

PROJECT MANUAL

100% CONSTRUCTION DOCUMENTS – *May 3, 2023 (tentatively)*



Bullitt County Public Schools
1040 Highway 44 East
Shepherdsville KY 40165

BERNHEIM MIDDLE SCHOOL RENOVATION

Bid Package 1: General Construction

700 Audubon Drive
Shepherdsville, KY 40165
BG# 23-051 : ska# 2022-36

Bid Date: **31 May 2023 (tentatively)**

Time of Opening: **1:00 pm EST (tentatively)**

Location: **Bullitt County Public Schools Central Office**
1040 Highway 44 East, Shepherdsville, KY 40165

ARCHITECT

Studio Kremer Architects Inc
1231 S Shelby Street
Louisville, KY 40203

STRUCTURAL ENGINEER

Brown + Kubican Structural Engineers
8900 Greenway Commons Pl. #201
Louisville, KY 40220

LANDSCAPE ARCHITECT and CIVIL ENGINEER

SWT Design
110 East Market Street
New Albany, IN 47150

M E P ENGINEER

CMTA, Inc.
10411 Meeting Street
Prospect, KY 40059

Volume 1



INDEX TO SPECIFICATIONS

Bernheim Middle School Renovation Bullitt County Public Schools BID PACKAGE 1: GENERAL CONSTRUCTION Shepherdsville KY 40165

VOLUME 1

BIDDING REQUIREMENTS

Section	00 01 00	Invitation to Bid
		Instructions to Bidders AIA A701 – 1997 – KDE Version (SAMPLE)
	00 20 00	Supplemental Instructions to Bidders
		KDE Form of Proposal
		Attachment A (<i>Form of Proposal</i>) – Base Bid Accounting Breakdown
		Attachment B (<i>Form of Proposal</i>) – Contractor Acknowledgment of Compliance
	00 40 00	General Notes to Contractor
	00 50 00	Contractor Safety
		Preface to the Geotechnical Report
		Geotechnical Report
		Preface to the Stormwater Pollution Prevention Plan
		Stormwater Pollution Prevention Plan
		Bullitt County Public Schools - New Construction & Renovation Design Guidelines

CONTRACT FORMS

Section		Standard Form of Agreement Between Owner and Contractor AIA A101 – 2007 – KDE Version (SAMPLE)
	00 60 00	Terms of the Agreement Between Owner and Contractor
		General Conditions of the Contract for Construction AIA A201 – 2007 – KDE Version (SAMPLE)
	00 70 00	Supplementary Conditions to General Conditions of the Contract for Construction
		Performance Bond & Payment Bond AIA A312 – 2010 – KDE Version (SAMPLE)
		KDE Purchase Order Summary Form (SAMPLE)
		KDE Purchase Order Form (SAMPLE)

DIVISION 01 – GENERAL REQUIREMENTS

Section	01 01 10	Summary of the Work
	01 02 10	Allowances
	01 02 50	Measurement and Payment
	01 04 00	Project Coordination
	01 05 00	Field Engineering
	01 17 00	Storage, Protection, & Safety
	01 20 00	Project Meetings

01 22 00	Unit Prices
01 23 00	Alternates
01 30 00	Submittals
01 34 00	Shop Drawings, Product Data, and Samples
01 40 00	Quality Control
01 41 10	Structural Special Inspection
01 50 00	Temporary Facilities
01 63 00	Substitutions
01 70 00	Contract Closeout
01 71 00	Cleaning
01 73 29	Cutting & Patching
01 78 00	Project Record Documents
01 79 00	Demonstration & Training
01 83 16	Exterior Encloser Performance (BPT)

DIVISION 02 – SITE CONDITIONS

Section	02 01 00	Site Conditions
	02 08 00	Staking

DIVISION 03 – CONCRETE

Section	03 30 00	Cast-In-Place Concrete (+Mix Form)
---------	----------	------------------------------------

DIVISION 04 – MASONRY

Section	04 20 00	Unit Masonry Assemblies
---------	----------	-------------------------

DIVISION 05 – METALS

Section	05 10 00	Structural Anchors
	05 12 00	Structural Steel
	05 21 00	Structural Joist Framing
	05 31 00	Steel Decking
	05 40 00	Cold-Formed Metal Framing

DIVISION 06 – WOOD & PLASTICS

Section	06 10 00	Rough Carpentry
	06 20 00	Finish Carpentry
	06 30 00	Architectural Millwork
	06 61 16	Solid Surface Fabrication

DIVISION 07 – THERMAL & MOISTURE PROTECTION

Section	07 11 13	Bituminous Dampproofing
	07 17 00	Membrane Waterproofing
	07 20 00	Building Insulation
	07 22 00	Roof Insulation
	07 27 26	Fluid Applied Membrane Air & Moisture Barrier

07 57 00	Coated Foamed Roof
07 61 13	Metal Wall Panels
07 62 00	Sheet Metal Flashing and Trim
07 72 00	Roof Accessories
07 92 00	Joint Sealants
07 95 00	Fire and Smoke Sealants

DIVISION 08 – OPENINGS

Section	08 11 00	Steel Doors and Frames
	08 14 16	Wood Doors
	08 33 30	Security Grille
	08 41 13	Aluminum-Framed Entrances and Storefronts
	08 44 13	Glazed Aluminum Curtain Walls
	08 51 13	Aluminum Windows
	08 71 00	Door Hardware
	08 80 00	Glazing

DIVISION 09 – FINISHES

Section	09 29 00	Gypsum Board Assemblies
	09 30 00	Tile
	09 51 13	Acoustical Lay-In Ceilings
	09 64 66	Wood Athletic Flooring (Refinishing)
	09 65 13	Resilient Wall Base and Accessories
	09 68 00	Carpet
	09 68 50	Luxury Vinyl Flooring
	09 91 13	Exterior Painting
	09 91 23	Interior Painting

DIVISION 10 – SPECIALTIES

Section	10 11 00	Visual Display Elements
	10 14 00	Building Signage
	10 22 39	Movable Partitions
	10 26 00	Wall Protection
	10 28 00	Restroom Accessories
	10 41 60	Outdoor Message / ID Signage
	10 44 00	Fire Protection Specialties
	10 51 13	Metal Lockers

DIVISION 11 – EQUIPMENT

Section	11 40 00	Food Service Equipment
	11 52 13	Large Venue Projection Screens
	11 66 00	Athletic Equipment
	11 66 43	Interior Scoreboards

DIVISION 12 – FURNISHINGS

Section	12 24 13	Shades
---------	----------	--------

12 32 00	Plastic Laminate Casework
12 35 50	Library Casework
12 66 13	Telescoping Bleachers

VOLUME 2

DIVISION 20 – MECHANICAL

Section	20 01 00	General Provisions – Mechanical
	20 02 00	Scope of the Mechanical Work
	20 03 00	Shop Drawings, Maintenance Manuals and Parts Lists
	20 04 00	Demolition and Salvage
	20 11 00	Sleeving, Cutting, Patching, Firestopping & Repairing
	20 12 00	Excavation, Trenching, Backfilling & Grading
	20 13 00	Pipe, Pipe Fittings, & Pipe Support
	20 13 05	Geothermal Loop System
	20 13 10	Pipe Filling, Cleaning, Flushing Purging and Chemical Treatment
	20 21 00	Valves
	20 22 00	Insulation - Mechanical
	20 23 00	Thermometers, Pressure Gauges, Etc
	20 24 00	Identifications, Tags, Charts, Etc.
	20 25 00	Hangers, Clamps, Attachments, Etc
	20 31 00	Testing, Balancing, Lubrication and Adjustments

DIVISION 21 – FIRE PROTECTION

Section	21 01 00	Fire Protection
---------	----------	-----------------

DIVISION 22 – PLUMBING

Section	22 01 00	Plumbing Specialties
	22 02 00	Plumbing Fixtures and Trim
	22 03 00	Plumbing Equipment

DIVISION 23 – HVAC

Section	23 01 00	Pumps
	23 02 00	HVAC Equipment
	23 11 00	Registers, Grilles, Diffusers & Louvers
	23 12 00	Sheet Metal

DIVISION 26 – ELECTRICAL

Section	26 05 00	General Provisions
	26 05 01	Scope of the Electrical Work
	26 05 02	Shop Drawings, Literature, Manuals, Parts Lists, and Special Tools
	26 05 03	Cutting, Patching & Repairing
	26 05 04	Demolition
	26 05 05	Coordination among Trades, Systems Interfacing and Connection of Equipment Furnished by Others
	26 05 19	Conductors, Identifications, Splicing Devices & Connectors
	26 05 26	Grounding

26 05 31	Cabinets, Outlet Boxes & Pull Boxes
26 05 33	Raceways & Fittings
26 05 44	Excavation, Trenching, Backfilling & Grading
26 05 53	Identifications
26 24 00	Electrical Distribution Equipment
26 27 26	Wiring Devices & Plates
26 29 13	Motor Starters
26 32 13	Emergency Generator
26 43 13	Surge Suppression System
26 51 13	Interior Lighting
26 51 14	Exterior Lighting
26 61 00	Photovoltaic System

DIVISION 27 – COMMUNICATION

Section	27 06 00	Data/Voice Rough-in
	27 51 16	Intercom Public Address and Master Clock System

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

Section	28 16 00	Intrusion Detection
	28 31 00	Fire Alarm System

DIVISION 31 – EARTHWORK

Section	31 22 16	Rough Grading
	31 22 19.13	Finish Grading
	31 23 00	Excavation & Backfill
	31 23 16.16	Trenching
	31 23 16.26	Rock Removal (No Additional Payment for This Item)
	31 25 00	Erosion Prevention & Sediment Control
	31 31 16	Termite Control

DIVISION 32 – EXTERIOR IMPROVEMENTS

Section	32 12 00	Flexible Pavement
	32 13 13	Pavement, Walks & Curbs
	32 33 00	Site Furnishings
	32 92 00	Turf and Grasses
	32 93 00	Plants

DIVISION 33 – UTILITIES

Section	33 41 00	Storm Piping & Drainage
---------	----------	-------------------------

END OF INDEX

Invitation to Bid (00 01 00)

Bullitt County Public Schools will receive sealed bids for the furnishing of all labor, materials and equipment for the performance of all work required for the **Renovation to Bernheim Middle School**.

Sealed bids will be received at the district's central office, Bullitt County Public Schools, 1040 Highway 44 East, Shepherdsville, KY 40165 until 1:00 pm E.S.T., Wednesday, May 31st, 2023 and then, at said office, publicly opened and read aloud.

Sealed bids are to be hand delivered and logged in at this location prior to the designated times for receipt of bids. ***NO BIDS RECEIVED AFTER THIS TIME WILL BE CONSIDERED***. No mailed in or faxed bids will be accepted. Bidder needs to be present at the bid opening or the bid shall be automatically rejected.

A single contract shall be awarded on the basis of the lowest and best lump sum bid.

The Bullitt County Board of Education provides equal opportunities to all of its Bidders with respect to the bidding and award of Construction Contracts.

Bullitt County Public Schools requires that the Bidder submit, with the bid, the following information:

1. **Proposal Form** - properly signed, with completed Unit Prices, listing of all sub-contractors, and listing of suppliers / manufacturers at time of submittal, including Attachments A and B.
2. **Bid Guaranty** - properly signed, witnessed and executed.

Each Bid shall be submitted on the Form of Proposal obtained from the Project Manual.

The Form of Proposal and required information listed above shall be submitted digitally for the following project:

BID DOCUMENTS
Bernheim Middle School Renovation
BID PACKAGE #1 – General Construction
Shepherdsville, Kentucky
Month 00, 2023

A completed Form of Proposal will be required for each Bidder. The Form of Proposal shall be complete per the instructions on the form, and submitted prior to the deadline for the Bid. Corrections to information on the Bid must be initialed in order to be valid. A Form of Proposal incorrectly or insufficiently completed will not be considered.

A bid may not be modified, withdrawn or cancelled by the Bidder for a period of (60) days after the designated time for receipt of Bids.

The Owner reserves the right to accept any bid, to reject any or all bids, and/or to waive any informalities in bids received where such acceptance, rejection or waiver is considered to be in the best interest of the Owner, and 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.

It is the Owners' intent to purchase significant quantities of material items through direct Purchase Orders. The sales and use tax is to be excluded only on those material items purchased by the Owner directly from the material supplier. See Supplementary Instructions to Bidders for additional information.

BID SECURITY:

Bids shall be accompanied by a certified check (submit a digital scan with bid submission and a physical check should be submitted by the Contractor's Representative who is present on site on bid day) or bid bond in the amount of Five percent (5%) of the Bid Amount. Absence of this document will be grounds for automatic rejection of bids. The bid security is required as a guarantee that if the Proposal is accepted a Contract will be immediately be entered into and the performance of it properly secured. The Bid Guaranty shall be issued by a Surety Company that has an AM Best Company rating of 'A-' or better. Upon award of the Contract, a Performance and Payment Bond for 100% of the Bid Amount shall be provided to the Owner. In case the Bid is not accepted, the check or the Bid Bond will be returned to the Bidder. Certified or cashier's checks will not be returned until Board approval of the successful Bidder. Refer to the Instructions to Bidders for additional information.

NON-CONFORMANCE TO THE ABOVE REQUIREMENTS SHALL BE GROUNDS FOR REJECTION OF THE BID.

A PRE-BID MEETING for this project shall be held at 10:30 am E.S.T., on Thursday, May 11th, 2023 at the district's central office, Bullitt County Public Schools, 1040 Highway 44 East, Shepherdsville, KY 40165. Bernheim Middle School will be open and accessible from 3:00 pm – 5:00 pm after the pre-bid meeting for onsite review.

OBTAINING PLANS AND SPECIFICATIONS:

Plans and Specifications may be obtained from Lynn Imaging, 11460 Bluegrass Pkwy, Louisville KY 40299, 502.499.8400, www.lynnimaging.com, in accordance with the terms set out below:

Each company requesting Construction Documents must identify the position of the company as being either the prime bidder, material supplier, or other and provide the name, address, and telephone number of the person responsible for receiving addenda material and general communication concerning the Bid.

PRINTED PLANS AND SPECIFICATIONS:

Printed plans and specifications are available to be purchased from Lynn Imaging. Contact Lynn Imaging for purchase price. Note that this is a non-refundable purchase price.

DIGITAL DOWNLOAD:

Plans and specifications may be downloaded from Lynn Imaging (lynnimaging.com) at no cost to the Bidder. If the Bidder has downloaded the full set of Construction Documents, they may contact Lynn Imaging to request specific plan sheets / specification sections to be printed at a purchase price determined by Lynn Imaging.

Bid Documents may also be reviewed through Builders Exchange's online Planroom.

ADDENDA REQUIREMENTS:

Addenda will be issued via digital download via the Lynn Imaging online Planroom.

Submit written requests to the Architect for clarification of any part of the Contract Documents, for interpretation and correction of any ambiguity, inconsistencies or errors therein. Any interpretations and/or corrections made will be included by Addendum, issued by the Architect.

Bidder's written requests shall be forwarded to Cate Noble Ward, Studio Kremer Architects, 1231 S. Shelby Street, Louisville, KY 40203, 502.499.1100, or cate@studiokremer.com.

Written requests may be forwarded up to two (2) calendar days before the final Addendum is distributed.

The final Addendum will be distributed five (5) calendar days before the Bid Date.

Only a written interpretation or correction by Addendum shall be binding. No Bidder shall rely upon interpretations or corrections given by any other method.

END OF SECTION 00 01 00

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

Instructions to Bidders

for the following PROJECT:

(Name and location or address)

Bernheim Middle School Renovation
700 Audubon Drive
Shepherdsville, Kentucky

THE OWNER:

(Name, legal status and address)

Bullitt County Public Schools
1040 Highway 44 East
Shepherdsville, Kentucky

THE ARCHITECT:

(Name, legal status and address)

Studio Kremer Architects, Inc.
1231 S Shelby Street
Louisville, Kentucky

TABLE OF ARTICLES

1	DEFINITIONS
2	BIDDER'S REPRESENTATIONS
3	BIDDING DOCUMENTS
4	BIDDING PROCEDURES
5	CONSIDERATION OF BIDS
6	POST-BID INFORMATION
7	PERFORMANCE BOND AND PAYMENT BOND
8	FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR
9	PUBLIC WORKS ACT [Reference: KRS 337.505 to 337.550]
10	TAXES
11	POST BID REVIEW AND MATERIAL SUBMITTAL
12	EQUAL EMPLOYMENT AND NONDISCRIMINATION
13	CONFLICT OF INTEREST, GRATUITIES AND KICKBACKS, USE OF CONFIDENTIAL INFORMATION [Reference KRS 45A.455]
14	KENTUCKY FAIRNESS IN CONSTRUCTION ACT OF 2007 [Reference KRS 371.400 to 371.425]
15	KENTUCKY PREFERENCE LAW [Reference KRS 45A.490 to 45A.494]



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 stationary 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.

SUPPLEMENTAL INSTRUCTIONS TO BIDDERS (00 20 00)

(AIA A701-1997, KDE Version):

The following supplements modify, change, delete from or add to the “Instructions To Bidders”. Where any Article of the Instructions To Bidders is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these Supplementary Instructions, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

ARTICLE 3 BIDDING DOCUMENTS

Revise 3.2.2 as follows:

Bidders and Sub-bidders shall examine Bidding Documents carefully prior to the Bid Date and make written request to the Architect for clarification of any part of the Contract Documents, for interpretation and correction of any ambiguity, inconsistencies or errors therein. Refer to the Invitation to Bid for contact information. Only a written interpretation or correction by Addendum shall be binding. No Bidder shall rely upon interpretations or corrections given by any other method.

ADD 3.2.4 as follows:

WORK REASONABLY INFERRED, BUT NOT PARTICULARLY DELINEATED OR SPECIFIED: Bidders and Sub-bidders shall study all Drawings and Specifications and all conditions related to the completion of the Work, and if any materials or labor evidently necessary for the proper completion of the Work, which is not specifically mentioned and included in the Drawings and Specifications, although reasonably inferred therefrom - unless eliminated by special mention - or if any error or inconsistency appears therein, or in the event of a doubt arising as to the true intent and meaning of the Drawings and Specifications, shall be reported to the Architect at least two (2) days in advance of the final Addendum being issued. The Architect will then issue an Addendum containing the proper information to all Bidders, to assure fair competition.

In cases where the Bidder fails to make such report and the Architect is not otherwise advised of such doubtful matter, the Bidder is hereby responsible for the furnishing of the necessary labor and materials reasonably inferred or evidently necessary for the proper completion of the Work; for any additional work involved in the correction of apparent errors or inconsistencies and in executing the true extent and meaning of the Drawings and Specifications as interpreted by the Architect, and all such labor and materials shall be provided at the Bidder’s expense and under no condition will any such labor and material be allowed as an extra.

ADD 3.2.5 as follows:

DISCREPANCIES: Anything called for in the Specifications and not shown on the Drawings or shown on the Drawings and not called for in the Specifications shall be included in both. Where the details and general drawings do not agree, the Bidder shall notify the Architect at least (2) days in advance of the final Addendum being issued and the Architect will issue an Addendum to all Bidders as to which of the two methods of construction shall be followed. Failure to make this determination shall make the Bidder subject to furnishing wither method as may be called for by the Architect. In case of discrepancies between the various parts of the Drawings and Specifications, the Bidder shall furnish either method as may be determined by the Architect.

ARTICLE 4 BIDDING PROCEDURE

Paragraph 4.1.1, add the following:

Provide one (1) original and one (1) copy of the Form of Proposal.

Paragraph 4.1.2, add the following to the end of the paragraph:

...except in those sections where the words "Not Applicable" have been entered. Failure to provide all required information shall be deemed sufficient reason for rejection of bid.

Paragraph 4.2.1, change as noted:

"Certified check" to "Certified/Cashiers check".

Paragraph 4.2.2, add the following:

A Surety Company issuing a bid bond shall have an A.M. Best Co. rating of "A-" or better and shall hold a Certificate of Authority issued by the Department of Treasury and shall be listed in the Circular, published annually as of July 1, by the Department of the Treasury, Financial Management Service in the Federal Register.

Paragraph 4.4.1, add the following:

The stipulated time period that a bid may not be modified, withdrawn or cancelled by the Bidder is for a period of 60-days following the date for the receipt of bids.

ARTICLE 5 CONSIDERATION OF BIDS

ADD 5.3.4 as follows:

Time Limit for Execution of Contract Documents: In the event that a Bidder's proposal is accepted by the Owner and such Bidder shall fail to execute the Contract and to furnish satisfactory performance bond within ten (10) calendar days from the date of notification of the award of Contract, the Owner may at their option, determine that the awardee has abandoned the Contract. Thereupon the proposal shall become null and void and the guarantee, which accompanied it, shall be forfeited to and become the property of the Owner as liquidated damages from such failure. If the Bidder shall execute the Contract and furnish a satisfactory bond, the Bid Guarantee will be returned to the Bidder by the Owner.

ARTICLE 6 POST-BID INFORMATION

Paragraph 6.3.1, add to the end of the third sentence:

... of any reasonable objections in accordance with paragraph 6.3.3.

Include the following under Paragraph 6.3.1

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

ADD THE FOLLOWING:

- 6.6.4** Within four (4) business days from the Bid Date the apparent successful Contactor shall provide;
- .1 A breakdown of major material items (excluding sales tax) the Bidder intends for the Owner to purchase through the issuance of Purchase Orders directly to the Material Suppliers. This breakdown shall be submitted on the KDE Purchase Order Summary Form. The successful bidder will fill out the Purchase Order Summary Form and turn into the Architect for the Owner to process.
 - .2 Purchase order amount shall include all costs of delivery to the job site.
 - .3 Incidental expenses (shop drawing preparation, bond, etc) for which a Material Supplier intends to submit an invoice shall not be included in the lump sum Purchase Order.
- 6.6.5** The General Contractor will be provided prepared Purchase Orders. Upon receipt, the Contractor shall have fourteen (14) business days to have each Purchase Order executed by the respective material suppliers and returned to the Architect. 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 execution of the Purchase Orders by the Owner, the Purchase Orders will be delivered to the Contractor for distribution to the respective suppliers.
- 6.6.5.1** In the event the quantities of materials supplied via Purchase Orders are insufficient to complete the Work, the Contractor shall, at no expense to Owner, provide such materials as necessary to complete the Work.
- 6.6.5.2** In the event at the completion of the Work the Contractor has not Submitted invoices totaling the value of any individual Purchase Order, that Purchase Order shall be considered complete and closed. **NO ADJUSTMENT WILL BE MADE TO THE CONTRACTORS' CONTRACT.**
- 6.6.5.3** General Contractor shall be responsible for verifying that the materials listed on the Bid Breakout Form and included in a KDE Purchase Order Form are in full compliance with the Supplier/Manufacturer List provided. Should an inconsistency become apparent, the Architect shall be able to select the manufacturer at no additional cost to the Owner.
- 6.6.6** The Owner will provide the Contractor Kentucky Sales Tax Exemption Certificates for each Material Supplier.
- 6.6.7** If any Alternate bid results in a change to a listed subcontractor or vendor, then such subcontractor or vendor changes are to be identified in "List of Proposed Subcontractors" and/or "List of Proposed Materials/Manufacturers".
- 6.6.8** The Owner shall not be required to fill out any credit applications.

