bolts.

MANUFACTURER & MODEL: CUSTOM FABRICATED

ITEM 60 DISPOSER -- ONE (1) REQUIRED.

Provide 2 hp offset disposer unit with 8" rotor/turntable, and three adjustable legs. Provide with 8-1/4" stainless steel sink adaptor to be welded into bottom of pre-rinse sink, (1) swirl nozzle, and solenoid. Control panel to be provided with automatic reversing magnetic contactors, overload protection, alternator, automatic delay timer for motor and water run time, low voltage protection, emergency disconnect switch, and push button operation. Install swirl nozzles in sink walls. 208/60/3

Provide with the following option: (1) extra swirl nozzle.

Furnish with the following option: T&S B-0455 vacuum breaker assembly.

K.E.C. to install disposer to adaptor and lag to floor with stainless steel bolts, control panel on mounting bracket provided under landing area and wire to solenoid and disposer.

All disposers must be from the same manufacturer.

MANUFACTURER & MODEL: MASTER C2-O-SK-RAC2

INSINGER and RED GOAT will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 61 HOSE REEL – 30 FT. -- ONE (1) REQUIRED.

Provide stainless steel enclosed wall mount hose reel with 30 Ft. of 3/8" I.D. heavy duty hose with adjustable hose bumper, 3/8" NPT female inlet, B-0107 spray valve, wall mount mixing faucet with 8" centers and control valve in riser, B-0963 vacuum breaker, fixed wall bracket, and retractable hose reel.

Furnish with the following options: ceramic cartridges, (2) B-CVV-1/2" vertical check valves, and 004R finger hook.

Plumbing Contractor to mount mixing valve to back splash per manufacturers' specification, then notify Kitchen Equipment Contractor that mixing valve is installed and ready for completion of hose reel assembly installation. Kitchen Equipment Contractor to install balance of piping to mixing valve and mount hose reel with fixed mounting bracket to wall using stainless steel bolts. See hose reel detail drawing of this item for installation details.

See detail drawing for center line of mixing valve and top point of hose reel mounting dimensions. If additional chrome piping is needed to place vacuum breaker at height as shown on drawing, then Kitchen Equipment Contractor shall provide additional length of piping.

K.E.C. to adjust hose stop so that nozzle height is to kitchen manager's preference.

Hose reel to be of the same manufacturer as all other faucets.

MANUFACTURER & MODEL: T&S B-1458-CR-MOD

CHICAGO FAUCET, FISHER, and SANIGUARD will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 62 OPEN NUMBER.

ITEM 63 DISHWASHER -- ONE (1) EXISTING.

Existing, supplied by owner. K.E.C. to relocate as shown on Food Service Equipment Floor Plan drawing and provide new drain water tempering device. 208/60/3
S/N: 231176741

K.E.C. to install drain water tempering kit and have manufacturer interwire to contacts on dishmachine. K.E.C. shall also be responsible for running the drain line to the floor sink ready for the Plumbing Contractor to make all final water connections to the tempering kit.

MANUFACTURER & MODEL: HOBART AM15VLT

ITEM 64 OPEN NUMBER.

ITEM 65 CLEAN DISH TABLE W/ OVERSHELF-- ONE (1) REQUIRED.

Provide custom 14-gauge stainless steel clean dish table to be 7'-9" long x 30" front to back with 34" working height. Table to have 10" rear and side splash, rolled front and end rail, and fully welded undershelf. Top, splash, and rails, to be of integral construction with all inside corners being coved and all welds ground and polished to a smooth surface. Rear splash to be turned up on 3/4" radius, turned back at the top 2" on a 45° angle, and down 1" at rear. Rolled rail to be turned up on a 3/4" radius and rolled out on 1-1/2" radius with front edge of roll being tuned down no less than 1". Rail to be 2" deep at the end of the table tapering to 3" deep at the dishwasher end. Drainboard at dishwasher end to be configured for machine specified in this contract. Top to be rigidly reinforced with 12-gauge stainless channel underbracing. Channels to have stainless steel leg gussets welded in place for securing of leg sets.