ARTICLE 9 PUBLIC WORKS ACT

Paragraph 9.2, delete paragraph:

Project is not funded with federal funds.

ARTICLE 10 TAXES

ADD THE FOLLOWING:

- 10.1.1** It is the Owner's intention to purchase major material items by direct Purchase Order. These materials shall be listed by the bidder on the KDE Purchase Order Summary Form. This Breakout shall include a description of the items, name of the manufacturer, name of the supplier, and the amount of the supplier's quote. A material supplier cannot be an installing contractor. It is intended that the bidder's base bid and alternate sums on the Form of Proposal should not include sales tax on these materials. For materials not identified for the Owner's direct purchase by Purchase Order, the bidder will be responsible for all applicable sales tax.
- 10.1.2** As provided by KRS 139.10 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.
- 10.1.3** 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 KDE Purchase Order Summary Form. If a contractor lists his own company as the supplier for items, 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.
- 10.1.4** The material breakout amount indicated by a prospective bidder is considered final. The KDE Purchase Order Form stipulates the cost of the material and is validated by the signature of the supplier.
- 10.1.5** The value of the direct Purchase Order cannot be less than \$5,000.

ARTICLE 11 POST BID REVIEW AND MATERIAL SUBMITTAL

Paragraph 11.1.1, add the following:

Failure to have a representative at the post bid review could lead to forfeiture of the bidders bid security, if errors or problems arise with the bid.

ARTICLE 13 CONFLICT OF INTEREST, GRATUITIES AND KICKBACKS, USE OF CONFIDENTIAL INFORMATION

ADD THE FOLLOWING:

- 13.1** PROHIBITION AGAINST CONFLICTS OF INTEREST, GRATUITIES, AND KICKBACKS
No employee or official of the Bullitt County Public Schools Board of Education, elective or appointive, shall take, receive, or offer to take or receive, either directly or indirectly, any

rebate, percentage of contract, money, or other things of value, as an inducement or intended inducement, in the procurement of business or the giving of business, for or to, or from, any person, partnership, firm, or corporation, offering, bidding for, or in open market seeking to make sales to the Bullitt County Public Schools Board of Education.

No person, firm, or corporation shall offer to make, pay, or give, any rebate, percentage of contract, money or any other thing of value, as an inducement or intended inducement, in the procurement of business or the giving of business, to any employee or to any official of the Bullitt County Public Schools Board of Education, elective or appointive, in his/her efforts to bid for, or offer for sale, or to seek in the open market.

ARTICLE 16 REGULATIONS (Additional Article)

The Kentucky Bid Law KRS 424.260 and 702 KAR 3:135 adopted by The Board of Education shall be deemed incorporated by reference in these specifications as though quoted fully herein. In the event of any conflict between this bid and the Kentucky Bid Law, the Law shall govern.

ARTICLE 17 CHALLENGE OF A BID AWARD (Additional Article)

A challenge to an award of a bid should be made in writing and received by the Owner within 48-hours of the bid opening. Rejection of a Contractor, Bidder or Offeror is a drastic action which must be based upon adequate evidence rather than mere accusation. In assessing adequate evidence, consideration shall be given to how much credible information is available, its reasonableness in view of surrounding circumstances, corroboration or lack thereof as to important allegations and inferences which may be drawn from the existence or absence of affirmative facts. The person or persons making the challenge must provide information and specifics, in writing, that will allow the District to properly assess the challenge.

Challenges should be mailed or delivered to:

Tony Roth, Director of Facilities
Bullitt County Public Schools
1040 Highway 44 East
Shepherdsville, KY 40165

END OF SECTION 00 20 00

BG No. 23-051

Date: _____ To: (Owner): **Bullitt County Public Schools**

Project Name: **Bernheim Middle School Renovation**

Bid Package **No.1 General Construction**

City, County: **Shepherdsville, Kentucky**

Name of Contractor:

Mailing Address:

Business Address: _____ Telephone: _____

Fax: _____

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
No.1	Door Hardware			<input type="checkbox"/>
No.2	Fire Alarm System			<input type="checkbox"/>
No.3	Plumbing Equipment			<input type="checkbox"/>
No.4	Kitchen Equipment			<input type="checkbox"/>
No.5	60kW Photovoltaic System			<input type="checkbox"/>
No.6	Entrance Modifications in Right-of-Way			<input type="checkbox"/>
No.7	Intercom Public Address and Master Clock System			<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.	Cleaning	
2.	Demolition	
3.	Building Layout (Engineer / Surveyor)	
4.	Excavation and Grading	
5.	Landscaping	
6.	Concrete	
7.	Masonry	
8.	Kitchen Equipment	
9.	Structural Steel	
10.	Steel Bar Joist / Metal Deck	
11.	Modified Roofing	
12.	Standing Seam Metal Roofing	
13.	Hollow Metal Door and Frames	
14.	Wood Doors	
15.	Hardware	

	<p align="center"><u>BRANCH OF WORK</u> (to be filled out by the Architect)</p>	<p align="center"><u>SUBCONTRACTOR</u> (to be filled out by the contractor)</p>
16.	Aluminum Windows / Storefront / Curtain Wall	
17.	Drywall / Hard Surface Ceiling	
18.	Resilient Base and Accessories	
19.	LVT Flooring	
20.	Ceramic Tile and Base	
21.	Acoustical Ceiling	
22.	Painting	
23.	Casework	
24.	Mechanical	
25.	Sheet Metal (HVAC)	
26.	Mechanical Insulator	
27.	Kitchen Hood	
28.	Test and Balance	
29.	Chemical Treatment	
30.	Plumbing	
31.	Fire Protection	
32.	Electrical	
33.	Fire Alarm	
34.	Security	
35.	Generator	
36.	Intercom	
37.	Geothermal	
38.		
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 with 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		
2.	Masonry		
3.	Modified Roofing		
4.	Standing Seam Metal Roofing		
5.	Pre-finished Metal		
6.	Structural Steel		
7.	Steel Bar Joist		
8.	Metal Floor & Roof Deck		
9.	Hollow Metal Door and Frames & Wood Doors		
10.	Hardware		
11.	Aluminum Windows / Storefront		
12.	Acoustical Ceiling		
13.	Resilient Base and Accessories		
14.	LVT Flooring		
15.	Paint		
16.	Casework		
17.	Kitchen Equipment		
18.	Fire Protection Sprinkler System / Sprinkler Heads		

	<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.	Plumbing Fixtures		
20.	Geothermal		
21.	Split Systems		
22.	Electric Unit Heaters		
23.	Domestic Water Heater		
24.	Hose Kits		
25.	Hydronic Pumps and Specialties		
26.	Variable Frequency Drives		
27.	Heat Pumps		
28.	AHU's / OA Units		
29.	Exhaust Fans		
30.	Grilles / Registers / Diffusers		
31.	Light Fixtures		
32.	Electrical Distribution Equipment		
33.	Fire Alarm		
34.	Intercom		
35.	Security Intrusion Detection		
36.	Emergency Generator		
37.	Emergency Transfer Switch		
38.			
39.			
40.			

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 with 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>
1.	Soil Stabilization of Subgrade		C.Y.
2.	Salvage and transport of boulders from Old Mill Elem stockpile, placement of landscape boulders		Per Boulder
3.	Reinforced concrete walks and slabs, 4" thick with compacted sub-base		S.Y.
4.	8" HDPE Pipe, Installed, 10" HDPE Pipe, Installed 12" HDPE Pipe, Installed		L.F. L.F. L.F.
5.	Earth Backfill		C.Y.
6.	Dense Graded Aggregate Base		TON
7.	Additional Excavation		C.Y.
8.	Asphalt Paving, per inch of thickness		S.Y.
9.	Structural Steel (weight less than 20 lbs/ft) (weight more than or equal to 20 lbs/ft)		LB. LB.
10.	Hollow metal frame – 3'-0" x 7'-0" (interior)		EA.
11.	Wood door w/ metal narrow lite kit – 3'-0" x 7'-0" (interior)		EA.
12.	Mortise lockset (classroom / intruder function) Cylindrical Lockset (classroom/intruder function)		EA. EA.
13.	Closer Exit device (rim type)		EA. EA.
14.	Acoustical Ceiling, including grid (2x2)		S.F. S.F.
15.	Resilient Base		L.F.
16.	LVT Flooring		S.F.
17.	6" CMU 8" CMU (reinforced) 12" CMU (reinforced)		S.F. S.F. S.F.

	<u>WORK</u> (to be filled out by the Architect)	<u>PRICE / UNIT</u> (to be filled out by the Contractor)	<u>UNIT</u>
18.	Metal stud framing (3-5/8") faced with 5/8" GWB, finished each side.		S.F.
19.	Block filler, pin-hole free (CMU) Primer (GWB)		S.F. S.F.
20.	(2) coats, acrylic paint (2) coats, water-based epoxy		S.F. S.F.
21.	1 1/2-inch Installed Interior Geothermal Piping with Misc. Fittings		L.F.
22.	2-inch Installed Interior Geothermal Piping with Misc. Fittings		L.F.
23.	2-inch Installed Interior Domestic Water Pipe		L.F.
24.	2-inch Installed DWV Pipe with Misc. Fittings		L.F.
25.	Permanent steel casing for 1 1/4-inch geothermal wellfield piping		L.F.
26.	Recessed 2G backbox and 3/4" or 1" EMT stub-out above 10'-8" accessible ceiling.		EA.
27.	Fire Alarm audio visual device (speaker/strobe) installed.		EA.
28.	Red fire alarm cabling installed.		L.F.
29.	3/4" EMT conduit installed (Plain or Factory Colored).		EA.
30.	Exit light fixture X-1 installed complete with 6'-0" whip and three #12 AWG conductors.		EA.
31.	Recessed "A3" fixture installed complete with a 6'-0" whip with three #12 AWG conductors		EA.
32.	#12 AWG conductor installed		L.F.
33.	#10 AWG conductor installed		L.F.
34.	Pendant Suspended Intercom Speaker Installed		EA.
35.	Tamper resistant 20A duplex outlet installed		EA.
36.	Long range Wall motion detector installed.		EA.
37.	Security Cabling Installed.		L.F.
38.	Fire Alarm manual pull station installed.		EA.
39.			

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.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			

	SUPPLIER (to be filled out by the Contractor)	PURCHASE ORDER DESCRIPTION (to be filled out by the Contractor)	PURCHASE ORDER AMT. (to be filled out by the Contractor)
19.			
20.			
21.			
22.			
23.			
24.			
25.			
26.			
27.			
28.			
29.			
30.			
31.			
32.			
33.			
34.			
35.			
36.			
37.			
38.			
39.			
40.			
41.			
42.			
43.			

	SUPPLIER (to be filled out by the Contractor)	PURCHASE ORDER DESCRIPTION (to be filled out by the Contractor)	PURCHASE ORDER AMT. (to be filled out by the Contractor)
44.			
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.~~ \$100,000. (change effective June 3, 2019.)

This form shall not be modified.

Attachment A

This attachment shall be included as an extension to the Form of Proposal - Kentucky Department of Education, 2013, 702 KAR 4:160

BASE BID ACCOUNTING BREAKDOWN:

Submit completed Breakdown within 1-hour of Bid submission.

WORK	PRICE
1 Civil (sitework)	\$ _____
2 Landscape	\$ _____
3 Structural	\$ _____
4 Architectural	\$ _____
5 Mechanical	\$ _____
6 Electrical	\$ _____
7 Fire Protection	\$ _____
8 Plumbing	\$ _____
 BASE BID GRAND TOTAL: (must equal Base Bid)	 \$ _____

CONTRACTOR ACKNOWLEDGEMENT OF COMPLIANCE WITH KRS 45A.343

By signing below, Contractor or Subcontractor acknowledge that it has read KRS 45A.343. Contractor or Subcontractor fully understands the effect of nondisclosure or noncompliance for failure to reveal violations of certain KRS Chapters as listed in KRS 45A.343.

2.3.7 Compliance with KRS Chapter 45A

- (a) All applicable provisions of KRS Chapter 45A regarding notice to and disclosure by contractors shall be complied with. Without limitation of the foregoing, every contract entered into by the Board shall require the contractor and all subcontractors performing work under the contract to:
 - (i) Reveal any final determinations as such term is used in KRS 45A.343 of a violation by the contractor or subcontractor within the previous five-year period pursuant to KRS Chapters 136, 139, 141, 337, 338, 341 and 342 that apply to the contractor or subcontractor; and
 - (ii) 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.
- (b) A contractor’s failure to reveal such a final determination of a violation by the contractor of KRS Chapters 136, 139, 141, 337, 338, 341 and 342 or to comply with these statutes for the duration of the contract shall be grounds for the Board’s:
 - (i) Cancellation of the contract; and
 - (ii) Disqualification of the contractor from eligibility for future contracts awarded by the Board for a period of two years.
- (c) A Subcontractor’s failure to reveal such a final determination of a violation by the subcontractor of KRS Chapters 136, 139, 141, 337, 338, 341, and 342 or to comply with these statutes for the duration of the contract shall be grounds for the disqualification of the subcontractor from eligibility for future contracts for a period of two years.

Contractor and or Subcontractor acknowledge that it has complied with the above requirements and have had the following violations as referenced above.

Listing of Violations (Attached separate sheet if necessary) Write “None” if no violations.

Company Name

Date

Contractor or Subcontractor (Print Name)

Contractor or Subcontractor (Signature)

GENERAL NOTES TO CONTRACTORS (00 40 00)

1. All pay applications shall be submitted digitally on AIA Document G702 and G703.
2. Projects shall be billed (invoiced) through the Architect.
3. Completion dates and liquidated damages clause will be enforced. If delays occur, contractor shall notify A/E in writing, reason for delay.
4. No money can be requested for Change Order work until approved by the Bullitt County Public School Board of Education and the AIA Document G701 form is processed.
5. All sub-contractors shall conduct their requests, questions, etc., through the general contractor's spokesman.
6. Contractors shall not modify any scope of work requested by district personnel. Changes to contract work must come through the Architect.
7. Please be aware that, under Article 12 of the Model Procurement code, contractors CAN be disallowed from doing work with Bullitt County Public Schools on the basis of non-performance or unsatisfactory performance on past projects.
8. Workers are required to wear shirts and other appropriate clothing at all times.
9. Alcohol, smoking, any tobacco products, use of e-cigarettes, drugs, firearms, foul language are strictly prohibited.
10. All contractors working on Bullitt County Public Schools property must comply with KRS160.380 subsection (3) prohibiting employment of workers convicted of felony sex crimes.
11. All contractors shall implement proper safety procedures when initiating hot work on projects.
12. Basis for Disqualification: Contractors with the following convictions or pending cases shall not be authorized to work on Bullitt County Schools property: (1) All sex-related offences; (2) All offences against minors; (3) All felony offences against persons or property; (4) All alcohol offences within five-years from date of check and no more than two such offences, in total; (5) All drug-related offences within five-years from date of check and no more than two such offences, in total; (6) All deadly weapon-related offences; (7) All violent, abusive, and/or threat-and harassment-related offences within the past five-years, unless the Applicant is a "violent offender" as defined in KRS 17.165(2), in which case the Applicant shall be disqualified under all circumstances.

NOTE: Please share this info with all interested parties in your firm.

END OF SECTION 00 40 00

CONTRACTOR SAFETY (00 50 00)

1. In order to provide a safe and healthful working environment, all contractors working for Bullitt County Public Schools are responsible for complying with all federal, state, and local regulations, such as, but not limited to, the Kentucky Occupational Safety and Health Standards for the Construction and General Industry, National Fire Protection Code, Kentucky Building Code, as incorporated in the 2006 International Building Code, Department of Health Regulations, Asbestos Hazard Emergency Response Act, Environmental Protection Agency, Team Kentucky Healthy at Work Requirements for Construction Businesses and Project Specifications.
2. Each Contractor shall have a trained competent safety person on site at all times who is required to conduct all necessary inspections and assessments. Each Contractor shall have a written company safety plan on the work-site.
3. Good housekeeping procedures and daily clean up shall be followed to minimize slip, trip, and fall hazards.
4. Material Safety Data Sheets (MSDS) shall be kept on site and employees familiar with their content.
5. Workers shall follow appropriate standards regarding specific eye protection, other personal protective equipment, or respiratory protection as required.
6. If required, and not included in the specifications, contractors shall follow proper disposal procedures of any hazardous waste.
7. No smoking is allowed in the school building or on school grounds.
8. Develop an emergency procedures plan to be utilized in the event of fire, tornado, or an earthquake, etc.
9. The contractor shall implement all required safety procedures when performing hot work on Bullitt County Public Schools projects.

THE FOLLOWING IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY TO THE CONTRACTOR

WORKER PROTECTION

The OSHA Construction Industry Standard (1926.62) applies to "all construction work where an employee may be exposed to lead." Construction work is defined as "work for construction, alteration and/or repair." It includes:

- (1) Demolition or salvage of structures where materials containing lead are present.
- (2) New construction, renovation of structures, or portions thereof where materials containing lead are present.
- (3) Maintenance operations associated with construction activities.

The rule requires "each employer who has a workplace or operation covered by the standard to initially determine if any employee may be exposed to lead at or above the action level." This is to be determined by personal exposure monitoring. The rule further states that "until the employer performs an employee exposure assessment as required, the employer shall treat the employee as if the employee were exposed above the PEL, and not in excess of ten times the PEL, and shall implement appropriate employee protective measures.

The tasks covered by this requirement include manual demolition of structures (e.g. dry wall), manual scraping, manual sanding, heat gun applications and power tool cleaning with dust collection systems."

The employee must collect at least one sample for each job classification.

Until an employer performs an initial employee exposure assessment, the employer must provide to the employees:

- (1) Appropriate respiratory protection and respirator physicals.
- (2) Appropriate personal protective equipment.
- (3) Change areas.
- (4) Hand washing facilities.
- (5) Biological monitoring.
- (6) Proper training.

However, "where the employer has previously monitored for lead exposure, and the data were obtained within the past 12 months during work operations closely resembling the process, type of material, work practices and environmental conditions used and prevailing in the employer's current operations, the employer may rely on this existing data to satisfy the initial monitoring requirements.

If the initial monitoring data indicate that workers are not exposed to lead concentrations at or above the 30 ug/m³ action level, no additional control or worker protection measures are required. Should data indicate that employees may be exposed to elevated lead concentrations exceeding the action level, the other aspects of 1926.62 concerning worker protection shall apply.

END OF SECTION 00 50 00

Preface to the Geotechnical Report

The Geotechnical Report is included in the Project Manual for informational purposes only.

It is not to be considered part of the Contract Documents. Contractor shall review the document and come to their own conclusion regarding sub-soil conditions. Additional borings can be made at the Bidder / Contractor's expense. If this is needed, the additional exploration shall be coordinated with the Owner.

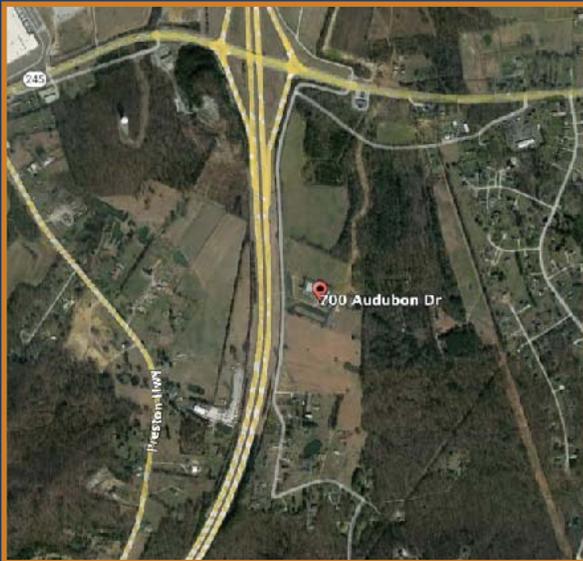
The boring locations shown on the Civil Drawings are approximate based on the information provided in the geotechnical report that was performed during the Schematic Design Phase and are meant for Contractor reference only.

The Contractor may perform any additional borings, inspections and / or soil testing at their expense. Any additional testing performed prior to bidding shall be coordinated with the Owner.

Documents provided:

1. Report of Geotechnical Exploration
Bernheim Middle School
Shepherdsville, Bullitt County, Kentucky
CSI Project Number: LX220209

as prepared by Consulting Services Incorporated, 4 January 2023



Report of Geotechnical Exploration

Bernheim Middle School

CSI Project No. LX220209

Prepared for :

Bullitt County Public Schools

January 4, 2023



January 4, 2023

Bullitt County Public Schools
% Studio Kremer Architects
1231 S Shelby Street
Louisville, Kentucky 40203

ATTN: Ms. Cate Ward, AIA

Subject: **Report of Geotechnical Exploration**
Bernheim Middle School
Shepherdsville, Kentucky
CSI Project No. LX220209

Dear Ms. Ward:

Consulting Services Incorporated of Kentucky (CSI) is pleased to present our report for the geotechnical services completed for your new building addition and new pavement areas project located at the existing Bernheim Middle School in Shepherdsville, Kentucky. We provided our services in general accordance with CSI's proposal number 8118 dated October 13, 2022.

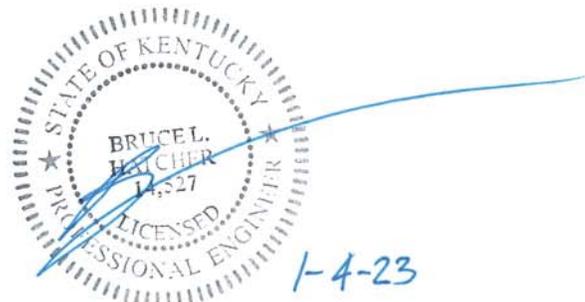
Our report represents information provided to us, readily available published data relevant to the site and site area, our observations and subsurface conditions encountered and our opinion of primary geotechnical conditions (discussion and recommendations) affecting design, construction and performance of the proposed earth supported portions of the project.

We appreciate the opportunity to provide our geotechnical services to you and the design team. Please do not hesitate to contact us for questions or comments about the information contained herein.

Cordially,



Barry Bishop, PE
Engineering Group Leader
Licensed KY 36,777



Bruce L. Hatcher, PE
Chief Engineer
Licensed KY 14,527

TABLE OF CONTENTS

INTRODUCTION	1
1 SCOPE OF THE GEOTECHNICAL EXPLORATION	1
2 PROVIDED INFORMATION	1
3 AREA/SITE INFORMATION	2
3A AREA TOPOGRAPHY/PHYSIOGRAPHY	2
3B SITE GEOLOGY	2
3C PUBLISHED SITE SOIL CONDITIONS	4
3D OTHER PUBLISHED SITE INFORMATION	6
4 SITE SURFACE OBSERVATIONS	7
5 SUBSURFACE CONDITIONS	9
5A SOIL CONDITIONS	9
5B GROUNDWATER CONDITIONS	9
5C BEDROCK INFORMATION	10
6 LABORATORY TESTING	10
GEOTECHNICAL DISCUSSION AND RECOMMENDATIONS	10
7 DISCUSSION-GEOTECHNICAL ISSUES	10
7A PREVIOUSLY PLACED FILL	11
7B HIGH PLASTICITY (FAT) CLAY SOILS	11
7C KARST GEOLOGY	12
8 EARTHWORK	12
8A SITE PREPARATION (WORK PRIOR TO FILLING)	13
8B NEW FILL OPERATIONS	13
8C BACKFILL OPERATIONS (FOUNDATION WALLS, UTILITIES, ETC.)	14
8D GENERAL NOTES	14
9 SITE DRAINAGE	15
10 FOUNDATIONS	15
10A SHALLOW SPREAD FOUNDATIONS ON SOIL	15
10B SHALLOW FOUNDATIONS ON SOIL - CONSTRUCTION NOTES	16
11 SEISMIC SITE CLASSIFICATION	16
12 CONCRETE SLABS-ON-GRADE	17
13 PAVEMENT RECOMMENDATIONS	17
13A ASPHALT PAVEMENT	18
13B RIGID PAVEMENT (CONCRETE)	19
14 NOTES ON REPORT AND RECOMMENDATIONS	19

APPENDICES, FIGURES, PHOTOS AND TABLES

APPENDICES:	Site Location Plan
	Boring Location Plan
	Boring Logs
	Field Testing Procedures
	Summary of Laboratory Tests
	Specific Laboratory Test Tables
	Laboratory Testing Procedures

List of Figures

Figure 1. Kentucky Physiographic Map	2
Figure 2. Site Geology	3
Figure 3. Karst Areas Map, KGS	4
Figure 4. USDA Soil Survey Map.....	5
Figure 5. Aerial photograph, dated March 1998	6
Figure 6. Aerial photograph, dated March 2002	7

List of Photos

Photos 1-2	8
-------------------------	---

List of Tables

Table 1. Anticipated Conditions.....	1
Table 2. Atterberg Limits Testing Results	11
Table 3. Light Duty Asphalt Pavement Section	18
Table 4. Heavy Duty Asphalt Pavement Section	18



INTRODUCTION

1 SCOPE OF THE GEOTECHNICAL EXPLORATION

We conducted a geotechnical exploration which is summarized in the following report. Our services included a review of the project information provided, conducting a geotechnical exploration that utilized soil test borings and rock coring to obtain samples for modeling the soil and rock conditions at the subject site, an analysis of the data and information obtained, and providing recommendations for the soil supported portions of the project site as listed in our proposal.

2 PROVIDED INFORMATION

Project information was provided to us via e-mail correspondence from Ms. Cate Noble Ward, AIA of Studio Kremer Architects. We were provided the following documents:

- Bullitt 2022 - RFP enclosure - Geotechnical Investigation Maps.pdf
- BCPS - geotechnical RFP to CSI.pdf (dated October 6, 2022)
- 2022-36 BMS Renovation_Architecture_v21_cateVX6FQ.pdf

Based on the information obtained, the following is our understanding of the project:

- The project site is located at the existing Bernheim Middle school located at 700 Audubon Drive in Shepherdsville, Kentucky. Reference the *Site Location Plan* in the Appendix for further details.
- We understand the project will consist of a new building addition with a footprint of approximately 4,042 square feet. This single-story addition will be situated along the west side of the existing school. Additionally, the project will consist new asphalt pavement areas. It should be noted that we were not supplied the outlines of these two new pavement areas.

We were not supplied with a grading plan for this project. However, we expect that the new addition FFE (Finished Floor Elevation) will match the FFE of the existing building. We have not been provided with specific structural or construction types. Based on our experience with similar projects, we expect construction will consist of CMU walls and slab-on-grade concrete floors and have assumed the following:

Table 1: Anticipated Conditions	
Site Grading	
Finished Floor Elevation	match FFE of existing building
Foundation Loading Conditions	
Load Type	Load
Column	50
Wall	4 kips/LF
Floor Slab	100 pounds/SF

If any of the aforementioned information is in error or if the information changes during the course of the project, please contact our office so that we can re-evaluate the new information with respect to our recommendations.

3 AREA/SITE INFORMATION

3A AREA TOPOGRAPHY/PHYSIOGRAPHY

The site is located in The Knobs area of the Outer Bluegrass Region of the Bluegrass Physiographic Region of Kentucky. This area consists of gently rolling topography with steeper slopes generally found near streams and rich, fertile soils. Published topographic mapping by the United States Geological Survey (USGS) indicates the elevations in the site vicinity range from 460 to 500 feet. Figure 1 shows the location of the site with respect to the regional physiography.

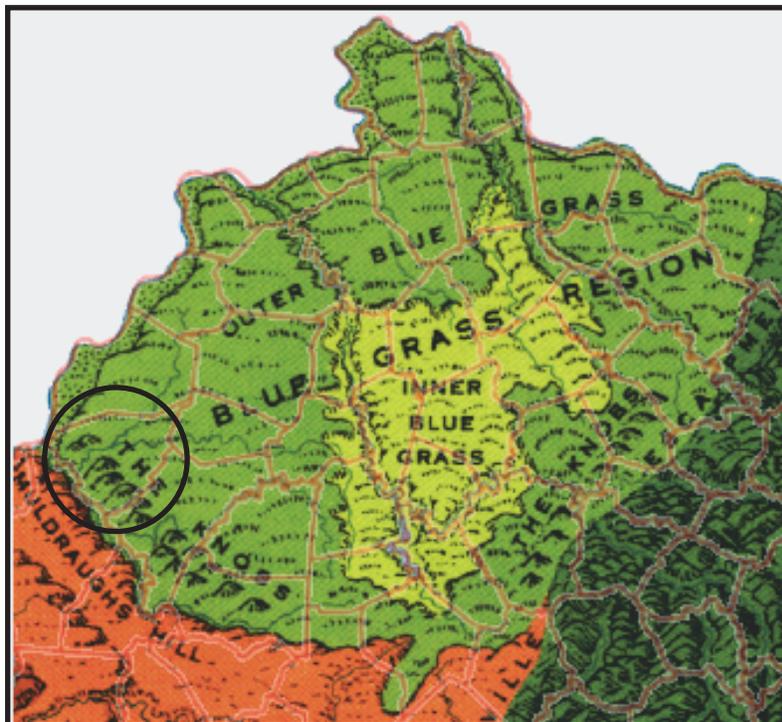


Figure 1. Kentucky Physiographic Map (site vicinity shown in the circle)

3B SITE GEOLOGY

A review of the USGS Geologic Map of the Shepherdsville, Bullitt County Quadrangle (dated 1968) indicates the project site is underlain by New Albany Shale of the Middle and Upper Devonian aged rock deposits. The geologic quadrangle describes the New Albany Shale as silty, olive-black to grayish-black that weathers as light to pale yellowish brown or very light gray. The New Albany Shale contains abundant pyrite that form brown and yellow iron oxides and sulfates. The New Albany Shale is notorious for causing heaving due to swelling caused by a chemical reaction with the pyrite.



NOTE: Our geologic research indicated that we would encounter New Albany Shale at the west side building addition in our rock core. However, that was not the case. Please read the remainder of this report for details.

There are no faults mapped within, or near, the project vicinity. The geologic dip in this area is less than 1 percent to the west. Please reference Figure 2 for more details of USGS mapped geology.

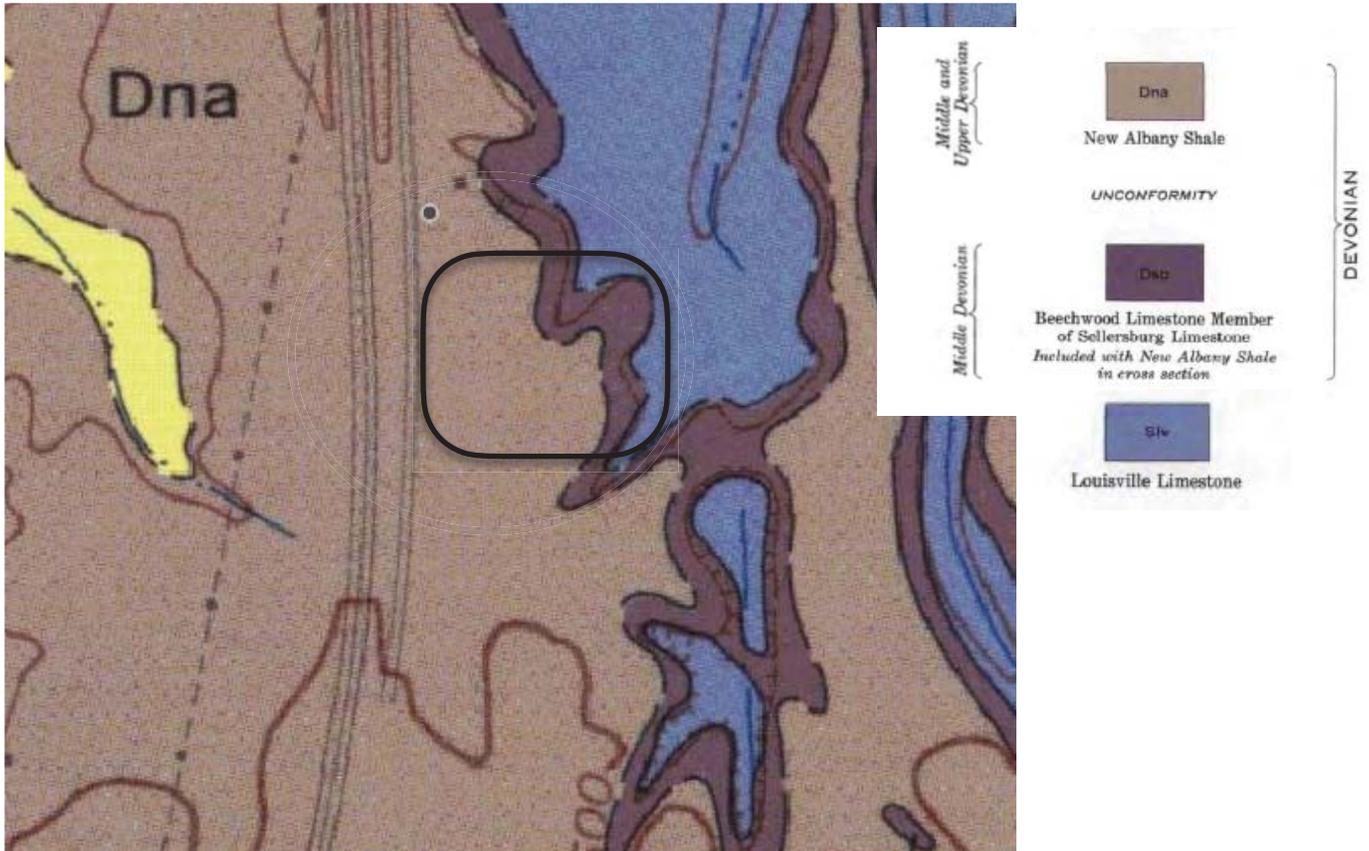


Figure 2. Site Geology USGS Shepherdsville Quadrangle, dated 1968
(site vicinity indicated by rectangle)

As with most of the geology of this portion of Kentucky, Karst (sinkholes, weathered bedrock, caverns, erratic bedrock, etc.) is associated with the site geology. Two large sinkholes are mapped to the southeast of the school. Some of the surrounding areas have been developed; therefore, obvious signs of sinkholes may have been filled. The Karst Occurrence in Kentucky map published by the Kentucky Geological Survey (KGS) indicates that the project site is in an area underlain by rock with a medium to high potential for Karst development. Please reference Figure 3 for more details.

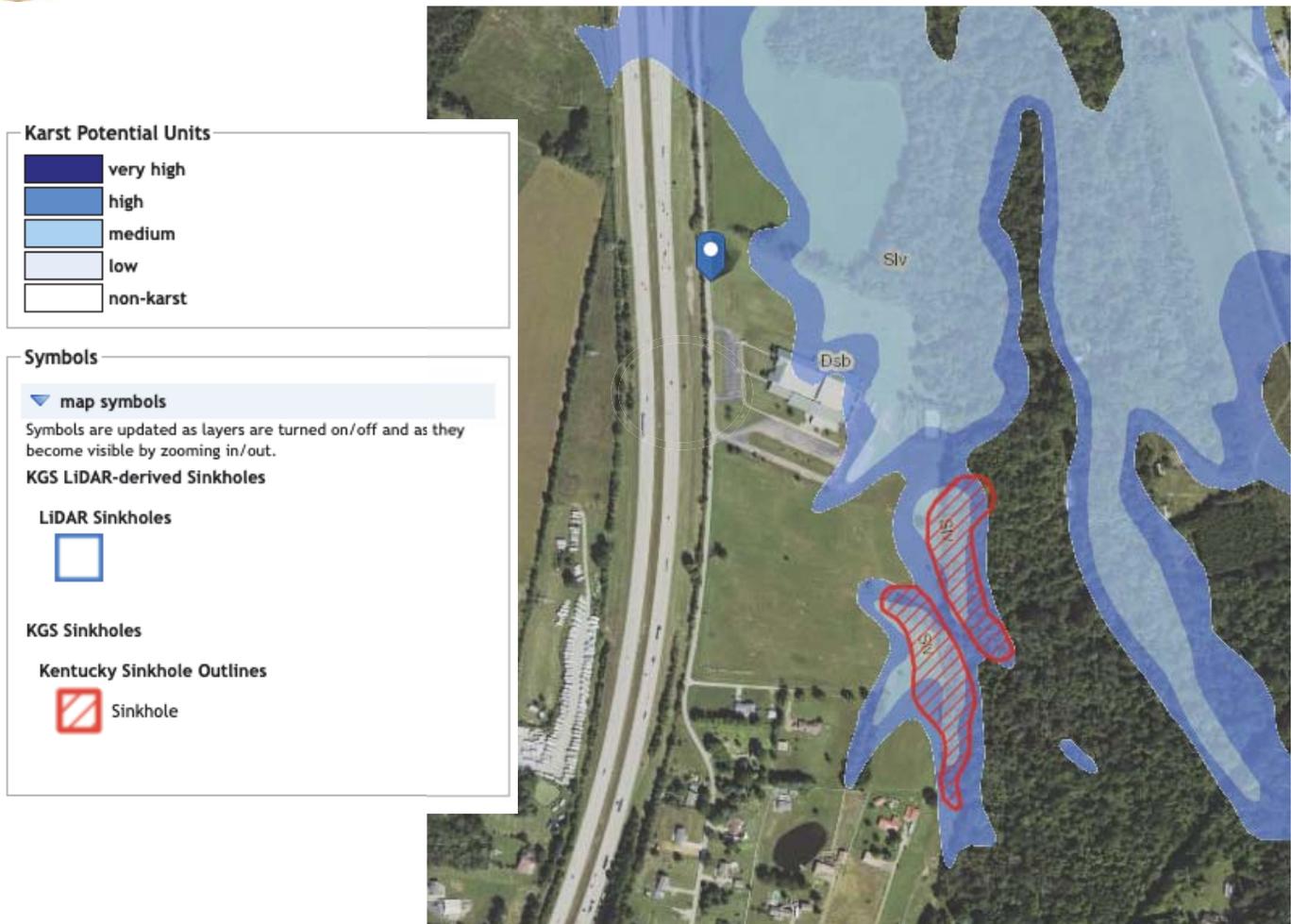


Figure 3. Karst and Sinkhole Map for Project Area (Kentucky Geological Survey)

3C PUBLISHED SITE SOIL CONDITIONS

According to the USDA Soil Survey of Bullitt (NRCS website), the soils underlying the site consist of the following series:

- CrB - Crider silt loam, 2 to 6 percent slopes
- HaC - Hagerstown silt loam, 6 to 12 percent slopes, eroded
- Ne - Newark silt loam, 0 to 2 percent slopes, frequently flooded

The following describes the soil series characteristics and limitations with respect to construction:

- Depth to restrictive feature for these soil series is listed as ranging from approximately 40 inches to greater than 80 inches.
- These soils series are listed as being “Somewhat Poorly Drained” to “Well Drained” with a depth of water table ranging from approximately 20 inches to greater than 80 inches.

- These soil series are listed as ranging from “Somewhat Limited” to “Very Limited” with respect to the construction of shallow excavations. Particular issues affecting construction include too clayey, dusty, depth to hard bedrock, slope, unstable excavation walls, flooding, and depth to saturated zone.
- These soil series are listed as ranging from “Somewhat Limited” to “Not Limited” with respect to construction of dwellings without basements. Particular issues affecting construction include shrink-swell, flooding, depth to saturated zone, and slope.
- These soil series are listed as ranging from “Somewhat Limited” to “Very Limited” with respect to construction of dwellings with basements. Particular issues affecting construction include shrink-swell, depth to hard bedrock, flooding, depth to saturated zone, and slope.
- All of the soil series are listed as being “Somewhat Limited” to Very Limited” with respect to construction of small commercial buildings. Particular issues affecting construction include shrink-swell, flooding, depth to saturated zone, and slope.
- All of the soil series are listed as being “Very Limited” with respect to construction of local roads and streets. Particular issues affecting construction include low strength, shrink-swell, soluble bedrock, frost action, ponding, depth to saturated zone, depth to thick cemented pan, depth to thin cemented pan, and slope.

Due to previous development surrounding the site, the soil survey information listed may no longer be useful since the site soils may have been altered. Thus, the soils described above may be on-site but not in their natural condition. Figure 4 shows the soils map from the USDA website.

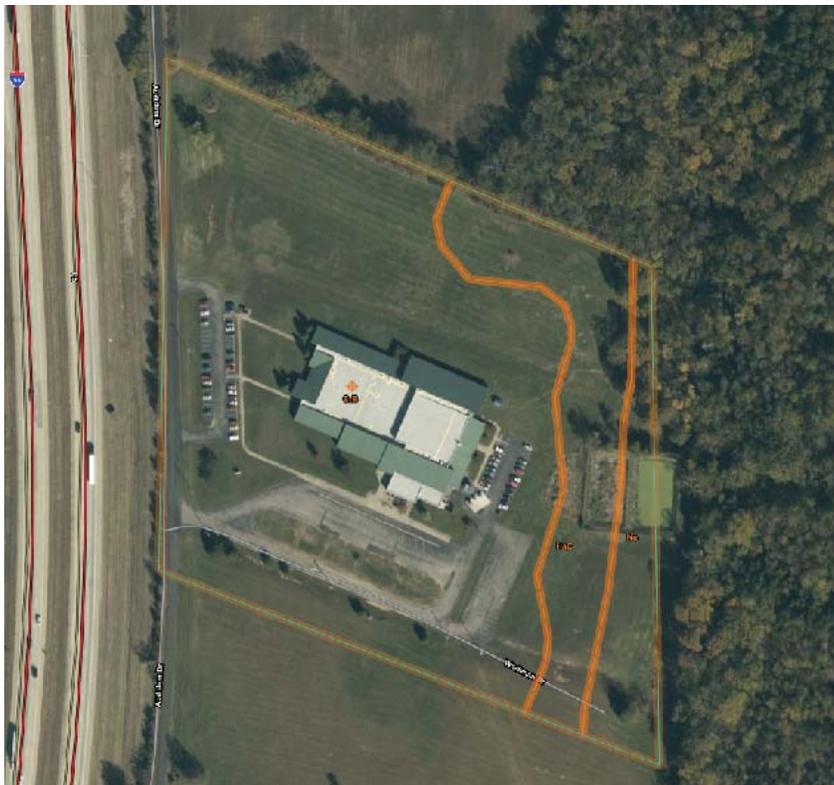


Figure 4: USDA Soil Survey Map of Project Site (site vicinity outlined in green/orange)

3D OTHER PUBLISHED SITE INFORMATION

We have reviewed numerous available aerial photographs, dated as far back as March 1998. The March 1998 aerial photograph indicates the school and pavement areas are already present. We did not see any significant changes to the building or pavement areas in the reviewed aerial maps. Please reference the following aerial photographs (earliest and latest) for further details.



Figure 5: Aerial photograph, dated March 1998 from Google Earth
(site vicinity shown in oval)



Figure 6: Aerial photograph, dated March 2022 from Google Earth
(site vicinity shown in oval)

4 SITE SURFACE OBSERVATIONS

Mr. Kyle Pauley, PE of CSI conducted a site visit, performed a field reconnaissance, logged soil borings, rock coring, and directed drilling operations within the proposed project area on December 7, 2022.

The existing Bernheim Middle School is located at 700 Audubon Drive in Shepherdsville, Kentucky. The existing school consists of the main school building with asphalt pavement areas to the east, west and south. There are also concrete sidewalks (with overhead lights) leading to different areas, mainly from the school to the pavement areas. The other areas of the school consist of manicured grass lawns with occasional trees. Based on our top of boring elevations, there is about 4 feet of vertical relief across our borings.

Public underground utilities (as marked by Before U Dig) were observed within the project vicinity. Also, we had Pinpoint Utility Protection clear all of our borings for underground utilities. Please reference the following photographs for views of the site at the time of our services.



Photo 1: View of front of school looking east (area of proposed building addition)



Photo 2: Typical view of manicured lawn area (looking toward Audubon Drive)



5 SUBSURFACE CONDITIONS

The subsurface conditions encountered at each of our soil boring locations are shown on the Logs in the Appendix. It should be noted that our soil borings were sampled according to the procedures presented in the Appendix. The Logs represent our interpretations of the subsurface conditions based on field logs, visual examination of field samples by an engineer, visual examination of auger cuttings, and tests of the samples collected. The letters in parentheses following the soil descriptions are the soil classifications in accordance with the Unified Soil Classification System. It should be noted that the stratification lines shown on the logs represent approximate transitions between material types. In-situ stratum changes could occur gradually or at slightly different depths. Water levels shown on the Boring Logs represent the conditions only at the time of our exploration.

5A SOIL CONDITIONS

Based on the boring plan provided, we performed 5 soil test borings:

- 3 for the proposed building addition (B-101 through B-103);
- 2 for pavement areas (B-201 and B-202).

Please reference the *Boring Location Plan* in the Appendix for details.

In general, we encountered the following in our soil borings: a layer of topsoil, overlying fill soils (where encountered), overlying residual soils, overlying bedrock.

At the surface in all 5 borings, we encountered a layer of topsoil. The topsoil thickness ranged from 0.1 feet to 0.3 feet and generally consisted of the root mat.

Beneath the topsoil, fill soils were encountered in 3 of our 5 borings. The fill soils were about 2 feet thick in these 3 borings. The fill soils consisted of brown clay that was sampled as firm to stiff and moist. The fill samples also contained brick fragments (B-103 only), black oxide nodules, and fine roots.

Beneath either the topsoil or the fill soils, residual soils were encountered at all 5 of our borings. The residual soils extended to either bedrock or to the borings's termination depth. The residual soil consisted of either lean clay (CL) or fat clay (CH). It should be noted that we only encountered fat clay (CH) in boring B-102A at a sample depth between 5 and 7 feet. The residual soils were firm to very stiff, reddish brown, brown, or dark brown in color. Some samples had tan mottling. The residual soil samples also contained black oxide nodules, fine roots (near the surface), and were sometimes sandy. All residual soil samples were moist.

5B GROUNDWATER CONDITIONS

Water was not observed in any of our soil borings upon completion of augering. All of our borings were immediately backfilled with auger cuttings upon completion of augering (due to safety concerns). A final groundwater reading was not obtained in our core hole since water was used to cool the coring bit.