Entire unit to be mounted on stainless steel leg set with 16-gauge stainless steel undershelf notched at corners and fully welded to legs. Undershelf to have 2" turn up at rear. Provide front legs with adjustable stainless steel bullet feet and rear legs with adjustable flanged feet.

Provide over end of table as shown on drawings, a stainless steel 6'-0" x 12" cantilevered shelf on stainless steel post extended through the rear splash to stainless steel support bracket.

See drawings for further details. Set in place as shown on drawing and secure flanged feet to floor with stainless steel bolts.

MANUFACTURER & MODEL: CUSTOM FABRICATED

ITEM 66 OPEN NUMBER.

ITEM 67 STORAGE CABINET - CHEMICAL -- ONE (1) REQUIRED.

Provide 18-gauge type 304 stainless steel storage cabinet with sloped top, locking hinged door, 6" stainless steel legs with adjustable bullet feet, and (5) adjustable shelves. Hinge door as shown on drawing.

MANUFACTURER & MODEL: IMC TEDDY SC-1824HS MODIFIED

COMMERCIAL STAINLESS and CUSTOM FABRICATION will be accepted as an alternative manufacturer provided the product conforms to the dimensions, construction, design, capacity, and function of the specified Manufacturer.

ITEM 68 LOCKERS - EMPLOYEE -- ONE (1 LOT) REQUIRED.

Not in K.E.C. Contract. To be provided by Others.

ITEM 69 CLOTHES WASHER AND DRYER -- ONE (1 SET) REQUIRED.

Not in Kitchen Equipment Contractor's Contract. To be provided by Others.

ITEM 70 MOP SINK -- ONE (1) REQUIRED.

Not in Kitchen Equipment Contractor's Contract. To be provided by Others.

END OF SPECIFICATIONS

KITCHEN EQUIPMENT SCHEDULE OF VALUES – BURGIN INDEPENDENT

SHEET 1 of 3

<u>Item</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Total Price</u>
1.	Dunnage Rack – Dry Storage	_____	_____
2.	Shelving – Dry Storage	Existing	_____
3.	Shelving – Dry Storage	_____	_____
4.	Utility Cart	_____	_____
5.	Can Rack	Existing	_____
6.	Hand Sink	By P.C.	_____
7.	Ice Machine w/ Bin	_____	_____
8.	Shelving – Pot & Pan	_____	_____
9.	Open Number	_____	_____
10.	Hood System	_____	_____
11.	Energy Distribution System	_____	_____
12.	6-Burner Range w/ Griddle & Ovens	_____	_____
13.	Convection Oven – Dbl. Stack	Existing	_____
14.	Combi Oven – Dbl. Stack	_____	_____
15.	Combi Oven – Roll-In	_____	_____
16.	Floor Trough	_____	_____
17.	Open Number	_____	_____
18.	Bun Pan Rack	_____	_____
19-19D.	Walk-In Cooler/Freezer	_____	_____
20.	Shelving – Cooler/Freezer	_____	_____
21.	Dunnage Rack – Cooler/Freezer	_____	_____
22.	Milk Crate Dolly	_____	_____
23.	Open Number	_____	_____
24.	Work Table w/ Sink	Custom Fabricator	_____
25.	Work Table	Custom Fabricator	_____
26.	Hot Water Dispenser	_____	_____
27.	Work Table	Custom Fabricator	_____
28.	Open Number	_____	_____
29.	Prep Sink w/ Chase	Custom Fabricator	_____
30.	Disposer	_____	_____