Water conditions that usually affect construction and performance of projects consist of trapped/perched water zones which occur in various areas in the soil mass, at or near the bedrock bedding planes or at or near the soil/rock interface. Perched water sources are often not linked to the more continuous relatively stable groundwater table that typically occurs at greater depths. Due to the Karst



terrain, this area can include springs and other water features. Site excavation activities or ground disturbance can expose these features and the resulting seepage can vary greatly. Finally, water issues are also dependent upon recent rainfall activity and surface and subsurface drainage patterns in the area.

5C BEDROCK INFORMATION

Auger refusal was encountered at all 3 building addition borings at depths ranging from 8.5 to 11.5 feet. We have interpreted auger refusal as the top of hard bedrock. The remaining two borings (pavement area borings) were terminated at a depth of 5.5 feet without encountering auger refusal.

Five feet of rock core was obtained at boring B101. The rock was logged as dolomitic limestone (Louisville Limestone) that was light brown to tan, with numerous small vugs, and was highly weathered. The rock core recovery was 78 percent, while the Rock Quality Designation (RQD) was 37 percent (which is considered poor rock quality). No voids or core water loss were observed during rock coring activities.

6 LABORATORY TESTING

Laboratory tests were performed on selected recovered samples from our borings. Detailed descriptions of these tests and the results of our testing are included in the Appendix. Tests performed included:

- Natural moisture contents
- Atterberg limits
- Percent fines analyses
- Unconfined compressive strength tests (soil)
- Standard Proctor test
- California Bearing Ratio (CBR) test

GEOTECHNICAL DISCUSSION AND RECOMMENDATIONS

7 DISCUSSION-GEOTECHNICAL ISSUES

Based on our experience with similar projects and the conditions observed during our subsurface exploration, we believe the site is suitable for the proposed school addition and new pavement areas. However, this site will be more difficult (and more expensive) to develop when compared to some sites due to previously placed fill and high plasticity (fat) clay soils. The primary geotechnical concerns are:

- Previously Placed Fill
- High Plasticity (Fat) Clay Soils
- Karst Geology

The following sections discuss each issue. However, recommendations to address the issues are contained in later sections of the report.



7A PREVIOUSLY PLACED FILL

Fill soils were encountered in 3 of our 5 borings. The fill soils were 2 feet thick in these 3 borings. The fill soils were brown clay that was firm to stiff and moist. The fill samples also contained brick fragments (B-103 only), black oxide nodules, and fine roots. Based on the extensive development of this project site, unusual and unexpected subsurface conditions should be expected and budgeted for. Therefore, areas of deeper fill could be encountered within any of the explored areas. Again, it should be noted that we did not encounter any deleterious materials (other than the brick fragments) in any of our auger cuttings or soil samples.

Fills placed in an uncontrolled manner have proven to be very problematic. The problems generally arise not from general settlement, but from erratic differential settling of the fill. The settlement of large masses is dependent upon several factors such as fill thickness, degree of compaction, fill contents, and age of the fill mass. Also, fills tend to settle linearly with thickness.

We typically recommend complete removal of any encountered previously placed fill within the proposed site improvement areas. We believe that most of the previously placed fill may be used as controlled fill, provided it meets specifications provided in this report. If any old fill is left in-place beneath the proposed site improvements, the Owner must be aware of the risk of construction over old fill material and hold CSI harmless for poor performance of the site improvements due to construction over the old fill.

7B HIGH PLASTICITY (FAT) CLAY SOILS

Atterberg limits testing was performed on 3 representative soil samples. Our laboratory testing indicated that 1 of the tested soil samples was fat clay (CH) with a maximum PI (Plasticity Index) of 32 percent, while the other 2 samples were lean clay (CL). Soils with a PI above 30 percent can have a tendency to shrink/swell with changes in moisture content. Soils with a PI greater than 50 are generally highly susceptible to volume change. Soils with a PI between these limits have moderate volume change potential. Thus, we believe the on-site soils present a low to moderate risk of volume change potential. See Table 2 for a summary of Atterberg limits testing results.

Boring No.	Depth (ft)	LL	PL	PI	Soil Type
B-101	4 - 5.5	33	21	12	CL
B-102A	5.0 - 7.0	63	31	32	CH
B-201	0 - 2.0	45	23	22	CL

Shrinking and swelling of foundation and bearing soils are generally not as severe in the central Kentucky area as in other areas because long periods of excessively wet or dry weather do not normally occur. However, if site grading takes place during the dry summer or fall months, significant drying of the exposed subgrade soils may occur. If these soils re-saturate after completion of construction, structural distress may be experienced. Also, moisture content loss typically results in settlement of soil supported building components. Where the soil moisture fluctuates, movement may be ongoing throughout the building's life, resulting in deterioration and building distress. Strength loss



may also affect building components, but is more likely to adversely affect lightly loaded structural elements such as floor slabs, sidewalks, patios, etc. Therefore, the volume change potential of the soils should be considered for this project.

Since the fat clay (CH) soils were only encountered in boring B-102A at a deeper depth (5 to 7 feet), we do not envision that these soils will adversely affect the proposed foundations or floor slabs. However, we do not recommend the use of on-site soils excavated from depths of 5 feet or deeper for use as new structural fill material.

7C KARST GEOLOGY

As previously stated, our geologic research indicated that we would encounter New Albany Shale at the west side building addition (borings B-101 through B-103). However, that was not the case since we encountered dolomitic limestone in our rock core at boring B-101. Thus, we do not believe that the KGS mapping is correct in this area.

KGS karst maps indicates a band of high Karst risk near the west end of the existing school. Thus, we expect that this Karst risk extends beneath the proposed building addition. Karst is common in this area of Kentucky and typically includes, sinkholes, caverns, erratic/irregular (pinnacle and rock channels) bedrock surfaces, and “floater” type boulders or rock cobbles in the native soil overburden. There are 2 KGS mapped sinkholes to the southeast of the existing school building. No obvious signs of Karst activity were denoted in our auger cuttings or soil samples. However, core water loss occurred at 13.5 feet during rock coring (which is a common indicator of Karst activity). Due to geologic formations in the area there is an inherent risk associated with Karst-related issues for this project site.

Based on our knowledge of the area geology, sinkholes could be exposed during grading activities and foundation and utility construction. Detailed site proofrolling and foundation observations are frequently utilized in an attempt to locate incipient soil dropouts. Sinkholes, mud seams, or slots in bedrock must be evaluated and treated on an individual basis. A CSI geotechnical engineer must be retained for remediation recommendations if any of these features are exposed during construction. Where the soil overburden is relatively thick, treatment of depressions will likely involve monitoring by a CSI geotechnical engineer during earthwork operations to observe indications of sinkhole throats and conduits after soil cutting activities are complete.

8 EARTHWORK

Historically, more change orders (in total number and costs) occur during the earthwork portion of construction than in almost any other part of the project. Further, the site preparation phase of construction always affects the future performance of project structures and pavements. Add into this, the fact that earthwork is the portion of work most influenced by wet weather and unknown conditions and time-wise, this section of the report could be the most important to prevent and minimize delays and costs during construction and for the life of the project.

Please review the concerns listed in section 7 prior to reading the following recommendations. If problems occur that the recommendations do not address or do not adequately remedy, please contact CSI as soon as possible.



8A SITE PREPARATION (WORK PRIOR TO FILLING)

- If applicable, remove/relocate utilities as required by the construction plans.
- All topsoil and organic materials should be removed (stripped) from the construction areas and all structural fill areas. Topsoil can be stockpiled for use in landscape areas.
- Existing asphalt pavement should be removed and wasted off-site. The crushed stone beneath the asphalt can be left in-place provided it holds up well to a heavy proofroll. If the crushed stone has to be removed due to required grades, then it can be re-used as new fill provided that it does not contain any deleterious materials.
- Excavated old fill materials can be re-used as new structural fill provided they do not contain deleterious materials and meet the requirements of this report.
- Areas ready to receive new fill should be proofrolled with a heavily loaded dump truck (GVW of 80,000 pounds) or similar equipment judged acceptable by a CSI geotechnical engineer. No proofrolling of rock areas after heave rock has been removed;
- The level of proofroll for any site area should be determined by a CSI geotechnical engineer on a case-by-case basis;
- Perform the proofrolling after a suitable period of dry weather to avoid degrading the subgrade;
- Areas which pump, rut, or wave during proofrolling may require undercutting, depending on the location of the area and the use of the area, so the geotechnical engineer should be contacted for guidance;
- Backfill of undercut areas should be performed in accordance with sections 8B and 8C;
- Retain CSI to observe the proofrolling operations and make recommendations for any unstable or unsuitable conditions encountered. This can save time on the construction schedule and save unnecessary undercutting.

We recommend that site grading should take place between about late April to late October. Earthwork taking place outside this time period will likely encounter wet conditions and weather conditions that will provide little to no assistance with drying the soils.

8B NEW FILL OPERATIONS

As previously stated, we do not recommend the use of on-site soils excavated from depths of 5 feet or deeper for use as new structural fill material. If off-site fill material is imported to the project site (possible), representative samples should be obtained of the proposed fill material to determine the moisture-density relationship and overall classification of the material. Off-site soils with a plasticity index (PI) greater than 25 percent should not be used for new fill.

After the subgrade has been approved to receive new fill, the fill may commence with the following procedures and guidelines recommended:



- Place fill in maximum 8-inch thick loose lifts;
- Fill lifts should be compacted to at least 95 percent of the soil's maximum dry density (ASTM D698) and maintain the moisture content of compacted fill within 3 percent of optimum moisture;
- Off-site soils with a plasticity index (PI) of greater than 25 percent should not be used as new fill;
- Fill compaction requirements should be extended to at least 5 feet outside the building footprints and pavement areas;
- Maximum particle size of the soil should be limited to 4 inches in any dimension with no concentrations of large fragments;
- Density testing should be performed as a means to verify percent compaction and moisture content of the material as it is being placed and compacted;
- Observation of fill “stability” is also critical, so it is recommended to observe the operation of the filling equipment traversing over the new fill to document movement (similar to proofrolling);
- Soils should not be “overcompacted” and construction traffic should be kept to minimum to assure compaction is achieved and that the soil is not allowed to “break down”;
- Retain a representative of CSI to observe and document fill placement and compaction operations.

8C BACKFILL OPERATIONS (FOUNDATION WALLS, UTILITIES, ETC.)

These materials are placed in more confined areas than mass earthwork materials and therefore cannot be placed in full compliance with sections 8A or 8B. The following are general recommendations for backfill areas:

- Fill lift thicknesses will vary dependent on compaction equipment available and material types, but in no case should exceed 8 inches;
- For crushed stone/aggregate backfills in trenches or wall backfill and when using smaller compaction equipment (such as a plate compactor or trench compactor or similar) the lift thickness should not exceed 4 inches;
- Compaction/moisture percentages and density testing requirements should be the same as in section 8B;
- CSI should be retained to provide additional recommendations for backfill (if necessary).

8D GENERAL NOTES

- For all earthwork operations, positive surface drainage is prudent to keep water from ponding on the surface and to assist in maintaining surface stability;
- The surface should be sealed prior to expected wet weather. This can usually be accomplished with rubber-tired construction equipment or a steel-drum roller;



- If any soil placement problems occur, CSI should be retained to provide additional recommendations, as needed.

9 SITE DRAINAGE

During construction, water should not be allowed to pond in excavations or undercutting will likely be required. Additionally, allowing water to pond in excavations greatly increases the risk for activating latent Karst features. During the life of the project, slope the subgrade and other site features so that surface water flows away from the site structures. Structure roof drains should be piped away to proper storm drainage systems. Diversion ditches should be used to keep surface water from accumulating at or near site structures.

For excavations during construction, most free water could likely be removed via sump pumps and open channel flow (ditches) at or near the source of seepage. If normal dewatering measures prove insufficient due to shallow water conditions, CSI should be retained to provide recommendations on the issue.

Wet conditions are possible in excavations on-site during site construction and karst features such as springs are common to the underlying geology. Daylighting wet zones for drainage or the use of french/rock drains may be prudent or cost effective methods of de-watering wet areas of the site. Pumping with long-flexible hoses day-lighted hundreds of feet away or other types of sumping could also be utilized if necessary. CSI should be retained to observe all excavations in locations of springs or other water-bearing features.

10 FOUNDATIONS

Based on the encountered depths to bedrock and the expectation that the new building addition FFE will match the FFE of the existing building, we expect the use of shallow spread foundations bearing on soil for this project. If there are any changes in the project criteria or structure locations, CSI should be allowed to review the recommendations to determine if any modifications are required.

10A SHALLOW SPREAD FOUNDATIONS ON SOIL

At present, we expect shallow foundations bearing on soil for the new building addition. Shallow spread footings may be sized using a **maximum allowable bearing pressure of 2,000 psf** (pounds per square foot). Foundations should bear on the firm or better residual soil, or newly placed engineered fill. Foundations should not bear on the existing fill material.

If rock is encountered within 2 feet of the design bottom of foundation (BOF) elevation (not expected), then the rock should be undercut to at least 2 feet below the design BOF. The undercut area should then be backfilled with compacted soil fill, or DGA (dense graded aggregate). The use of No. 57 crushed stone as backfill material is not recommended.

A detailed settlement analysis was beyond the scope of this exploration. However, based on the expected structural loads, the anticipated behavior of soil types encountered during field activities, and our experience with similar projects, we expect that total settlements will not exceed 1-inch, and that differential settlements will not exceed ½-inch along continuous footing distances of 30 feet or less. We



recommend the structures be designed to accommodate these magnitudes of total and differential settlements.

Additional design considerations for spread foundations bearing on soil are outlined as follows:

- Design all footings with a minimum 24 inches width;
- All exterior footing bottoms should bear at least 24 inches below finished exterior grading (Kentucky Building Code, Table 1809.5 for Bullitt County);
- Interior footings (those not exposed to freezing) may be placed at nominal depths or 18 inches deep, whichever is deeper;
- Include control joints at suitable intervals in the walls of structures and in areas where changes in support from native soil to fill are anticipated, to help accommodate differential foundation movements.

10B SHALLOW FOUNDATIONS ON SOIL - CONSTRUCTION NOTES

Any soils can lose strength if they become wet, so we recommend the foundation subgrades be protected from exposure to water. For foundation construction, we also recommend the following procedures.

- For soils that will remain exposed overnight or for an extended period of time, place a "lean" concrete mudmat over the bearing areas. The concrete should be at least 4 inches thick. Flowable fill concrete or low-strength concrete is suitable for this cover, as conditions allow.
- Disturbed soil should be removed prior to foundation concrete placement;
- Foundation bearing conditions should be benched level;
- Areas loosened by excavation operations should be recompact prior to reinforcing steel placement;
- Loose soil, debris, and excess surface water should be removed from the bearing surface prior to concrete placement;
- Retain a CSI geotechnical engineer to observe all foundation excavations and provide recommendations for treatment of any unsuitable conditions encountered.

11 SEISMIC SITE CLASSIFICATION

The latest edition of the Kentucky Building Code (KBC) was reviewed to determine the Site Seismic Classification. Based on our review of geologic data, our experience and subsurface conditions encountered, we recommend a Seismic **SITE CLASS "C"** for soil bearing foundations.

A detailed geotechnical earthquake engineering analysis was not performed since it was beyond the scope of our authorized work. However, based on a review of published literature and our experience with similar subsurface conditions, we believe the potential for slope instability, liquefaction, and surface



rupture due to faulting or lateral spreading resulting from earthquake motions is low. However, this potential could be elevated during wet periods of the year unless adequate drainage is provided.

12 CONCRETE SLABS-ON-GRADE

A grade supported floor slab is suitable for the proposed building addition provided all new fill is placed as recommended in this report and observed by CSI. All slab-on-grade concrete should bear on firm or better residual soil or engineered fill material. Slabs should not bear on the existing fill material. Additionally, all soils (residual or new fill) must pass a level of proofrolling recommended by a CSI geotechnical engineer.

If rock is encountered within 1 foot of the slab subgrade elevation (not expected), we recommend that the rock be undercut at least 1 foot below slab subgrade elevation and the excavation be backfilled with structural soil fill or compacted dense graded crushed stone up to the design slab subgrade elevation.

The following features are recommended as part of the concrete slab construction:

- Provide isolation joints between the slab and columns along footing supported walls.
- Adequate joint patterns (ACI and ICC guidelines) should be used to permit slab movement due to normal settlement, normal subgrade disturbance and material expansion/contraction;
- Place a minimum of 4 inches of compacted dense graded crushed stone beneath the slab to provide a working base. The actual thickness of the crushed stone layer should be based on design requirements;
- Keep the crushed stone or gravel moist, but not wet, immediately prior to slab concrete placement to minimize curling of the slab due to differential curing conditions between the top and bottom of the slab;
- Retain CSI to review the actual subgrade conditions prior to slab construction and make recommendations for any unsuitable conditions encountered.

Note: Slab subgrade conditions are also considered earthwork areas and the recommendations contained in the Earthwork section of the report. See Section 8 of this report for specific details.

13 PAVEMENT RECOMMENDATIONS

We were not supplied expected traffic loadings for this project. Based on our experience with similar projects, we expect that the traffic in the light-duty pavement areas will be limited primarily to automobiles. Buses, occasional delivery trucks, and an occasional garbage truck are expected for heavy-duty pavement areas. Please refer to the recommendations contained in the Earthwork section of this report for subgrade preparation.

Adequate soil/subgrade support is critical for any pavement area. Please refer to the recommendations contained in the Earthwork section of this report for subgrade preparation. Also, prior to stone base placement, areas to be paved with asphalt must be proof rolled at the direction of CSI. Soft or wet areas not "passing" proof roll criteria at that time must be stabilized at our direction.



Adequate drainage and slope of the pavement subgrade and pavement section should be provided to promote adequate drainage. Edges of the pavement should be provided a means of water outlet by extending the aggregate base course through to side ditches or providing drain pipes and weep holes at catch basin walls.

The following pavement recommendations are based on our experience with similar materials and loading conditions. The recommendations are based on the assumption that the soil subgrade will be compacted and/or remediated according to the recommendations contained in this report.

13A ASPHALT PAVEMENT

Typically, pavement design is based on supplied traffic loads and California Bearing Ratio (CBR) values. However, no traffic loads were provided to us for this project. Our laboratory testing indicated a CBR value of 4.6 percent for the on-site soils. Thus, we used a CBR value of 4 percent for our pavement design calculations. Generalized pavement designs for light duty and heavy duty pavement are given in Table 3 and Table 4.

Table 3. Light Duty Asphalt Pavement Section	
Pavement Section Component	Thickness (in)
Bituminous Surface Course	1.5
Bituminous Binder Course	1.5
Dense Graded Aggregate (DGA)*	8.0*

*DGA to be placed in 6 inch thick maximum, compacted lifts

Table 4. Heavy Duty Asphalt Pavement Section	
Pavement Section Component	Thickness (in)
Bituminous Surface Course	1.5
Bituminous Binder Course	2.5
Dense Graded Aggregate (DGA)*	8.0*

*DGA to be placed in 6 inch thick maximum, compacted lifts

The dense graded aggregate (DGA) should be placed and compacted in accordance with Kentucky Department of Highways Standard Specifications, latest edition. The asphalt should be mixed, placed, and compacted in accordance with Kentucky Department of Highways Standard Specifications, latest edition. It is common practice to place the base stone and binder course prior to completion of construction without placing the surface course. It should be noted that repeated passes of heavily loaded construction traffic on the binder course will decrease the service life of your pavement.



13B RIGID PAVEMENT (CONCRETE)

We anticipate reinforced concrete pavement will be used in areas where the pavement is subjected to high stresses such as entrances/exits, drop-off/pick-up lanes, and dumpster pads. Prior to stone base placement, we recommend an additional heavy proofroll of the subgrade be performed to verify subgrade conditions. Recommendations for undercutting/repair of the subgrade can be made at that time by a CSI geotechnical engineer.

Again, no expected traffic loadings were supplied to us for this project. As such, we recommend a minimum DGA thickness of 8 inches beneath the new concrete pavement and a minimum concrete thickness of 6 inches for new pavement areas. We also recommend that the concrete pavement be reinforced with heavy welded wire fabric or reinforcing steel. For dumpster pads and refuse container pads, the concrete pads should be large enough to accommodate both the refuse container and all axles of the truck.

14 NOTES ON REPORT AND RECOMMENDATIONS

We recommend that this complete report be provided to the various design team members, the contractors and the project Owner. Potential contractors should be informed of this report in the "Instructions to Bidders" section of the bid documents. A geotechnical exploration, such as the one we performed, uses widely spaced borings to attempt to model the subsurface conditions at the site. Because no exploration contains complete data or a complete model, there is always a possibility that conditions between borings will be different from those at specific boring locations. Thus, it is possible that some subsurface conditions will not be as anticipated by the project team or contractor. If this report is included or referenced in the actual contract documents, **it shall be explicitly understood that this report is for informational purposes only**. CSI shall not be responsible for the opinions of, or conclusions drawn by, others.

It has been our experience that the construction process often disturbs soil conditions and this process, no matter how much experience we use to anticipate construction methodology, is not completely predictable. Therefore, changes or modifications to our recommendations are likely needed due to these possible variances. Experienced CSI geotechnical personnel should be used to observe and document the construction procedures and the conditions encountered. Unanticipated conditions and inadequate procedures should be reported to the design team along with timely recommendations to solve the problems created. We recommend that the Owner retain CSI to provide this service based upon our familiarity with the project, the subsurface conditions and the intent of our recommendations.

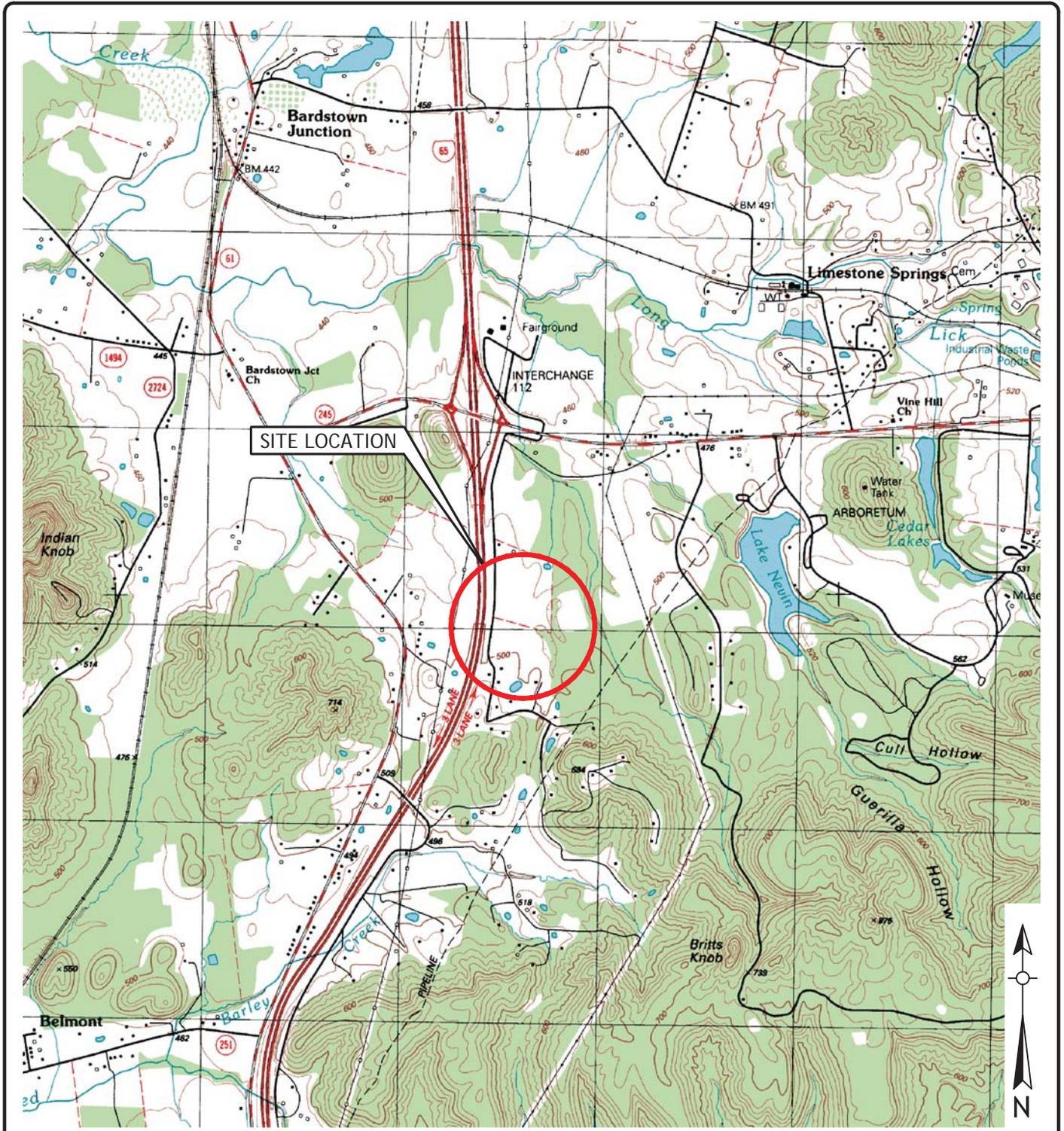
This report is based on the supplied project information, the subsurface conditions observed at the time of the report, and our experience with similar conditions. As such, it cannot be applied to other project sites, types, or combinations thereof. If the Project Information section in this report contains incorrect information or if additional information is available, you should convey the correct or additional information to us and retain us to review our recommendations. Our recommendations may then require modification.

No section or portion of this report (including Appendix information) can be used as a stand alone article to make distinct changes or assumptions. The entire report and Appendix should be used together as one resource.



While this report deals with samples of subsurface materials and some comments on water conditions at the site, no assessment of site environmental conditions or the presence of contaminants were performed.

We wish to remind you that our exploration services include storing the soil and rock core samples collected and making them available for inspection for 30 days. The soil and rock core samples are then discarded unless you request otherwise. Please inform us if you wish to keep any of the obtained samples.

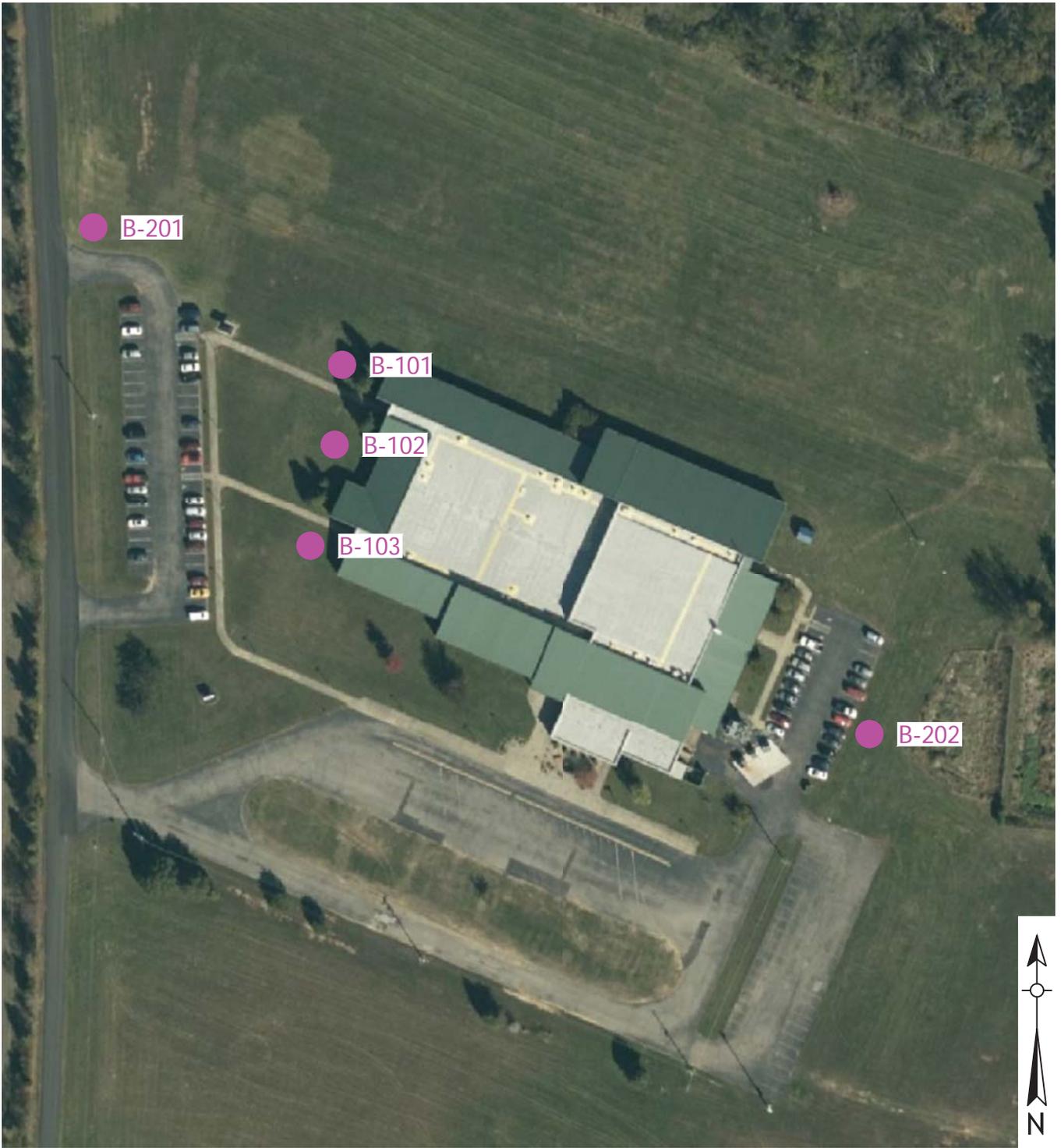


Site Location Plan adapted from USGS Sheperdsville, Kentucky Topographic Quadrangle map (dated 1991), with further adaptation by CSI personnel.

FOR ILLUSTRATION PURPOSES ONLY

 Consulting Services Incorporated of Kentucky 858 Contract Street Lexington, Kentucky 40505 859.309.6021 Office 888.792.3121 Fax www.csikentucky.com	SITE LOCATION PLAN	Project No: LX220209	Drawn By: HH
	Bernheim Middle School Sheperdsville, KY	Date: 1/4/2023	Checked By: BH
		Scale: Not To Scale	Drawing No: SLP - 1

This drawing is being furnished for this specific project only. Any party accepting this document does so in confidence and agrees that it shall not be duplicated in whole or in part, nor disclosed to others without the consent of Consulting Services Incorporated of Kentucky.



Boring Location Plan adapted from provided Geotechnical Investigation Map, not dated, and aerial imagery with further adaptation by CSI personnel.

LEGEND	
● B-XXX	BORING LOCATIONS

FOR ILLUSTRATION PURPOSES ONLY

 Consulting Services Incorporated of Kentucky 858 Contract Street Lexington, Kentucky 40505 859.309.6021 Office 888.792.3121 Fax www.csikentucky.com	BORING LOCATION PLAN		Project No: LX220209	Drawn By: SM
	Bernheim Middle School Shepherdsville, KY		Date: 1/4/2023	Checked By: BH
			Scale: Not To Scale	Drawing No: BLP - 1

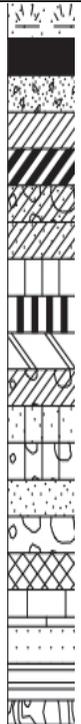
This drawing is being furnished for this specific project only. Any party accepting this document does so in confidence and agrees that it shall not be duplicated in whole or in part, nor disclosed to others without the consent of Consulting Services Incorporated of Kentucky.



Consulting Services Incorporated

LEXINGTON | LOUISVILLE | CINCINNATI

Geotechnical Boring Information Sheet

Sample Type Symbols		Definitions
Splitspoon (SPT) Shelby Tube Grab Rock Core Auger Cuttings		<p>SPT-"Splitspoon" or standard penetration test. Blow counts are number of drops required for a 140 lb hammer dropping 30 inches to drive the sampler 6 inches.</p> <p>N-value is the addition of the last two intervals of the 18-inch sample.</p> <p>Shelby tubes are often called "undisturbed samples". They are directly pushed into the ground, twisted, allowed to rest for a small period of time and then pulled out of the ground. Tops and bottoms are cleaned and then sealed.</p> <p>Sample classification is done in general accordance with ASTM D2487 and 2488 using the Unified Soil Classification System (USCS) as a general guide.</p>
Surface Symbols		
Topsoil Asphalt Concrete Lean Clay Fat Clay Glacial Till Sandy Clay Silt Elastic Silt Lean Clay to Fat Clay Gravelly Clay Sandy Silt Gravelly Silt Sand Gravel Fill Limestone Sandstone Shale/Siltstone Weathered Rock		<p>Soil moisture descriptions are based on the recovered sample observations. The descriptors are dry, slightly moist, moist, very moist and wet. These are typically based on relative estimates of the moisture condition of a visual estimation of the soils optimum moisture content (EOMC). Dry is almost in a "dusty" condition usually 6 or more percent below EOMC. Slightly moist is from about 6 to 2 percent below EOMC at a point at which the soil color does not readily change with the addition of water. Moist is usually 2 percent below to 2 percent above EOMC and the point at which the soil will tend to begin forming "balls" under some pressure in the hand. Very moist is usually from about 2 percent to 6 percent above EOMC and also the point at which it's often considered "muddy". Wet soil is usually 6 or more percent above EOMC and often contains free water or the soil is in a saturated state.</p> <p>Silt or Clay is defined as material finer than a standard #200 US sieve (<0.075mm) Sand is defined as material between the size of #200 sieve up to #4 sieve. Gravel is from #4 size sieve material to 3". Cobbles are from 3" to 12". Boulders are over 12".</p> <p>Rock hardness is classified as follows: Very Soft: Easily broken by hand pressure Soft: Ends can be broken by hand pressure; easily broken with hammer Medium: Ends easily broken with hammer; middle requires moderate blow Hard: Ends require moderate hammer blow; middle requires several blows Very Hard: Many blows with a hammer required to break core</p> <p>Rock Quality Designation (RQD) is defined as total combined length of 4" or longer pieces of core divided by the total core run length; defined in percentage.</p>
Samples Strength Descriptors		
Cohesive Soils: Very Soft Soft Firm Stiff Very Stiff Hard Non-cohesive Soils: Very Loose Loose Firm Very Firm Dense Very Dense	N 0-1 2-4 5-8 9-15 16-30 31+ 0-4 5-10 11-20 21-30 30-50 51+	<p>Water or cave-in observed in borings is at completion of drilling each boring unless otherwise noted.</p> <p>Strata lengths shown on borings represents a rough estimate. Transition may be more abrupt or gradual. Soil borings are representative of that estimated location at that time and are based on recovered samples. Conditions may be different between borings and between sample intervals. Boring information is not to be considered stand alone but should be taken in context with comments and information in the geotechnical report and the means by which the borings are logged, sampled and drilled.</p>

BORING LOG

Consulting Services Incorporated
 858 Contract Street
 Lexington, Kentucky 40505
 Phone: 859.309.6021
 Fax: 888.792.3121



BORING: B-101

Project Number: LX220209 Name: Bernheim Middle School Client: Bullitt County Public Schools Location: Shepherdsville, KY Logged By: K. Pauley, PE	Weather: Misty, 60's *Elevation (ft): 486.8 Date Started: 12/7/22 Date Completed: 12/7/22 Checked By: B. Hatcher, PE	Contractor: CSI Drill Rig: B-57 Method: SFA Hole Size (in): 4
---	--	--

Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
486	0		TOPSOIL - 0.2 feet	4-6-7 (13)	14	17.3						Dry upon completion of soil augering
	2		LEAN CLAY (CL) - STIFF, reddish brown, with black oxide nodules, moist	7-8-7 (15)	12	19.1						
484	4			4-5-6 (11)	16	16.0	33	21	12	96		
482	6			5-7-9 (16)	18	17.8						
480	8		LEAN CLAY (CL) - VERY STIFF to STIFF, brown, with tan mottling, with black oxide nodules, moist	4-5-7 (12)	12	24.2						
478	10											
476	12		Auger Refusal at 11.5 feet Begin Coring at 11.5 feet									
474	14		DOLOMITIC LIMESTONE (LOUISVILLE LIMESTONE) - light brown to tan, with numerous vugs, higly weathered		47							REC (%) - 78 RQD (%) - 37
472	16											
470			Coring Terminated at 16.5 feet									Core water loss observed at 13.5 feet



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

BORING LOG

Consulting Services Incorporated
 858 Contract Street
 Lexington, Kentucky 40505
 Phone: 859.309.6021
 Fax: 888.792.3121



BORING: B-102

Project Number: LX220209 Name: Bernheim Middle School Client: Bullitt County Public Schools Location: Shepherdsville, KY Logged By: K. Pauley, PE	Weather: Misty, 60's *Elevation (ft): 487.5 Date Started: 12/7/22 Date Completed: 12/7/22 Checked By: B. Hatcher, PE	Contractor: CSI Drill Rig: B-57 Method: SFA Hole Size (in): 4
---	--	--

Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
			TOPSOIL - 0.3 feet									
486	2		LEAN CLAY (CL) - FIRM, brown, with fine roots, moist	1-2-5 (7)	12							Dry upon completion of soil augering
484	4		LEAN CLAY (CL) - STIFF, reddish brown, with black oxide nodules, moist	4-6-6 (12)	10							
482	6		FAT CLAY (CH) - STIFF, reddish brown, with tan mottling, with black oxide nodules, moist	4-5-8 (13)	16							
480	8			4-5-50/5"	12							
478	10		Auger Refusal at 8.5 feet									
476	12											
474	14											
472	16											
470												



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

BORING LOG

Consulting Services Incorporated
 858 Contract Street
 Lexington, Kentucky 40505
 Phone: 859.309.6021
 Fax: 888.792.3121



BORING: B-102A

Project Number: LX220209 Name: Bernheim Middle School Client: Bullitt County Public Schools Location: Shepherdsville, KY Logged By: K. Pauley, PE	Weather: Misty, 60's *Elevation (ft): 487.5 Date Started: 12/7/22 Date Completed: 12/7/22 Checked By: B. Hatcher, PE	Contractor: CSI Drill Rig: B-57 Method: SFA Hole Size (in): 4
---	--	--

Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
486	2		Sounding (No samples taken)									Dry upon completion of soil augering
484	4											
482	6		SHELBY TUBE								Qu (psf) = 1798	
480	8		Boring Terminated at 7.0 feet									
478	10											
476	12											
474	14											
472	16											
470												



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

BORING LOG

Consulting Services Incorporated
 858 Contract Street
 Lexington, Kentucky 40505
 Phone: 859.309.6021
 Fax: 888.792.3121



BORING: B-103

Project Number: LX220209 Name: Bernheim Middle School Client: Bullitt County Public Schools Location: Shepherdsville, KY Logged By: K. Pauley, PE	Weather: Misty, 60's *Elevation (ft): 487.7 Date Started: 12/7/22 Date Completed: 12/7/22 Checked By: B. Hatcher, PE	Contractor: CSI Drill Rig: B-57 Method: SFA Hole Size (in): 4
---	--	--

Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
486	2	[Cross-hatched symbol]	TOPSOIL - 0.3 feet FILL - sampled as STIFF, brown clay, with brick fragments, moist	5-7-7 (14)	13	18.2						Dry upon completion of soil augering
484	4	[Diagonal lines symbol]	LEAN CLAY (CL) - STIFF, brown, with black oxide nodules, moist	5-6-7 (13)	12	20.5						
482	6	[Diagonal lines symbol]	LEAN CLAY (CL) - STIFF to FIRM, reddish brown, with tan mottling, with black oxide nodules, moist	4-5-6 (11)	14	21.4						
480	8	[Diagonal lines symbol]		3-3-5 (8)	16	23.9						
476	12		Auger Refusal at 11.5 feet									
474	14											
472	16											
470												



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

BORING LOG

Consulting Services Incorporated
 858 Contract Street
 Lexington, Kentucky 40505
 Phone: 859.309.6021
 Fax: 888.792.3121



BORING: B-201

Project Number: LX220209 Name: Bernheim Middle School Client: Bullitt County Public Schools Location: Shepherdsville, KY Logged By: K. Pauley, PE	Weather: Misty, 60's *Elevation (ft): 487.5 Date Started: 12/7/22 Date Completed: 12/7/22 Checked By: B. Hatcher, PE	Contractor: CSI Drill Rig: B-57 Method: SFA Hole Size (in): 4
---	--	--

Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
486	2	[Cross-hatched symbol]	TOPSOIL - 0.2 feet FILL - sampled as FIRM, brown clay, with black oxide nodules, with fine roots, moist	2-3-4 (7)	15							Dry upon completion of soil augering
484	4	[Diagonal hatched symbol]	LEAN CLAY (CL) - STIFF, reddish brown, with tan mottling, with black oxide nodules, moist	4-5-8 (13)	14							
482	6		Boring Terminated at 5.5 feet	5-6-5 (11)	16							
480	8											
478	10											
476	12											
474	14											
472	16											
470												



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

BORING LOG

Consulting Services Incorporated
 858 Contract Street
 Lexington, Kentucky 40505
 Phone: 859.309.6021
 Fax: 888.792.3121



BORING: B-202

Project Number: LX220209 Name: Bernheim Middle School Client: Bullitt County Public Schools Location: Shepherdsville, KY Logged By: K. Pauley, PE	Weather: Misty, 60's *Elevation (ft): 483.8 Date Started: 12/7/22 Date Completed: 12/7/22 Checked By: B. Hatcher, PE	Contractor: CSI Drill Rig: B-57 Method: SFA Hole Size (in): 4
---	--	--

Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
482	2	[Cross-hatched symbol]	TOPSOIL - 0.1 feet FILL - sampled as STIFF, brown clay, with black oxide nodules, with rock fragments, moist	4-5-6 (11)	16							Dry upon completion of soil augering
480	4	[Diagonal lines symbol]	LEAN CLAY (CL) - STIFF, dark brown, with black oxide nodules, sandy, moist	7-6-7 (13)	10							
478	6	[Diagonal lines symbol]	LEAN CLAY (CL) - STIFF, reddish brown, with black oxide nodules, moist Boring Terminated at 5.5 feet	3-4-6 (10)	14							
476	8											
474	10											
472	12											
470	14											
468	16											
466												



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

Consulting Services Incorporated

LEXINGTON | LOUISVILLE | CINCINNATI

FIELD TESTING PROCEDURES

Field Operations: The general field procedures employed by CSI 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 the chief driller. 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, which are the basis for all evaluations and recommendations.

The final boring records represent our interpretation of the contents of the field records based on the results of the engineering examinations and tests of the field samples. These records depict subsurface conditions at the specific locations and at the particular time when drilled. Soil conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in a change in the subsurface soil and ground water conditions at these boring locations. The lines designating the interface between soil or refusal materials on the records and on profiles represent approximate boundaries. The transition between materials may be gradual. The final boring records are included with this report.

The detailed data collection methods using 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 hollow stem steel auger into the soil. At regular intervals, the drilling tools were removed and soil samples obtained with a standard 1.4 inch I.D., 2 inch O.D., split tube sampler. The sampler was first seated 6 inches to penetrate any loose cuttings, then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated the "penetration resistance". The penetration resistance, when properly evaluated, is an index to the soil strength and foundation supporting capability.

Representative portions of the soil samples, thus obtained, were placed in glass jars and transported to the laboratory. In the laboratory, the samples were examined to verify the driller's field classifications. Test Boring Records are attached which graphically show the soil descriptions and penetration resistances.

Consulting Services Incorporated

LEXINGTON | LOUISVILLE | CINCINNATI

Core Drilling: Refusal materials are materials that cannot be penetrated with the soil drilling methods employed. Refusal, thus indicated, may result from hard cemented soil, soft weathered rock, coarse gravel or boulders, thin rock seams or the upper surface of sound continuous rock. Core drilling procedures are required to determine the character and continuity of refusal materials.

Prior to coring, casing is set in the drilled hole through the overburden soils, if necessary, to keep the hole from caving. Refusal materials are then cored according to ASTM D 2113 using a diamond-studded bit fastened to the end of a hollow double tube core barrel. This device is rotated at high speeds, and the cuttings are brought to the surface by circulating water. Core samples of the material penetrated are protected and retained in the swivel-mounted inner tube. Upon completion of each drill run, the core barrel is brought to the surface, the core recovered is measured, the samples are removed and the core is placed in boxes for storage.

The core samples are returned to our laboratory where the refusal material is identified and the percent core recovery and rock quality designation is determined by a soils engineer or geologist. The percent core recovery is the ratio of the sample length obtained to the depth drilled, expressed as a percent. The rock quality designation (RQD) is obtained by summing up the length of core recovered, including only the pieces of core which are four inches or longer, and dividing by the total length drilled. The percent core recovery and RQD are related to soundness and continuity of the refusal material. Refusal material descriptions, recoveries, and RQDs are shown on the "Test Boring Records".

Hand Auger Borings and Dynamic Cone Penetration Testing: Hand auger borings are performed manually by CSI field personnel. This consists of manually twisting hand auger tools into the subsurface and extracting "grab" or baggie samples at intervals determined by the project engineer. At the sample intervals, dynamic cone penetration (DCP) testing is performed. This testing involves the manual raising and dropping of a 20-pound hammer, 18 inches. This "driver" head drives a solid-1 $\frac{3}{4}$ inch diameter cone into the ground. DCP "counts" are the number of drops it takes for the hammer to drive three 1 $\frac{3}{4}$ inch increments, recorded as X-Y-Z values.

Test Pits: Test pits are excavated by the equipment available, often a backhoe or trackhoe. The dimensions of the test pits are based on the equipment used and the power capacity of the equipment. Samples are taken from the spoils of typical buckets of the excavator and sealed in jars or "Ziploc" baggies. Dynamic Cone Penetration or hand probe testing is often performed in the upper few feet as OSHA standards allow. Refusal is deemed as the lack of advancement of the equipment with reasonable to full machine effort.

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.