KITCHEN EQUIPMENT SCHEDULE OF VALUES – BURGIN INDEPENDENT

SHEET 2 of 3

<u>Item</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Total Price</u>
31.	Work Table	Custom Fabricator	_____
32.	Open Number		
33.	Baker's Table	Custom Fabricator	_____
34.	Pass-Thru Refrigerator	_____	_____
35.	Pass-Thru Heat & Hold	_____	_____
36.	S/S Trim	Customk Fabricator	_____
37.	Hose Reel – 30 Ft.	_____	_____
38.	Milk Cooler	_____	_____
39.	Milk Cooler	_____	_____
40.	Hot/Cold/Frozen Food Table	_____	_____
41.	Hot/Cold/Frozen Food Table	_____	_____
42.	Solid Top Table	_____	_____
43.	Cashier Station	_____	_____
44.	P.O.S. System	By Owner	
45.	Open Number		
46.	Cashier Station	_____	_____
47.	P.O.S. System	By Owner	
48.	Solid Top Table	_____	_____
49.	Ice Cream Display Freezer	_____	_____
50.	Heated Display Merchandiser	_____	_____
51.	Twin Coffee Brewer	_____	_____
52.	Work Table w/ Back Splash & Marine Edge	Custom Fabricator	_____
53.	Dual Slushie Machine	_____	_____
54.	Glass Door Merchandiser	Existing	
55.	Open Number		
56.	Solid Top Table	_____	_____
57.	Tray & Flatware Cart	_____	_____
58.	Open Number		
59.	Soiled Dishtable w/ Scrap & Pot Sinks	Custom Fabricator	_____
60.	Disposer	_____	_____
61.	Hose Reel – 30 Ft.	_____	_____
62.	Open Number		
63.	Dishwasher	_____	_____
64.	Open Number		

KITCHEN EQUIPMENT SCHEDULE OF VALUES – BURGIN INDEPENDENT

SHEET 3 of 3

<u>Item</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Total Price</u>
65.	Open Number		
66.	Clean Dishtable w/ Overshelf	Custom Fabricator	_____
67.	Storage Cabinet - Chemical	_____	_____
68.	Employee Lockers	By Others	_____
69.	Washer & Dryer	By Others	
70.	Mop Sink	By P.C.	

Equipment Total	_____
Labor	_____
Sub Total	_____
Tax (If Required)	_____
Grand Total	_____

Custom Fabricator to be: _____

Refrigeration Installer to be: _____

Equipment Installer to be: _____

Submitted by: _____

Company Name: _____

Date: ____/____/____

Line item pricing should include all expenses required for completion of this project. This Schedule of Values shall be available upon request.

END OF SECTION 114000

SECTION 122413 - MANUALLY OPERATED WINDOW SHADES**PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Section includes: Manually operated, roll-up fabric window shades including mounting and operating hardware. Shades shall occur in cafeteria 172 and office 175B in the base bid. Alternate #1 includes classrooms B103 and B104, and FRYSC B105. Alternate #2 includes FMD 102 and first aid 101.
- B. Related sections:
 - 1. Section 090050 - Finish Legend
 - 2. Section 092116 - Gypsum Board Assemblies: Suspended gypsum board ceilings to contain recessed window shades
 - 3. Section 095100 - Acoustical Ceilings: Suspended acoustical panel ceilings to contain recessed windows

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements - Submittal procedures

1.03 REFERENCE STANDARDS

- A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement (replaced SG-971)
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013
- C. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014
- D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012
- E. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011
- F. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2014
- H. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009
- I. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition

1.04 SUBMITTALS

- A. Submit in accordance with Section 01330 - Submittal Procedures:
 - 1. List of proposed products and product data
 - 2. Shop drawings showing window openings, dimensions, and attachment method
 - 3. Samples for selection by Interior Designer:
 - a. Fabrics
 - 4. Window Shade Schedule listing rooms, field verified window dimensions, quantities, type of shade, fabric, and color
 - 5. Manufacturer's installation and maintenance instructions

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver window shades until building is enclosed and construction within spaces where shades will be installed is substantially complete.
- B. Deliver products in manufacturer's original, unopened, undamaged containers with labels intact.
- C. Label containers and shades according to Window Shade Schedule.

1.06 SEQUENCING AND SCHEDULING

- A. Coordinate the work with all sections referencing this section.

1.07 WARRANTY

- A. Provide under provisions of Section 01700 - Contract Closeout: 5 years warranty against defects in materials and workmanship for clutch operating mechanism.

PARTS 2 - PRODUCTS**2.01 ACCEPTABLE MANUFACTURERS**

- A. Draper, Inc., 411 South Pearl Street, Spiceland, Indiana 47385-0425; 765-987-7999
- B. Springs Window Fashions Division, Inc.
- C. Hunter Douglas Window Fashions
- D. Lutron
- E. Manufacturers of equivalent products submitted and approved in accordance with Section 01630 - Product Substitution Procedures.