Summary of Laboratory Results

Borehole	Depth	Sample Type	Liquid Limit	Plastic Limit	Plasticity Index	Classification	Water Content (%)	Unconfined Compressive Strength (ksf)	Dry Density (pcf)	Wet Density (pcf)	Max. Dry Density (pcf)	Opt. Water Content (%)	CBR	Swell (%)	RQD	Percent Recovery	k (cm/sec)	% Finer #200	
B-101	0.0	SS					17.3												
B-101	1.5	SS					19.1												
B-101	4.0	SS	33	21	12	CL	16.0												95.8
B-101	6.5	SS					17.8												
B-101	9.0	SS					24.2												
B-102A	5.0	UD	63	31	32	CH	25.9	1798	90.0	113.4									97.0
B-103	0.0	SS					18.2												
B-103	1.5	SS					20.5												
B-103	4.0	SS					21.4												
B-103	6.5	SS					23.9												
B-201	0.0	GRAB	45	23	22	CL	22.3				102.7	21.3	4.6						93.9

PROJECT INFORMATION

Client: Bullitt County Public Schools
 Project Name: Bernheim Middle School
 Project Number: LX220209
 Project Location: Shepherdsville, KY

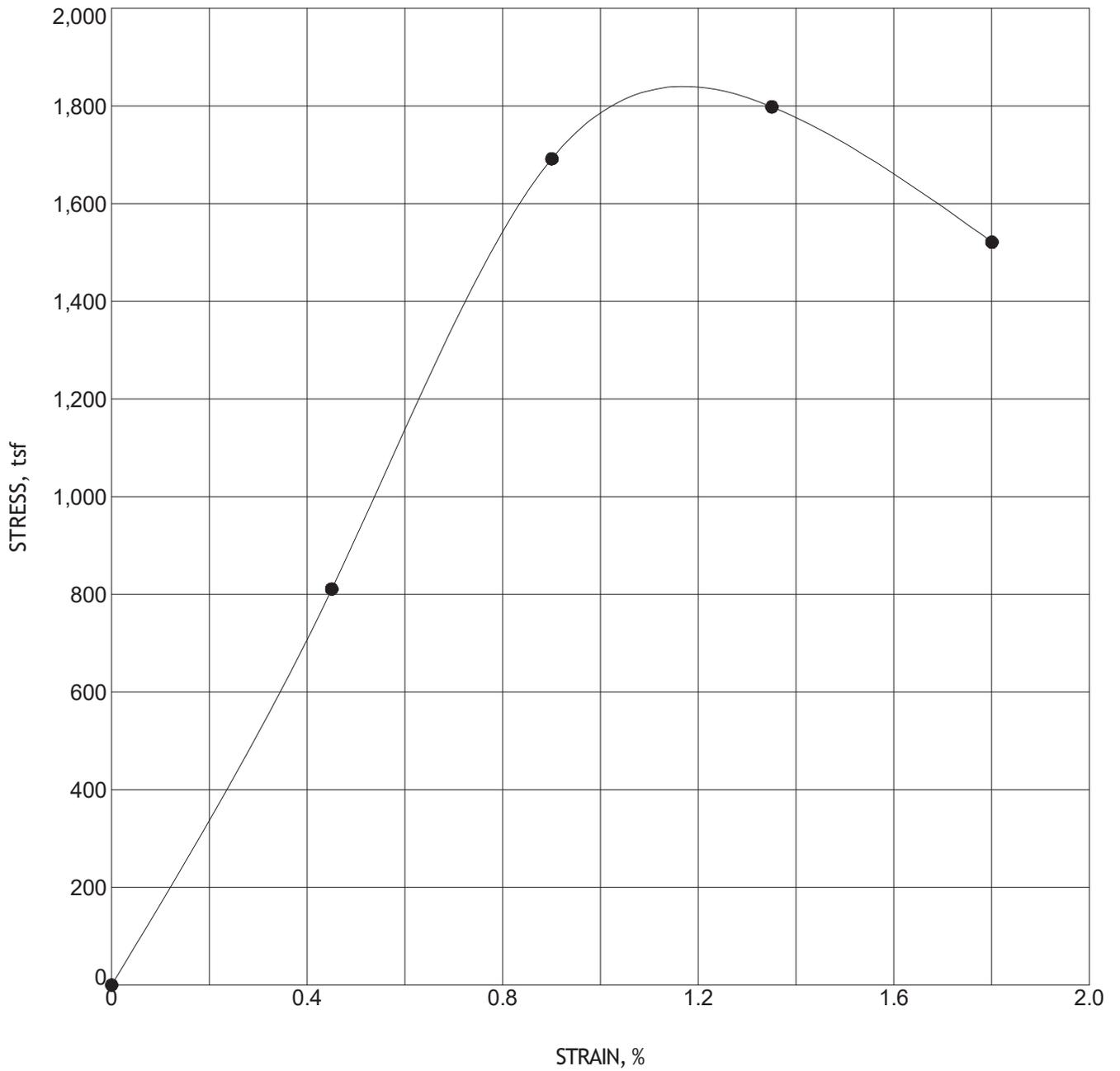
Consulting Services Incorporated

858 Contract Street
 Lexington, Kentucky 40505
 Phone: 859.309.6021
 Fax: 888.792.3121



SS - Split Spoon Sample
 GRAB - Bulk Grab Sample
 k - Coefficient of Permeability
 - See Attached test Results

UNCONFINED COMPRESSION TEST



Specimen Identification	Description	Unconfined Compressive Strength (tsf)	Failure Strain (%)	γ_d	MC%
● B-102A 5.0	brown FAT CLAY (CH)	1798	1.4	90	26

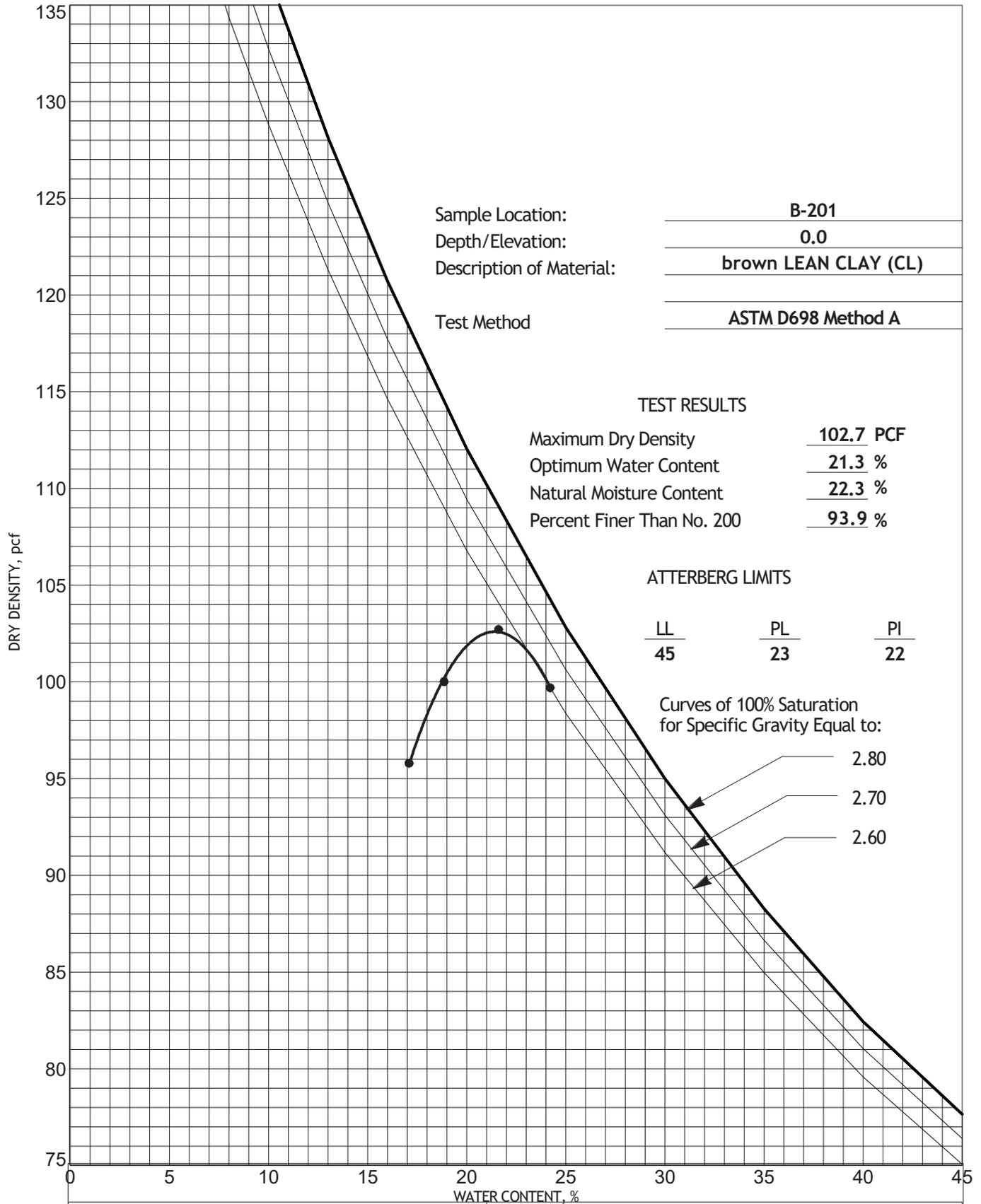


Consulting Services Incorporated
 858 Contract Street
 Lexington, Kentucky 40505
 Phone: 859.309.6021
 Fax: 888.792.3121

PROJECT INFORMATION

Client: Bullitt County Public Schools
 Project Name: Bernheim Middle School
 Project Number: LX220209
 Project Location: Shepherdsville, KY

MOISTURE-DENSITY RELATIONSHIP



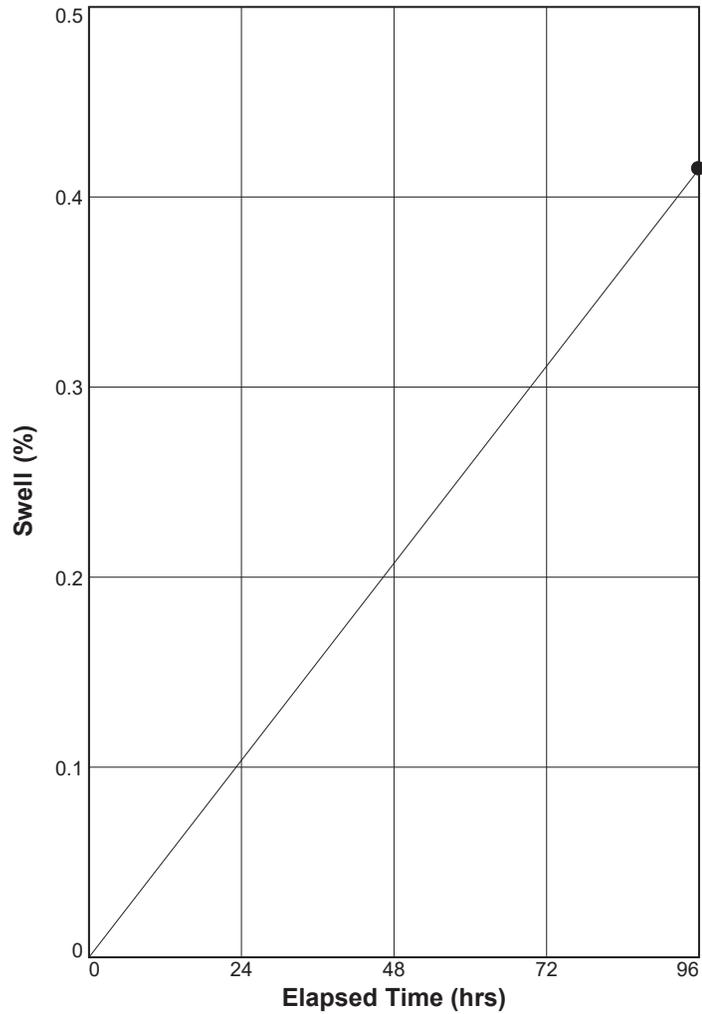
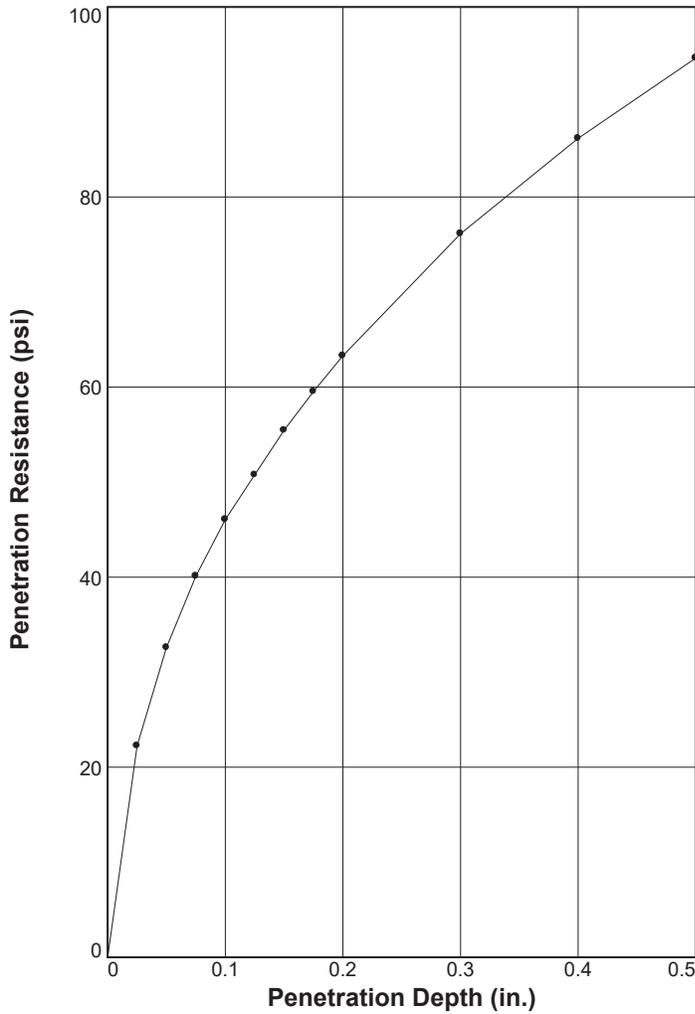
Consulting Services Incorporated
 858 Contract Street
 Lexington, Kentucky 40505
 Phone: 859.309.6021
 Fax: 888.792.3121

PROJECT INFORMATION

Client: Bullitt County Public Schools
 Project Name: Bernheim Middle School
 Project Number: LX220209
 Project Location: Shepherdsville, KY

BEARING RATIO TEST REPORT

ASTM D1883-16



	Molded		Soaked		CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Dry Density (pcf)	Moisture (%)	Dry Density (pcf)	Moisture (%)	0.10 in.	0.20 in.			
1 ○	97.7	23.3	97.3	24.2	4.6	4.2	0.000	15	0.4
2 △									
3 □									
Material Description					USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
					CL	102.7	21.3	45	22

Project No: LX220209
Project: Bernheim Middle School
Sample Number: B-201 **Depth:** 0.0

Test Description/Remarks:

BEARING RATIO TEST REPORT
CSI of Kentucky

Figure _____

Consulting Services Incorporated

LEXINGTON | LOUISVILLE | CINCINNATI

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.

Rock Classification: Rock classifications provide a general guide to the engineering properties of various rock types and enable the engineer to apply past experience to current situations. In our explorations, rock core samples obtained during drilling operations are examined in our laboratory and visually classified by an engineer. The rock cores are classified according to relative hardness and RQD (see Guide to Rock Classification Terminology), color, and texture. These classification descriptions are included on our Test Boring Records.

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.

Percent Finer Than 200 Sieve: Selected samples of soils are washed through a number 200 sieve to determine the percentage of material less than 0.074 mm in diameter.

Rock Strength Tests: To obtain strength data for rock materials encountered, unconfined compression tests are performed on selected samples. In the unconfined compression test, a cylindrical portion of the rock core is subjected to increasing axial load until it fails. The pressure required to produce failure is recorded, corrected for the length to diameter ratio of the core and reported.

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 three alternate methods.

Consulting Services Incorporated

LEXINGTON | LOUISVILLE | CINCINNATI

Test	Method	Hammer Wt./ Fall	Mold Diam.	Run on Material Finer Than	No. of Layers	No. of Blows/ Layer
Standard D 698	A	5.5 lb./12"	4"	No. 4 sieve	3	25
	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 Material Finer Than	No. of Layers	No. of Blows/ Layer
Modified D 15557	A	10 lb./18"	4"	No. 4 sieve	5	25
	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.

Laboratory California Bearing Ratio Tests: The California Bearing Ratio, generally abbreviated to CBR, is a punching shear test and is a comparative measure of the shearing resistance of a soil. It provides data that is a semi-empirical index of the strength and deflection characteristics of a soil. The CBR is used with empirical curves to design pavement structures.

A laboratory CBR test is performed according to ASTM D 1883. The results of the compaction tests are utilized in compacting the test sample to the desired density and moisture content for the laboratory California Bearing Ratio test. A representative sample is compacted to a specified density at a specified moisture content. The test is performed on a 6-inch diameter, 4.58-inch-thick disc of compacted soil that is confined in a cylindrical steel mold. The sample is compacted in accordance with Method C of ASTM D 698 or D 1557.

CBR tests may be run on the compacted samples in either soaked or unsoaked conditions. During testing, a piston approximately 2 inches in diameter is forced into the soil sample at the rate of 0.05 inch per minute to a depth of 0.5 inch to determine the resistance to penetration. The CBR is the percentage of the load it takes to penetrate the soil to a 0.1 inch depth compared to the load it takes to penetrate a standard crushed stone to the same depth. Test results are typically shown graphically.

Consolidation Tests: Consolidation tests are conducted on representative soil samples to determine the change in height of the sample with increasing load. The results of these tests are used to estimate the settlement and time rate of settlement of structures constructed on similar soils. A consolidation test is performed according to ASTM D2435 on a single section of an undisturbed sample extruded from a sample tube. The sample is trimmed into a disc 2.5 inches in diameter and 0.75 inch thick. The disc is confined in a stainless steel ring and sandwiched between porous plates. It is then subjected to incrementally increasing vertical loads, and the resulting deformations are measured with a micrometer dial gauge. Void ratio are then calculated from these deformation readings. The test results are typically provided in tabular form or in the form of plots of void ratio versus applied stress (e-log p curves).

Consulting Services Incorporated

LEXINGTON | LOUISVILLE | CINCINNATI

Organic Content: The Organic Content is determined according to ASTM D2974. The moisture content is first determined by drying portions of the sample at 105 degrees Celsius. The ash content is then determined by igniting the oven-dried sample from the moisture content determination in a muffle furnace at 440 degrees Celsius. The substance remaining after ignition is the ash. The organic content is expressed as a percentage by subtracting the percent ash from one hundred.

Direct Shear Tests: Direct shear tests are performed according to ASTM D3080 to determine the shear strength parameters of the soil. The specimen of soil is placed in a rigid box that is divided horizontally into two frames. The specimen is then confined under a vertical or normal stress and horizontal force is applied to fail the specimen along a horizontal plane at its mid-height.

Because drainage of the soil specimen cannot be easily controlled, undrained tests (i.e., UU and CU tests) are possible only on impervious soils and pore pressure measurements cannot be made. Drained tests (i.e., CD tests), however, are possible on all soil types. Since the drainage paths through the specimen are short and pore water pressures are dissipated fairly rapidly, the direct shear test is well suited to the CD test.

A minimum of three test specimens are required to establish the strength envelope of a soil. The soil parameters obtained are the cohesion and angle of internal friction.

Unconfined Compression Tests: The unconfined compression test is an unconsolidated-undrained triaxial shear test with no lateral confining pressure. This test is used to determine the shear strength of clayey soils. An unconfined compression test is performed according to ASTM D2166 on a single section of an undisturbed sample extruded from a sampling tube. The sample is trimmed to a length-to-diameter ratio of about 2 and placed in the testing device. Incrementally increasing vertical loads are applied until the sample fails. Test results are provided in the form of a stress-strain curve or a value representing the unconfined compressive strength of the sample.

Grain Size Tests: Grain Size Tests are performed to determine the soil classification and the grain size distribution. The soil samples are prepared for testing according to ASTM D421 (dry preparation) or ASTM D2217 (wet preparation). The grain size distribution of soils coarser than a number 200 sieve (0.074 mm opening) is determined by passing the samples through a standard set of nested sieves. Materials passing the number 200 sieve are suspended in water and the grain size distribution calculated from the measured settlement rate. These tests are conducted in accordance with ASTM D422.

Triaxial Shear Tests: Triaxial shear tests are used to determine the strength characteristics and friction angle of a given soil sample. Triaxial tests are also used to determine the elastic properties of the soil specimen. Triaxial shear tests are performed on several sections of a relatively undisturbed sample extruded from the sampling tube. The samples are trimmed into cylinders 1.4 to 2.8 inches in diameter and encased in rubber membranes. Each is then placed in a compression chamber and confined by all around water pressure. Samples are then subjected to additional axial and/or lateral loads, depending on the soil and the field conditions to be simulated. The test results are typically presented in tabular form or in the form of stress-strain curves and Mohr envelopes or p-q plots.

Three types of triaxial tests are normally performed. The most suitable type of triaxial test is determined by the loading conditions imposed on the soil in the field and the soil characteristics.

1. Consolidated-Undrained (designated as a CU or R Test).
2. Consolidated-Drained (designated as a CD or S Test).
3. Unconsolidated-Undrained (designated as a UU or Q Test).

Preface to the Stormwater Pollution Prevention Plan

The Stormwater Pollution Prevention Plan is included in the Project Manual for informational purposes to assist the Contractor in compliance with the KYR10 permit and is not considered a part of the Contract Documents. The Contractor is responsible for complying with all the requirements of the KYR10 permit from the Kentucky Division of Water including filing for the Notice of Intent. Inspection report templates have been included with the SWPPP that can be used on the site for the weekly inspections required by the permit. The Contractor may elect to use other templates for site inspections, as long as the requirements of the KYR10 permit are maintained.

Documents provided:

Stormwater Pollution Prevention Plan for:

Bernheim Middle School Renovation
Shepherdsville, KY
Bullitt County Board of Education
Shepherdsville, KY 40165

SWPPP Contact:

SWT Design

Paul Toenjes, LA
110 East Market Street
New Albany, IN 47150
Phone: (502) 717.1007
Email: pault@swtdesign.com

SWPPP Preparation Date: 00/00/0000

Stormwater Pollution Prevention Plan (SWPPP)

For Construction Activities At:

Bernheim Middle School
700 Audubon Drive
Shepherdsville, KY 40165
BG#23-051

SWPPP Prepared For:

Bullitt County Public Schools
1040 Highway 44 East
Shepherdsville, KY 40165

SWPPP Prepared By:

SWT Design
Chantal Block
110 E. Market Street
New Albany, IN 47150
502-717-1007
chantalb@swtdesign.com

SWPPP Preparation Date:

04/14/2023

Estimated Project Dates:

Project Start Date: Insert Date

Project Completion Date: Insert Date

Contents

SECTION 1: CONTACT INFORMATION/RESPONSIBLE PARTIES1

1.1 Operator(s) / Subcontractor(s).....1

1.2 Stormwater Team2

SECTION 2: SITE EVALUATION, ASSESSMENT, AND PLANNING3

2.1 Project/Site Information3

2.2 Discharge Information.....3

2.3 Nature of the Construction Activities.....5

2.4 Sequence and Estimated Dates of Construction Activities6

2.5 Authorized Non-Stormwater Discharges.....7

2.6 Site Maps.....8

SECTION 3: (NOT USED)9

SECTION 4: EROSION AND SEDIMENT CONTROLS AND DEWATERING PRACTICES ...10

4.1 Natural Buffers or Equivalent Sediment Controls.....10

4.2 Perimeter Controls10

4.3 Sediment Track-Out11

4.4 Stockpiles or Land Clearing Debris Piles Comprised of Sediment or Soil...11

4.5 Minimize Dust.....12

4.6 Minimize Steep Slope Disturbances.....12

4.7 Topsoil.....13

4.8 Soil Compaction13

4.9 Storm Drain Inlets.....14

4.10 Constructed Site Drainage Feature15

4.11 Sediment Basins or Similar Impoundments15

4.12 Chemical Treatment.....16

4.13 Dewatering Practices.....16

4.14 Other Stormwater Controls16

4.15 Site Stabilization.....16

SECTION 5: POLLUTION PREVENTION CONTROLS17

5.1 Potential Sources of Pollution17

5.2 Spill Prevention and Response18

5.3 Fueling and Maintenance of Equipment or Vehicles.....18

5.4 Washing of Equipment and Vehicles.....18

5.5 Storage, Handling, and Disposal of Building Products, Materials, and Wastes 19

5.6 Washing of Applicators and Containers used for Stucco, Paint, Concrete, Form Release Oils, Cutting Compounds, or Other Materials22

5.7 Application of Fertilizers22

5.8 Other Pollution Prevention Practices22

SECTION 6: INSPECTION, MAINTENANCE, AND CORRECTIVE ACTION.....23

6.1 Inspection Personnel and Procedures.....23

6.2 Corrective Action24

6.3 Delegation of Authority24

SECTION 7: (NOT USED)25
SECTION 8: CERTIFICATION AND NOTIFICATION.....26
SWPPP APPENDICES27

SECTION 1: CONTACT INFORMATION/RESPONSIBLE PARTIES

1.1 Operator(s) / Subcontractor(s)

Operator(s):

Company or Organization Name:
Name:
Address:
City, State, Zip Code:
Telephone Number:
Email:
Area of control (if more than one operator at site):

Subcontractor(s):

Company or Organization Name:
Name:
Address:
City, State, Zip Code:
Telephone Number:
Email:
Area of control (if more than one operator at site):

Company or Organization Name:
Name:
Address:
City, State, Zip Code:
Telephone Number:
Email:
Area of control (if more than one operator at site):

Emergency 24-Hour Contact:

Company or Organization Name:
Name:
Telephone Number:

1.2 Stormwater Team

Stormwater Team

Name and/or Position, and Contact	Responsibilities	I Have Read the SWPPP and Understand the Requirements
Chantal Block Civil Engineer, SWT Design 314-644-5700 chantalb@swtdesign.com	Engineer of Record for design project and consultant for SWPPP	<input checked="" type="checkbox"/> Yes Date: 13 April 2023
		<input type="checkbox"/> Yes Date:

SECTION 2: SITE EVALUATION, ASSESSMENT, AND PLANNING

2.1 Project/Site Information

Project Name and Address

Project/Site Name: Bernheim Middle School

Street/Location: 700 Audubon Drive

City: Shepherdsville

State: Kentucky

ZIP Code: 40165

County or Similar Government Division: Bullitt County

Project Latitude/Longitude

Latitude: 37.9174° N

(decimal degrees)

Longitude: -85.6851° W

(decimal degrees)

Latitude/longitude data source: Map GPS Other (please specify):

Horizontal Reference Datum: NAD 27 NAD 83 WGS 84

2.2 Discharge Information

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)?

Yes No

Are there any waters of the U.S. within 50 feet of your project's earth disturbances?

Yes No

2.3 Nature of the Construction Activities

General Description of Project

Provide a general description of the nature of your construction activities, including the age or dates of past renovations for structures that are undergoing demolition:

1. Project involves the renovation of and addition to an existing 6th – 8th grade school for accommodation of 500 students. The existing construction of the building is a combination of a pre-engineered metal structure system with masonry veneer at the perimeter and load bearing masonry and sloped bar joists at the center over the media center. There are two additions to the end of the building to expand classroom space. Interior renovation includes the reconfiguration of partitions at the classrooms, media center, administration suite, and gym locker rooms.
2. Roofing scope includes new metal standing seam installed over the existing and modified bitumen roofing over the classroom additions. The existing insulated foam roof is under warranty, preservation measures of the warranty and coordination with the warranty holder is required.
4. Openings include aluminum windows, storefront, and curtain wall. Doors are primarily hollow metal doors in hollow metal frames.
5. New canopies will be constructed to provide cover at the main entry and bus entry sidewalk.
6. Work involves HVAC systems, electrical systems (including lighting), plumbing, fire protection, communications, and electronic safety and security systems.
7. Finishes include drywall, luxury vinyl tile (LVT), carpet, tile, painting, and acoustical/grid ceilings.
8. Select existing parking and drives will be resurfaced to serve the building, as will multiple outdoor paved areas. Above grade detention facilities will be constructed to mitigate additional runoff created by the construction of the project.
9. Other site development includes outdoor classroom and cafeteria seating plazas, grasses, plantings, geothermal well field and signage.

Business days and hours for the project: (to be populated by contractor)

Size of Construction Site

Size of Property	Insert Size Of Property (in acres or in miles if a linear construction site)
Total Area Expected to be Disturbed by Construction Activities	2.43 acres
Maximum Area Expected to be Disturbed at Any One Time, Including On-site and Off-site Construction Support Areas	

Type of Construction Site (check all that apply):

- Single-Family Residential
 Multi-Family Residential
 Commercial
 Industrial
 Institutional
 Highway or Road
 Utility
 Other _____

Will you be discharging dewatering water from your site?

Yes No

If yes, will you be discharging dewatering water from a current or former Federal or State remediation site?

Yes No

Pollutant-Generating Activities

Pollutant-Generating Activity (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations)	Pollutants or Pollutant Constituents (e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels)
Concrete	
Asphalt paving	

Construction Support Activities *(only provide if applicable)*

Describe any construction support activities for the project (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas):

Concrete batch plant, asphalt batch plant

Contact information for construction support activity:

Name:

Telephone No.:

Email:

Address And/Or Latitude/Longitude:

2.4 Sequence and Estimated Dates of Construction Activities *(to be populated by contractor)*

Phase I

Insert General Description of Phase	
Estimated Start Date of Construction Activities for this Phase	Insert Estimated Date
Estimated End Date of Construction Activities for this Phase	Insert Estimated Date
Estimated Date(s) of Application of Stabilization Measures for Areas of the Site Required to be Stabilized	Insert Estimated Date <i>[Add additional dates as necessary]</i>
Estimated Date(s) when Stormwater Controls will be Removed	Insert Estimated Date <i>[Add additional dates as necessary]</i>

Phase II

Insert General Description of Phase	
Estimated Start Date of Construction Activities for this Phase	Insert Estimated Date
Estimated End Date of Construction Activities for this Phase	Insert Estimated Date
Estimated Date(s) of Application of Stabilization Measures for Areas of the Site Required to be Stabilized	Insert Estimated Date [Add additional dates as necessary]
Estimated Date(s) when Stormwater Controls will be Removed	Insert Estimated Date [Add additional dates as necessary]

[Repeat as needed.]

2.5 Authorized Non-Stormwater Discharges

List of Authorized Non-Stormwater Discharges Present at the Site

Authorized Non-Stormwater Discharge	Will or May Occur at Your Site?
Discharges from emergency fire-fighting activities	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Fire hydrant flushings	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Landscape irrigation	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water used to wash vehicles and equipment	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water used to control dust	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Potable water including uncontaminated water line flushings	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
External building washdown (soaps/solvents are not used and external surfaces do not contain hazardous substances)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Pavement wash waters	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Uncontaminated air conditioning or compressor condensate	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Uncontaminated, non-turbid discharges of ground water or spring water	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Foundation or footing drains	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Uncontaminated construction dewatering water	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

2.6 Site Maps

See Appendix A for site maps.

SECTION 3: (NOT USED)

SECTION 4: EROSION AND SEDIMENT CONTROLS AND DEWATERING PRACTICES

4.1 Natural Buffers or Equivalent Sediment Controls

Buffer Compliance Alternatives

Are there any receiving waters within 50 feet of your project's earth disturbances? YES NO
 (Note: If no, no further documentation is required for Section 4.1 in the SWPPP Template.
 Continue to Section 4.2.)

4.2 Perimeter Controls

Instructions (see CGP Parts 2.2.3 and 7.2.6.b.ii):

- Describe sediment controls that will be used (e.g., silt fences, filter berms, compost filter socks, gravel barriers, temporary diversion dikes) to meet the Part 2.2.3 requirement to "install sediment controls along any perimeter areas of the site that are downslope from any exposed soil or other disturbed areas."
- For linear projects (as defined in Appendix A), where you have determined that the use of perimeter controls in portions of the site is infeasible (e.g. due to a limited or restricted right-of-way), document other practices that you will implement to minimize pollutant discharges to perimeter areas of the site.

General

- [Insert general description of how you will comply with CGP Part 2.2.3](#)

Specific Perimeter Controls

Insert name of perimeter control to be installed	
Description: Insert description of perimeter control to be installed. Indicate specific controls that will be installed and made operational prior to earth disturbance.	
Installation	Insert approximate date of installation
Maintenance Requirements	Insert maintenance requirements for the perimeter control. (Note: At a minimum, you must provide for maintenance that meets the following requirement in CGP Part 2.2.3.ci: "Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control" And in CGP Part 2.2.3.cii: "After a storm event, if there is evidence of stormwater circumventing or undercutting the perimeter control, extend controls and/or repair undercut areas to fix the problem.")
Design Specifications	Include copies of design specifications here

[Repeat as needed for individual perimeter controls.]

4.3 Sediment Track-Out

<p>Instructions (see CGP Parts 2.2.4 and 7.2.6.b.iii):</p> <ul style="list-style-type: none"> – Describe stormwater controls that will be used to minimize sediment track-out. – Describe location(s) of vehicle exit(s), procedures to remove accumulated sediment off-site (e.g., vehicle tracking), and stabilization practices (e.g., stone pads or wash racks or both) to minimize off-site vehicle tracking of sediment. Also include the design, installation, and maintenance specifications for each control.

General

- [Insert general description of how you will comply with CGP Part 2.2.4](#)

Specific Track-Out Controls

Insert name of track-out control to be installed	
Description: Insert description of track-out control to be installed	
Installation	Insert approximate date of installation
Maintenance Requirements	Insert maintenance requirements for the track-out control (Note: At a minimum, you must provide for maintenance that meets the following requirement in CGP Part 2.2.4.d: "Where sediment has been tracked-out from your site onto paved roads, sidewalks, or other paved areas outside of your site, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out sediment into any constructed or natural site drainage feature, storm drain inlet, or receiving water.")
Design Specifications	Include copies of design specifications here

[Repeat as needed for individual track-out controls.]

4.4 Stockpiles or Land Clearing Debris Piles Comprised of Sediment or Soil

<p>Instructions (see CGP Parts 2.2.5 and 7.2.6):</p> <ul style="list-style-type: none"> – Describe stormwater controls and other measures you will take to minimize the discharge of sediment or soil particles from stockpiled sediment or soil. Include a description of structural practices (e.g., diversions, berms, ditches, storage basins), including design, installation, and maintenance specifications, used to divert flows from stockpiled sediment or soil, retain or detain flows, or otherwise limit exposure and the discharge of pollutants from stockpiled sediment or soil. – For piles that will be unused for 14 or more days, describe what cover or other appropriate temporary stabilization will be used. – Also, describe any controls or procedures used to minimize exposure resulting from adding to or removing materials from the pile.
--

General

- [Insert general description of how you will comply with CGP Part 2.2.5](#)

Specific Stockpile Controls

Insert name of stockpile control to be installed	
Description: Insert description of stockpile control to be installed	
Installation	Insert approximate date of installation
Maintenance Requirements	Insert maintenance requirements for the stockpile control (Note: At a minimum, you must comply with following requirement in CGP Part 2.2.5.d: "You are prohibited from hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any constructed or natural site drainage feature, storm drain inlet, or receiving water")
Design Specifications	Include copies of design specifications here

[Repeat as needed for individual stockpile controls.]

4.5 Minimize Dust

Instructions (see CGP Parts 2.2.6 and 7.2.6):
Describe controls and procedures you will use at your site to minimize the generation of dust.

General

- Insert general description of how you will comply with CGP Part 2.2.6

Specific Dust Controls

Insert name of dust control to be installed	
Description: Insert description of dust control to be installed	
Installation	Insert approximate date of installation
Maintenance Requirements	Insert maintenance requirements for the dust control
Design Specifications	Include copies of design specifications here

[Repeat as needed for individual dust controls.]

4.6 Minimize Steep Slope Disturbances

Instructions (see CGP Parts 2.2.7 and 7.2.6):
<ul style="list-style-type: none"> – Describe how you will minimize the disturbance to steep slopes (as defined by CGP Appendix A). – Describe controls (e.g., erosion control blankets, tackifiers), including design, installation and maintenance specifications, that will be implemented to minimize sediment discharges from slope disturbances.

General

- Insert general description of how you will comply with CGP Part 2.2.7

Specific Steep Slope Controls

Insert name of steep slope control to be installed	
Description: Insert description of steep slope control to be installed	
Installation	Insert approximate date of installation
Maintenance Requirements	Insert maintenance requirements for the steep slope control
Design Specifications	Include copies of design specifications here

[Repeat as needed for individual steep slope controls.]

4.7 Topsoil

<p>Instructions (see CGP Parts 2.2.8 and 7.2.6):</p> <ul style="list-style-type: none"> – Describe how topsoil will be preserved and identify these areas and associated control measures on your site map(s). – If it is infeasible for you to preserve topsoil on your site, provide an explanation for why this is the case.
--

General

- Insert general description of how you will comply with CGP Part 2.2.8. If it is infeasible for you to comply with the requirement, include an explanation of why this is the case.

Specific Topsoil Controls

Insert name of topsoil control to be installed	
Description: Insert description of topsoil control to be installed	
Installation	Insert approximate date of installation
Maintenance Requirements	Insert maintenance requirements for the topsoil control
Design Specifications	Include copies of design specifications here

[Repeat as needed for individual topsoil controls.]

4.8 Soil Compaction

<p>Instructions (see CGP Parts 2.2.9 and 7.2.6):</p> <p>In areas where final vegetative stabilization will occur or where infiltration practices will be installed, describe the controls, including design, installation, and maintenance specifications that will be used to restrict vehicle or equipment access or condition the soil for seeding or planting.</p>

General

- Insert general description of how you will comply with CGP Part 2.2.9

Specific Soil Compaction Controls

Insert name of soil compaction control to be installed	
Description: Insert description of soil compaction control to be installed	
Installation	Insert approximate date of installation
Maintenance Requirements	Insert maintenance requirements for the soil compaction control
Design Specifications	Include copies of design specifications here

[Repeat as needed for individual soil compaction controls.]

4.9 Storm Drain Inlets

<p>Instructions (see CGP Parts 2.2.10 and 7.2.6.iv):</p> <p>Describe controls (e.g., inserts, rock-filled bags, or block and gravel) including design, installation, and maintenance specifications that will be implemented to protect all inlets that carry stormwater flow from your site to a receiving water, provided you have the authority to access the storm drain inlet. Inlet protection measures are not required when storm drain inlets to which your site discharges are conveyed to a sediment basin, sediment trap, or similarly effective control.</p>
--

General

- Insert general description of how you will comply with CGP Part 2.2.10
- Where inlet protection measures are not required because the storm drain inlets to which your site discharges are conveyed to a sediment basin, sediment trap, or similarly effective control, include a short description of the control that receives the stormwater flow from the site.

Specific Storm Drain Inlet Controls

Insert name of storm drain inlet control to be installed	
Description: Insert description of storm drain inlet control to be installed	
Installation	Insert approximate date of installation
Maintenance Requirements	Insert maintenance requirements for the storm drain inlet control (Note: At a minimum, you must comply with following requirement in CGP Part 2.2.10.b: "Clean, or remove and replace, the inlet protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.")
Design Specifications	Include copies of design specifications here

[Repeat as needed for individual storm drain inlet controls.]

4.10 Constructed Site Drainage Feature

Instructions (see CGP Parts 2.2.11 and 7.2.6):
 If you will be installing a constructed site drainage feature, describe control practices (e.g., erosion controls and/or velocity dissipation devices such as check dams and sediment traps), including design specifications and details (volume, dimensions, outlet structure), that will be implemented at the construction site.

General

- Insert general description of how you will comply with CGP Part 2.2.11

Specific Constructed Site Drainage Features

Insert name of constructed site drainage feature to be installed	
Description: Insert description of the constructed site drainage feature to be installed	
Installation	Insert approximate date of installation
Maintenance Requirements	Insert maintenance requirements for the constructed site drainage feature
Design Specifications	Include copies of design specifications here

[Repeat as needed for individual constructed site drainage features.]

4.11 Sediment Basins or Similar Impoundments

Instructions (see CGP Parts 2.2.12 and 7.2.6.b.v):
 If you will install a sediment basin or similar impoundment, include design specifications and other details (volume, dimensions, outlet structure) that will be implemented in conformance with CGP Parts 2.2.12 and 7.2.6.b.iv.

- Sediment basins must be situated outside of receiving waters and any natural buffers established under CGP Part 2.2.1; and designed to avoid collecting water from wetlands.
- At a minimum, sediment basins provide storage for either (1) the calculated volume of runoff from the 2-year, 24-hour storm (see <https://www.epa.gov/npdes/construction-general-permit-2-year-24-hour-storm-frequencies>), or (2) 3,600 cubic feet per acre drained.
- Sediment basins must also utilize outlet structures that withdraw water from the surface, unless infeasible.
- Use erosion controls and velocity dissipation devices to prevent erosion at inlets and outlets.

General

- Insert general description of how you will comply with CGP Part 2.2.12. If you have determined that it is infeasible for you to utilize an outlet structure that discharges from the surface, provide an explanation for why this is the case.

Specific Sediment Basin Controls

Insert name of sediment basin control to be installed
Description: Insert description of sediment basin control to be installed

Insert name of sediment basin control to be installed	
Installation	Insert approximate date of installation
Maintenance Requirements	Insert maintenance requirements for the sediment basin control. (Note: At a minimum, you must comply with following requirement in CGP Part 2.2.12.f: "Remove accumulated sediment to maintain at least one-half of the design capacity and conduct all other appropriate maintenance to ensure the basin or impoundment remains in effective operating condition.")
Design Specifications	Include copies of design specifications here

[Repeat as needed for individual sediment basin controls.]

4.12 (NOT USED)

4.13 (NOT USED)

4.14 (NOT USED)

4.15 Site Stabilization

Total Amount of Land Disturbance Occurring at Any One Time

- Five Acres or less
 More than Five Acres

Insert name of site stabilization practice	
<input type="checkbox"/> Vegetative <input type="checkbox"/> Non-Vegetative <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
Description: <ul style="list-style-type: none"> ▪ Insert description of stabilization practice to be installed ▪ Note how design will meet requirements of Part 2.2.14.a 	
Installation	Insert approximate date of installation
Completion	Insert approximate completion date
Maintenance Requirements	Insert maintenance requirements for the stabilization practice
Design Specifications	Include copies of design specifications here

5.2 Spill Prevention and Response

Insert spill prevention and response procedures here

5.3 Fueling and Maintenance of Equipment or Vehicles

Instructions (see CGP Parts 2.3.1 and 7.2.6):

- Describe equipment/vehicle fueling and maintenance practices that will be implemented to eliminate the discharge of spilled or leaked chemicals (e.g., providing secondary containment (*examples: spill berms, dikes, spill containment pallets*) and cover where appropriate, and/or having spill kits readily available.)

General

- Insert general description of how you will comply with the CGP Part 2.3.1

Specific Pollution Prevention Practices

Insert name of pollution prevention practice	
Description: Insert description of practice to be implemented	
Implementation	Insert approximate date of implementation
Maintenance Requirements	Insert maintenance requirements for the pollution prevention practice
Design Specifications	If applicable include copies of design specifications here

[Repeat as needed.]

5.4 Washing of Equipment and Vehicles

Instructions (see CGP Parts 2.3.2 and 7.2.6):

- Describe equipment/vehicle washing practices that will be used to minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters (e.g., locating activities away from receiving waters and storm drain inlets or constructed or natural site drainage features and directing wash waters to a sediment basin or sediment trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls).
- Describe how you will prevent the discharge of soaps, detergents, or solvents and provide storage by either (1) cover (*examples: plastic sheeting or temporary roofs*) to prevent these detergents from coming into contact with rainwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

General

- Insert general description of how you will comply with CGP Part 2.3.2

Specific Pollution Prevention Practices

Insert name of pollution prevention practice	
Description: Insert description of practice to be implemented	
Implementation	Insert approximate date of implementation
Maintenance Requirements	Insert maintenance requirements for the pollution prevention practice
Design Specifications	If applicable include copies of design specifications here

[Repeat as needed.]

5.5 Storage, Handling, and Disposal of Building Products, Materials, and Wastes

<p>Instructions (see CGP Parts 2.3.3 and 7.2.6):</p> <p>For any of the types of building products, materials, and wastes in Sections 5.5.1-5.5.6 below that you expect to use or store at your site, provide the information on how you will comply with the corresponding CGP provision and the specific practices that you will employ.</p>
--

5.5.1 Building Materials and Building Products

(Note: Examples include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures, and gravel and mulch stockpiles.)

General

- Insert general description of how you will comply with CGP Part 2.3.3.a. If there are construction wastes that are subject to the exception in Part 2.3.3.a, describe the specific wastes that will be stored on your site.

Specific Pollution Prevention Practices

Insert name of pollution prevention practice	
Description: Insert description of practice to be implemented	
Implementation	Insert approximate date of implementation
Maintenance Requirements	Insert maintenance requirements for the pollution prevention practice
Design Specifications	If applicable include copies of design specifications here

[Repeat as needed.]

5.5.2 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials

General

- Insert general description of how you will comply with CGP Part 2.3.3.b

Specific Pollution Prevention Practices

Insert name of pollution prevention practice	
Description: Insert description of practice to be implemented	
Implementation	Insert approximate date of implementation

Insert name of pollution prevention practice	
Maintenance Requirements	Insert maintenance requirements for the pollution prevention practice
Design Specifications	If applicable include copies of design specifications here

[Repeat as needed.]

5.5.3 Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals

General

- Insert general description of how you will comply with CGP Part 2.3.3.c.
- Note: The requirements in CGP Part 2.3.3.c differ based on whether you chemical containers on your site are less than 55 gallons, or 55 gallons or more. See CGP Parts 2.3.3.c.i and ii.
- If site constraints prevent you from storing chemical containers 50 feet away from receiving waters or the other site drainage features as required in CGP Part 2.3.3c.ii(b), document the specific reasons why the 50-foot setback is not feasible, and how you will store containers as far away as the site permits

Specific Pollution Prevention Practices

Insert name of pollution prevention practice	
Description: Insert description of practice to be implemented	
Implementation	Insert approximate date of implementation
Maintenance Requirements	Insert maintenance requirements for the pollution prevention practice
Design Specifications	If applicable include copies of design specifications here

[Repeat as needed.]