2.02 MANUALLY OPERATED WINDOW SHADES

- A. Type: Manually operated, vertical roll-up, fabric window shade with bead chain and clutch operating mechanism, mounting brackets, fasteners, and other components necessary for complete installation; Equal to FlexShade as manufactured by Draper, Inc.
- B. Method of installation: Mounted inside of window opening and extending from head to sill and jamb to jamb.
- C. Operation: Bead chain and clutch operating mechanism allowing shade to stop when chain is released. Designed never to need adjustment or lubrication. Provide preset limit stops to prevent shade from being raised or lowered too far.
 - 1. Clutch mechanism: Fabricated from high carbon steel and molded fiberglass reinforced polyester or injected molded nylon
 - 2. Control loop: Stainless steel bead chain hanging at side of window
 - 3. Chain location: Right hand side when facing window from interior

2.03 HARDWARE

- A. Mounting Brackets: 1018 plated steel stamping. Sizes 1 5/8" and 2 1/4". Mount to face, ceiling or jamb. Brackets do not require additional adapters.
- B. Fascia: L-shaped cover of extruded aluminum, .060 wall. Snap-lock assembly to end caps without exposed fasteners. Anodized Aluminum (standard) finish or black, white, ivory or bronze powder coat finish.

2.04 FABRIC

- A. Material: Manufacturer's standard 3% open light filtering fabric, typical except in Cafeteria 172 where 1% openness is required.

PART 3 - EXECUTION**3.01 PREPARATION**

- A. Field verify window dimensions prior to fabrication.
- B. Coordinate requirements for blocking and structural supports to ensure adequate means for installation of window shades.

3.02 INSTALLATION

- A. Install window shades at locations indicated on drawings and approved Window Shade Schedule.
- B. Comply with shade manufacturer's written instructions and approved shop drawings.

3.03 ADJUSTING AND CLEANING

- A. Operate shade through complete cycle of lowering, stopping, and raising to ensure proper operation. Adjust as required for smooth operation.
- B. Clean shade assemblies and protect from damage from construction operations. If damage occurs, remove and replace damaged components or entire unit as required to provide units in their original, undamaged condition.

END OF SECTION

SECTION 123550 - INSTITUTIONAL CASEWORK**PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. This Section includes the following:
 - 1. Plastic laminate faced wood cabinets of stock design
 - 2. Plastic laminate countertops
- B. In some instances specific manufacturer's model numbers have been used to more clearly define the casework design and are not provided to preclude other acceptable manufacturer's from supplying equal products.
- C. Related Sections include the following: List below only products and construction that the reader might expect to find in this Section but are specified elsewhere.
 - 1. Division\~6 Section "Miscellaneous Carpentry" for wood blocking for anchoring institutional casework
 - 2. Division\~6 Section "Interior Architectural Woodwork" (Custom Millwork)
 - 3. Division\~9 Section "Gypsum Drywall" for reinforcements in gypsum board partitions for anchoring institutional casework
 - 4. Division\~9 Section "Resilient Wall Base and Accessories" for resilient base applied to institutional casework

1.02 RELATED REQUIREMENTS

- A. Section 013000 - Administrative Requirements - Submittal procedures
- B. Section 090050 - Finish Legend

1.03 DEFINITIONS

- A. Exposed Portions of Cabinets: Surfaces visible when doors and drawers are closed, including bottoms of cabinets more than 48 inches (1220 mm) above floor, and surfaces visible in open cabinets. The bottom of wall cabinets are considered exposed and will receive plastic laminate.
- B. Concealed Portions of Cabinets: Surfaces not usually visible after installation, including sleepers, web frames, dust panels, and ends and backs that are placed directly against walls or other cabinets.

1.04 REFERENCE STANDARDS

- A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement (replaced SG-971)
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013
- C. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014
- D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012
- E. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011
- F. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2014

- H. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009
- I. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition

1.05 SUBMITTALS

- A. Product Data: For each type of product indicated
- B. Shop Drawings: Show fabrication and installation details for institutional casework. Include plans, elevations, sections, details, and attachments to other Work.
- C. Samples for Initial Selection: For cabinet finishes and for each type of top material indicated
- D. Samples for Verification: 6-inch- (150-mm-) square Samples for each type of finish, including top material and the following:
 - 1. Section of countertop showing top, front edge, and backsplash construction

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative of institutional casework manufacturer for installation and maintenance of units required for this Project.
- B. Source Limitations: Obtain institutional casework through one source from a single manufacturer.
- C. Quality Standard: Build and install to AWI quality standards.
- D. Product Designations: Drawings indicate sizes, configurations, and finish material of institutional casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish material, and complying with the Specifications may be considered. Refer to Division 1 Section "Product Requirements."

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver institutional casework only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified in "Project Conditions" Article.
- B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.08 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install institutional casework until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Verify all dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating institutional casework without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.09 COORDINATION

- A. Coordinate layout and installation of metal framing and reinforcements in gypsum board assemblies for support of institutional casework.

1.10 SEQUENCING AND SCHEDULING

- A. Coordinate the work with all sections referencing this section.

1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of institutional casework that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:
 1. Delamination of components or other failures of glue bond
 2. Warping of components
 3. Failure of operating hardware
 4. Deterioration of finishes
 5. Warranty Period: Five years from date of substantial completion

1.12 EXTRA MATERIALS

- A. Furnish complete touchup kit for each type and finish of institutional casework provided. Include scratch fillers, stains, finishes, and other materials necessary to perform permanent repairs to damaged casework finish.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- B. Basis-of-Design Product: The design for institutional casework is based on TMI Systems Design Corp. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
- C. Plastic Laminate Faced Institutional Casework:
 1. Action Outfitters
 2. Advanced Cabinet Systems
 3. Advantage Millwork
 4. America's Finest Woodworking Team
 5. Architectural Cabinet Systems; Division of Windham Millwork, Inc.
 6. Case Systems, Inc.
 7. Caseworks of Kentucky
 8. Creative Cabinets
 9. Cumberland Manufacturing
 10. Custom Casework
 11. Custom Creations
 12. Diversified Woodworking
 13. Euronique, Inc.
 14. Fisher Hamilton Inc.
 15. Hamilton Sorter
 16. Hausmann Industries, Inc.
 17. Interior Wood Specialties, Inc.

18. Kentucky Mill & Casework
19. Leininger Cabinets
20. Louisville Lumber
21. LSI Corporation of America, Inc.
22. Morgan Smith Industries
23. Norlab, Inc.
24. Polyvision Corporation
25. Procise Countertops
26. Riverside Mill
27. Smith' s Laminating
28. Southern Cabinetry, Inc.
29. Stevens Industries, Inc.
30. Tate Ornamental
31. Techline
32. Terrill Manufacturing Company
33. TMI Systems Design Corp.
34. Top Service
35. U.S. Millwork
36. Wenger Co.
37. Westmark Commercial Casework

D. Plastic Laminate Material:

1. Arborite
2. Formica Corporation
3. Nevamar
4. Wilsonart International; Div. of Premark International, Inc.

E. Rigid PVC Extrusions (3mm & 1mm):

1. Wood Tape

2.02 MATERIALS

A. General:

1. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood
2. Hardwood Plywood: HPVA\~HP-1, either veneer core or particle core, unless otherwise indicated
3. Softwood Plywood: DOC\~PS\~1
4. Particleboard: ANSI\~A208.1, Grade\~ M-2-Exterior Glue
5. Medium-Density Fiberboard: ANSI\~A208.2, Grade\~ MD-Exterior Glue

6. Hardboard: AHA\~A135.4, Class\~1 Tempered
 7. Plastic Laminate: High-pressure decorative laminate complying with NEMA\~LD\~3
 8. Edgebanding for Plastic Laminate: Rigid PVC extrusions, through color with satin finish, 3 mm thick at doors and drawer fronts, 1 mm thick elsewhere
- B. Exposed Cabinet Materials:
1. Plastic Laminate: Type VGS.
 - a. Unless otherwise indicated, provide plastic laminate for exposed surfaces.
 - b. Provide plastic laminate for doors and drawer fronts and where indicated.
- C. Semiexposed Cabinet Materials:
1. Plastic Laminate: Type\~ CLS
 - a. Provide plastic laminate for interior faces of doors and drawer fronts [only/and] where indicated.
 2. Melamine-Faced Particleboard: Particleboard with decorative surface of thermally fused, melamine-impregnated web and complying with LMA\~SAT-1
 - a. Provide melamine-faced particleboard for semiexposed surfaces, unless otherwise indicated.
 3. Cabinets with glass doors: provide plastic laminate to match the exterior of the cabinet unless shown otherwise on the drawings.
- D. Concealed Cabinet Materials:
1. Solid Wood: Any hardwood or softwood species, with no defects affecting strength or utility
 2. Plywood: Hardwood plywood. Concealed backs of plywood with exposed or semiexposed faces shall be same species as faces.
 3. Plastic Laminate: Type\~BKL

2.03 DESIGN, COLOR, AND FINISH

- A. Design: Provide institutional casework of the following design:
1. Flush overlay with wire pulls
- B. Melamine-Faced Particleboard Colors, Patterns, and Finishes: As selected by Architect from casework manufacturer's full range.
- C. Plastic-Laminate Colors, Patterns, and Finishes: As selected by Architect from plastic-laminate manufacturer's full range.
- D. Rigid PVC Extrusions (3mm & 1mm). As selected by Architect/Designer from PVC edging manufacture selections - provide a minimum of 65 color/pattern selection(s).

2.04 CABINET FABRICATION

- A. Plastic-Laminate-Faced Cabinet Construction:
1. Bottoms and Ends of Cabinets, Shelves, and Tops of Wall Cabinets and Tall Cabinets: 3/4-inch (19-mm) particleboard, plastic-laminate faced on exposed surfaces, melamine faced on semiexposed surfaces. The bottom of wall cabinets is considered exposed and will receive plastic laminate. The front exposed edges of the cabinet shall receive plastic laminate.
 2. Backs of Cabinets: 1/2-inch (12.7-mm) particleboard, plastic-laminate faced on exposed surfaces, melamine faced on semiexposed surfaces.

3. Drawer Fronts: 3/4-inch (19-mm) particleboard, plastic-laminate faced on both sides.
 4. Drawer Sides and Backs: 1/2-inch (12.7-mm) solid wood or plywood or particle board, with glued dovetail or multiple-dowel joints.
 5. Drawer Bottoms: 1/4-inch (6.4-mm) plywood glued and dadoed into front, back, and sides of drawers. Use 1/2-inch (12.7-mm) material for drawers more than 24 inches (600 mm) wide.
 6. Doors: 3/4-inch (19-mm) particleboard or medium-density fiberboard, plastic-laminate faced on both sides.
- B. Filler Strips: Provide as needed to close spaces between cabinets and walls, ceilings, and indicated equipment. Fabricate from same material and with same finish as cabinets.
- C. All wall and base cabinets over 3'-0" in width shall receive a vertical to prevent deflection.

2.05 CASEWORK HARDWARE

- A. Hardware, General: Provide manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware complying with requirements indicated.
1. Use threaded metal or plastic inserts with machine screws for fastening to particleboard except where hardware is through-bolted from back side.
- B. 5-Knuckle Hinges: Chrome-plated or Powder-coated, semi-concealed, 5-knuckle hinges complying with BHMA\~A156.9, Grade\~1, with antifriction bearings and rounded tips. Provide 2 hinges for doors less than 48 inches (1220 mm) high and 3 hinges for doors more than 48 inches (1220 mm) high.
- C. Pulls: Pulls as standard shall be surface mounted solid aluminum. Provide 2 pulls for drawers more than 24 inches (600 mm) wide. Wire pulls shall be 4" wide.
- D. Door Catches: Powder-coated, nylon-roller spring catch. Provide 2 catches on doors more than 48 inches (1220 mm) high.
- E. Drawer Slides: Side-mounted, full-extension, zinc-plated steel drawer slides with steel ball bearings. Type B05091, and rated for the following loads:
1. Box Drawer Slides: 100 lbf (440\~N)
 2. File Drawer Slides: 150 lbf (670\~N)
 3. Pencil Drawer Slides: 45 lbf (200\~N)
 4. Keyboard Slide: 75 lbf (330 N)
- F. Drawer and Cupboard Locks: Cylindrical (cam) type, 5-pin tumbler, brass with chrome-plated finish, complying with BHMA A156.11, Grade 1.
1. Provide a minimum of two keys per lock and six master keys.
 2. Provide locks where indicated.
- G. Grommets for Cable Passage Through Countertops: 3 1/2" OD, Molded-plastic grommets and matching caps with slot for wire passage. Color to be selected by designer.
- H. Adjustable Shelf Supports: 2-pin locking plastic shelf rests complying with BHMA\~A156.9, Type\~B04013
- I. Countertop / Shelf Support: Provide countertop/shelf supports equivalent to A & M Hardware, Inc., workstation brackets, size brackets to suit installation.
- J. Aluminum Slides for Sliding Glass Doors: BHMA A156.9, B07063

2.06 COUNTERTOPS

- A. Countertops, General: Provide smooth, clean exposed tops and edges in uniform plane free of defects. Provide front and end overhang of 1 inch (25 mm) over base cabinets.
- B. Plastic-Laminate Tops: Plastic-laminate sheet, shop bonded with waterproof glue to both sides of 1" to 1-1/4" (29-mm) plywood or particleboard. Sand surfaces to which plastic laminate is to be bonded. Plastic laminate below is standard general-purpose grade.
 - 1. Plastic-Laminate Type for Flat Tops: HGS
 - 2. Plastic-Laminate Type for Backing: BKL
 - 3. Provide PVC edgings on front edge of top, and on ends of tops.
 - 4. Use exterior plywood or phenolic-resin-bonded particleboard for countertops containing sinks.
- C. Provide grommets at all KS locations per owner's direction.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of reinforcements, and other conditions affecting performance of institutional casework.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 CASEWORK INSTALLATION

- A. Install plumb, level, and true; shim as required, using concealed shims. Where institutional casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- B. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16 inch (1.5 mm) of a single plane. Fasten cabinets to partition framing, wood blocking, or reinforcements in partitions with fasteners spaced 24 inches (600 mm) o.c. Bolt adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16 inch (1.5 mm).
 - 1. Where base cabinets are not installed adjacent to walls, fasten to floor at toe space with fasteners spaced 24 inches (600 mm) o.c. Secure sides of cabinets to floor, where they do not adjoin other cabinets, with not less than two fasteners.
- C. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch (1.5 mm) of a single plane. Fasten to hanging strips, masonry, partition framing, blocking, or reinforcements in partitions. Align similar adjoining doors to a tolerance of 1/16 inch (1.5 mm).
 - 1. Fasten through back, near top and bottom, at ends, and not more than 16 inches (400 mm) o.c.
- D. Install hardware uniformly and precisely. Set hinges snug and flat in mortises, unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.
- E. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.03 INSTALLATION OF TOPS

- A. Field Jointing: Where possible make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on

Shop Drawings.

1. Secure field joints in plastic-laminate countertops with concealed clamping devices located within 6 inches (150 mm) of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
- B. Secure tops to cabinets with Z-type fasteners or equivalent, using two or more fasteners at each front, end, and back.
- C. Abut top and edge surfaces in one true plane, with internal supports placed to prevent deflection.
- D. Secure backsplashes to tops with concealed metal brackets at 16 inches (400 mm) o.c. and walls with adhesive.
- E. Seal junctures of top, splash, and walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

3.04 INSTALLATION OF SHELVING

- A. Securely fasten adjustable shelving supports to partition framing, wood blocking, or reinforcements in partitions.
- B. Install shelf standards plumb and at heights to align shelf brackets for level shelves. Install shelving level and straight, closely fitted to other work where indicated.

3.05 CLEANING AND PROTECTING

- A. Repair or remove and replace defective work as directed on completion of installation.
- B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
- C. Protection: Provide 6-mil (0.15-mm) plastic or other suitable water-resistant covering over countertop surfaces. Tape to underside of countertop at a minimum of 48 inches (1220 mm) o.c. Remove protection at Substantial Completion.

END OF SECTION