5.5.4 Hazardous or Toxic Waste

(Note: Examples include paints, caulks, sealants, fluorescent light ballasts, solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids.)

General

- Insert general description of how you will comply with CGP Part 2.3.3.d

Specific Pollution Prevention Practices

Insert name of pollution prevention practice	
Description: Insert description of practice to be implemented	
Implementation	Insert approximate date of implementation
Maintenance Requirements	Insert maintenance requirements for the pollution prevention practice
Design Specifications	If applicable include copies of design specifications here

[Repeat as needed.]

5.5.5 Construction and Domestic Waste

(Note: Examples include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, demolition debris, and other trash or discarded materials.)

General

- Insert general description of how you will comply with CGP Part 2.3.3.e
- If there are wastes that are subject to the exception in Part 2.3.3.e.ii, describe the specific wastes that will be stored on your site.

Specific Pollution Prevention Practices

Insert name of pollution prevention practice	
Description: Insert description of practice to be implemented	
Implementation	Insert approximate date of implementation
Maintenance Requirements	Insert maintenance requirements for the pollution prevention practice
Design Specifications	If applicable include copies of design specifications here

[Repeat as needed.]

5.5.6 Sanitary Waste

General

- Insert general description of how you will comply with CGP Part 2.3.3.f

Specific Pollution Prevention Practices

Insert name of pollution prevention practice	
Description:	Insert description of practice to be implemented
Implementation	Insert approximate date of implementation
Maintenance Requirements	Insert maintenance requirements for the pollution prevention practice
Design Specifications	If applicable include copies of design specifications here

[Repeat as needed.]

5.6 Washing of Applicators and Containers used for Stucco, Paint, Concrete, Form Release Oils, Cutting Compounds, or Other Materials

<p>Instructions (see CGP Parts 2.3.4 and 7.2.6):</p> <p>Describe how you will comply with the CGP Part 2.3.4 requirement for washing applications and containers.</p>
--

General

- Insert general description of how you wil comply with CGP Part 2.3.3.g

Specific Pollution Prevention Practices

Insert name of pollution prevention practice	
Description:	Insert description of practice to be implemented
Implementation	Insert approximate date of implementation
Maintenance Requirements	Insert maintenance requirements for the pollution prevention practice
Design Specifications	If applicable include copies of design specifications here

[Repeat as needed.]

5.7 (NOT USED)

5.8 (NOT USED)

SECTION 6: INSPECTION, MAINTENANCE, AND CORRECTIVE ACTION

6.1 Inspection Personnel and Procedures

Site Inspection Schedule

Select the inspection frequency(ies) that applies, based on CGP Parts 4.2, 4.3, or 4.4

Standard Frequency:
<input type="checkbox"/> Every 7 calendar days <input checked="" type="checkbox"/> Every 14 calendar days and within 24 hours of either: <ul style="list-style-type: none">▪ A storm event that produces 0.25 inches or more of rain within a 24-hour period (including when there are multiple, smaller storms that alone produce less than 0.25 inches but together produce 0.25 inches or more in 24 hours), or▪ A storm event that produces 0.25 inches or more of rain within a 24-hour period on the first day of a storm and continues to produce 0.25 inches or more of rain on subsequent days (you conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the last day of the storm that produces 0.25 inches or more of rain (i.e., only two inspections would be required for such a storm event)), or▪ A discharge caused by snowmelt from a storm event that produces 3.25 inches or more of snow within a 24-hour period.
For frozen conditions where construction activities are being conducted <input checked="" type="checkbox"/> Once per month Insert beginning and ending dates of frozen conditions on your site: <ul style="list-style-type: none">▪ Beginning date of frozen conditions: Insert approximate date▪ Ending date of frozen conditions: Insert approximate date
For frozen conditions where construction activities are suspended <input checked="" type="checkbox"/> Inspections are temporarily suspended Insert beginning and ending dates of frozen conditions on your site: <ul style="list-style-type: none">▪ Beginning date of frozen conditions: Insert approximate date▪ Ending date of frozen conditions: Insert approximate date

Inspection Report Forms

See [Appendix D](#) of this document

6.2 **Corrective Action**

Personnel Responsible for Corrective Actions

Corrective Action Logs

See [Appendix E of this document](#)

6.3 **Delegation of Authority**

Duly Authorized Representative(s) or Position(s):

Company or Organization Name:

Name:

Position:

Address:

City, State, Zip Code:

Telephone Number:

Email:

SECTION 7: (NOT USED)

SECTION 8: CERTIFICATION AND NOTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date: _____

[Repeat as needed for multiple construction operators at the site.]

SWPPP APPENDICES

Attach the following documentation to the SWPPP:

Appendix A – Site Maps

Appendix B – Copy of 2022 CGP

(Note: The 2022 CGP is available at <https://www.epa.gov/npdes/2022-construction-general-permit-cgp>)

Appendix C – NOI and EPA Authorization Email

Appendix D – Site Inspection Form and Dewatering Inspection Form (if applicable)

(Note: EPA has developed a sample site inspection form template that CGP operators can use. The template is available at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>). Where the operator will be dewatering at the site, EPA has developed a separate dewatering inspection form template to use to document the required information. This template is available at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>.

Appendix E – Corrective Action Log

(Note: EPA has developed a sample corrective action log that CGP operators can use. The form is available at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>)

Appendix F – SWPPP Amendment Log

Appendix G – Subcontractor Certifications/Agreements

Appendix H – Grading and Stabilization Activities Log

Appendix I – NOT USED

Appendix J – Delegation of Authority

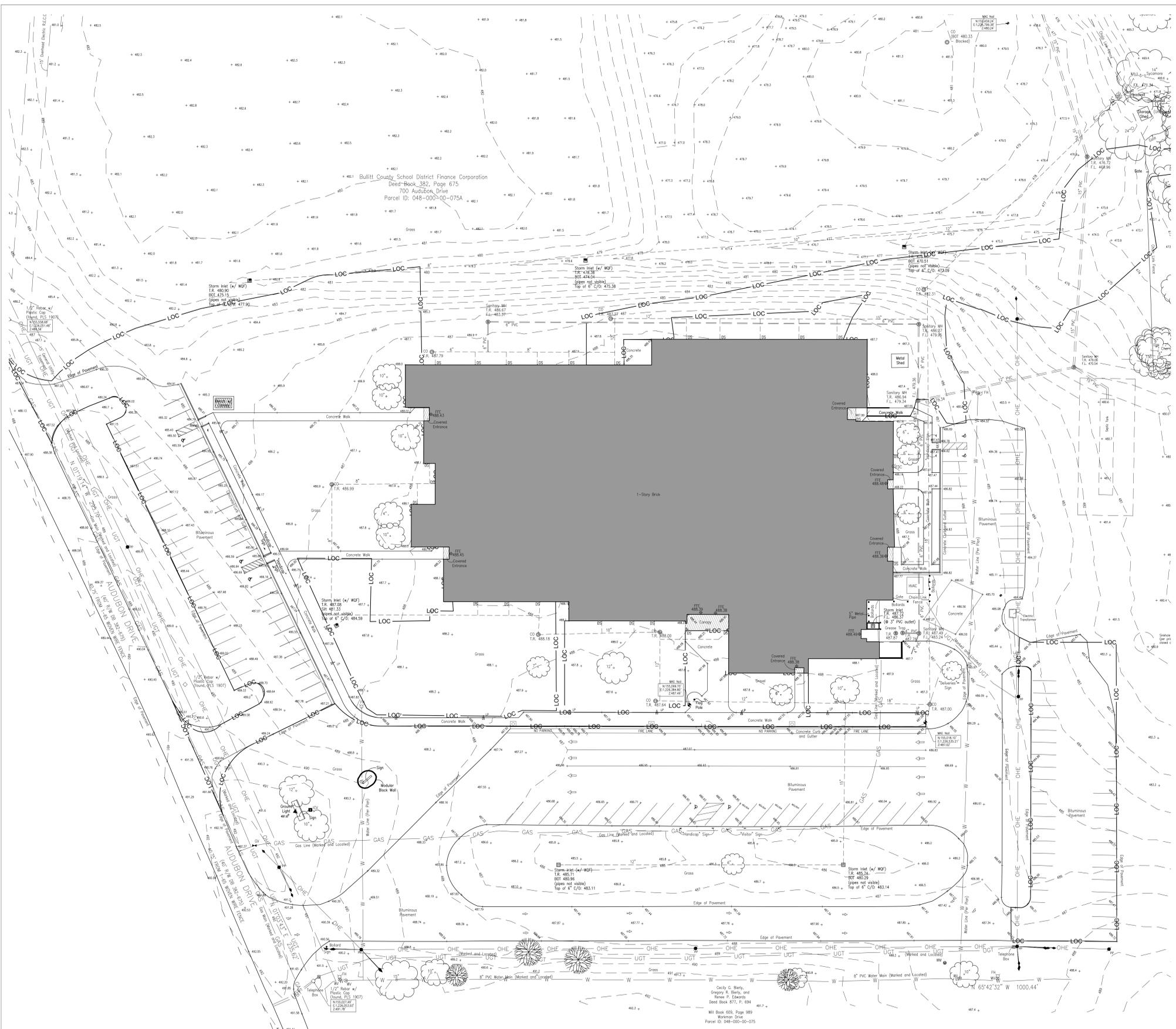
Appendix K – NOT USED

Appendix L – NOT USED

Appendix M – NOT USED

Appendix N – NOT USED

Appendix A – Site Maps



Operator/Emergency 24-Hour Contact

Company
Contact name
Phone number
Email address

- Install erosion and sedimentation controls as follows:**
- Install silt fence prior to commencing site clearing and earthwork.
 - Protect inlets prior to commencing work or pavement removal upstream of the inlets.
 - Install washdown stations prior to any construction vehicles departing the site.
 - Maintain controls - include an ongoing operation and maintenance program for controls and response to any loss of sediment.

Phase Construction Activity
Stage work in a manner to protect existing work and minimize disruption to undisturbed areas.

Control stormwater flowing onto and through the project
Install downstream slope protection around all soil stockpiles and at all locations expected to receive sheet flow. Stormwater runoff will be routed around disturbed areas as practicable. Soil stockpiles shall be stabilized or covered at end of each workday. Contractor shall update this plan to include other specific measures for installing and maintaining stormwater control measures.

Control Dust
Sweep dust frequently on hard surfaces and use a water truck when necessary for dust control.

Protect slopes
Install slopes no steeper than 3:4 to 1:1. Install downstream slope protection (straw bales or silt fences) at all locations expected to receive sheet flow.

Protect storm drain inlets
Install straw bales and/or silt fences around open storm drains prior to disturbance of adjacent ground surfaces. Refer to STORMWATER POLLUTION PREVENTION - INLET PROTECTION note.

Establish perimeter controls and sediment barriers
Route stormwater runoff around disturbed areas as practicable. Install downstream slope protection (straw bales or silt fences) at all locations expected to receive sheet flow.

Control spills
Contractor shall update this plan to include procedures for preventing and responding to spills, leaks, and other releases, including identifying by name or position the employee(s) responsible for detecting and responding to spills and leaks.

Retain sediment on-site and control dewatering practices
Perform dewatering as necessary. Retain pumped water in shallow trenches to evaporate or percolate into subsoil. Install downstream slope protection (straw bales or silt fences) at all locations expected to receive residual sheet flow from dewatering operations.

Manage Wastes
Contractor shall update this plan to include procedures for managing wastes generated onsite.

Establish stabilized construction exits
Equip construction exits with washdown equipment as practicable. Retain pumped water in shallow trenches to evaporate or percolate into subsoil. Install downstream slope protection (straw bales or silt fences) at all locations expected to receive residual sheet flow from washdown operations.

- Perform seeding upon completion of earthwork**
- Seed disturbed areas if the areas are expected to remain untouched for 45 days or longer
 - Seed graded swales and ditches within 7 days
 - Seed all open areas immediately upon reaching final grade
 - Vegetation shall become established within 2 weeks during growing seasons - provide alternate soil stabilization if outside of growing season

Stormwater Pollution Prevention - Inlet Protection note:
Inlet protection systems suggested on these plans have not been designed by the engineer but are solely the responsibility of the contractor. Any method proposed and installed by the contractor (including but not limited to straw bales, flexstorm inlet filters, and any other proprietary inlet collection systems) to protect storm inlets from capture and conveyance of sediment-laden stormwater runoff shall be designed and maintained by the contractor to be appropriate for adequate protection from flooding local building and other existing improvements. The contractor shall follow all manufacturer's specifications for proprietary inlet protection systems, including but not limited to installation of overflow systems and specified periodic inspections and maintenance of the inlet protection systems. The contractor shall be solely responsible for damages related to flooding that results from inlet protection methods.

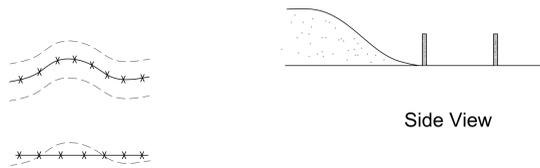
A STORMWATER POLLUTION PREVENTION PLAN
SCALE: 1"=30'



NOTIFY CIVIL ENGINEER IMMEDIATELY IN EVENTS OF DISCREPANCIES, OMISSIONS, AND/OR CONFLICTS IN THE DRAWINGS OR SPECIFICATIONS. THE CONTRACTOR IS NOT AUTHORIZED TO SCALE THE DRAWINGS. ALL QUESTIONS IN REFERENCE TO CONTRACT DOCUMENTS SHALL BE IMMEDIATELY DIRECTED TO THE CIVIL ENGINEER.

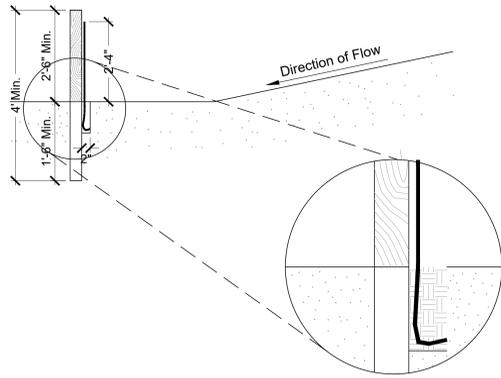
CONSTRUCTION DOCUMENTS - BOARD REVIEW SET

<p>SWP DESIGN 110 E. Market Street Louisville, KY 40202 L 502.777-1007</p>	<p>BULLITT COUNTY PUBLIC SCHOOLS 1040 HIGHWAY 41 EAST SHEPHERDSVILLE, KY 40365</p>	<p>studio kremer architects 1231 S Shelby St. Louisville, KY 40203 TEL 502.496.1100 Fax 502.496.1101</p>
<p>SWPPP</p>	<p>Bernheim Middle School 700 Audubon Drive Shepherdsville, KY 40365</p>	<p>LANDSCAPE ARCHITECT & CIVIL ENGINEER</p>
<p>BC# 23-051</p>	<p>DATE : 4/14/23 DRAWN BY : PT CHECKED BY : cb REVISIONS :</p>	<p>2022-36</p>
<p>C0.2</p>		

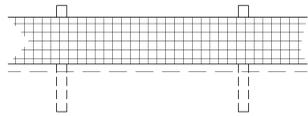


Side View

Top View



Side View

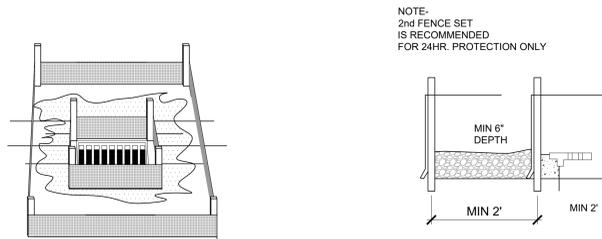


Front View

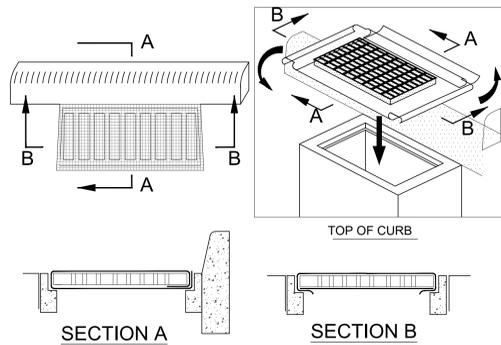
- Silt fence shall be constructed before upslope land disturbance begins.
 - All silt fence shall be placed at a level elevation as consistently as possible so that water will not concentrate at low points in the fence and so that small swales or depressions which may carry small concentrated flows to the silt fence are dissipated along its length.
 - To prevent water ponded by the silt fence from flowing around the ends, each end shall be constructed upslope so that the ends are at a higher elevation.
 - Where possible, silt fence shall be placed on the flattest area available.
 - Where possible, vegetation shall be preserved for 5 ft. (or as much as possible) upslope from the silt fence. If vegetation is removed, it shall be reestablished within 7 days from the installation of the silt fence.
 - The height of the silt fence shall be a minimum of 28 in. above the original ground surface.
 - The silt fence shall be placed in a trench cut a minimum of 6 in. deep. The trench shall be cut with a trencher, cable laying machine, or other suitable device which will ensure adequate uniform trench depth.
 - The silt fence shall be placed with the stakes on the downslope side of the geotextile and so that the 8 in. of cloth are below the ground surface. Excess material shall lay on the bottom of the 6-in. deep trench. The trench shall be backfilled and compacted.
 - Seams between sections of silt fence shall be overlapped with the end stakes of each section wrapped together before driving into the ground.
 - Maintenance - Silt fence shall allow runoff to pass only as diffuse flow through the geotextile. If runoff overtops the silt fence, flows under or around the ends, or in any other way becomes a concentrated flow, one of the following shall be performed, as appropriate: 1) The layout of the silt fence shall be changed, 2) Accumulated sediment shall be removed, or 3) Other practices shall be installed.
- Criteria for Silt Fence Materials
- Fence Posts - The length shall be a minimum of 32 in. long. Inl constructed from 2" x 4" sections of wood or 1.3 lb./ft. minimum steel posts. The maximum spacing between posts shall be 6 ft.
 - Silt Fence Fabric (See chart below)

Fabric Properties	Values	Test Method
Grab Tensile Strength	120 lb. minimum	ASTM D 4632
Bursting Strength	175 psi minimum	ASTM D 3786
Slurry Flow Rate	0.3 gal/min./sq. ft.	
Equivalent Opening Size	#30	ASTM D-4751
Ultraviolet Stability	70%	ASTM D-4355

A SILT FENCE DETAIL
NTS



C FABRIC WRAPPED INLET BARRIER
NTS



B FABRIC WRAPPED INLET GRATE
NOT TO SCALE

Appendix B – Copy of 2022 CGP

**National Pollutant Discharge Elimination System (NPDES)
Construction General Permit (CGP) for Stormwater Discharges from
Construction Activities**

In compliance with the provisions of the Clean Water Act, 33 U.S.C. § 1251 et. seq., (hereafter CWA), as amended by the Water Quality Act of 1987, P.L. 100-4, "operators" of construction activities (defined in Appendix A) that meet the requirements of Part 1.1 of this National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP), are authorized to discharge pollutants in accordance with the effluent limitations and conditions set forth herein. Permit coverage is required from the "commencement of construction activities" (see Appendix A) until one of the conditions for terminating CGP coverage has been met (see Part 8.2).

This permit becomes effective on 12:00 am, February 17, 2022.

This permit and the authorization to discharge expire at 11:59pm, February 16, 2027.

Signed and issued this 18 day of January 2022

DEBORAH SZARO Digitally signed by DEBORAH SZARO
Date: 2022.01.18 08:31:14 -05'00'

Deborah Szaro,
Acting Regional Administrator, EPA Region 1.

Signed and issued this 18 day of January 2022

JAVIER LAUREANO Digitally signed by JAVIER LAUREANO
Date: 2022.01.18 11:21:16 -05'00'

Javier Laureano,
Director, Water Division, EPA Region 2.

Signed and issued this 18 day of January 2022

CARMEN GUERRERO PEREZ Digitally signed by CARMEN GUERRERO PEREZ
Date: 2022.01.18 10:19:51 -04'00'

Carmen Guerrero-Perez,
Director, Caribbean Environmental Protection Division, EPA Region 2.

Signed and issued this 18 day of January 2022

CATHERINE LIBERTZ Digitally signed by CATHERINE LIBERTZ
Date: 2022.01.18 12:05:24 -05'00'

Catherine A. Libertz,
Director, Water Division, EPA Region 3.

Signed and issued this 18 day of January 2022

JEANEANNE GETTLE Digitally signed by JEANEANNE GETTLE
Date: 2022.01.18 13:09:48 -05'00'

Jeaneanne Gettle,
Director, Water Division, EPA Region 4.

Signed and issued this 18 day of January 2022

 Digitally signed by TERA FONG
Date: 2022.01.18 13:03:49 -06'00'

Tera Fong,
Director, Water Division, EPA Region 5.

Signed and issued this 18 day of January 2022

CHARLES MAGUIRE Digitally signed by CHARLES MAGUIRE
DN: cn=US, o=U.S. Government, ou=Environmental Protection Agency, cn=CHARLES MAGUIRE, o.9.2342.19200300.100.1.1#68001003650036
Date: 2022.01.18 14:06:55 -06'00'

Charles W. Maguire,
Director, Water Division, EPA Region 6.

Signed and issued this 18 day of January 2022

JEFFERY ROBICHAUD Digitally signed by JEFFERY ROBICHAUD
Date: 2022.01.18 14:41:37 -06'00'

Jeffery Robichaud,
Director, Water Division, EPA Region 7.

Signed and issued this 18 day of January 2022

DARCY OCONNOR Digitally signed by DARCY OCONNOR
Date: 2022.01.18 14:00:05 -07'00'

Darcy O'Connor,
Director, Water Division, EPA Region 8.

Signed and issued this 18 day of January 2022

TOMAS TORRES Digitally signed by TOMAS TORRES
Date: 2022.01.18 13:30:16 -08'00'

Tomás Torres,
Director, Water Division, EPA Region 9.

Signed and issued this 18 day of January 2022

DANIEL OPALSKI Digitally signed by DANIEL OPALSKI
Date: 2022.01.18 15:10:20 -08'00'

Daniel D. Opalski,
Director, Water Division, EPA Region 10.

CONTENTS

1 How to Obtain Coverage Under the Construction General Permit (CGP)..... 1

1.1 Eligibility Conditions 1

1.2 Types of Discharges Authorized 3

1.3 Prohibited Discharges..... 4

1.4 Submitting your Notice of Intent (NOI) 5

1.5 Requirement to Post a Notice of Your Permit Coverage..... 7

2 Technology-Based Effluent Limitations..... 8

2.1 General Stormwater Control Design, Installation, and Maintenance Requirements..... 8

2.2 Erosion and Sediment Control Requirements..... 10

2.3 Pollution Prevention Requirements 17

2.4 Construction Dewatering Requirements..... 22

3 Water Quality-Based Effluent Limitations..... 23

3.1 General Effluent Limitation to Meet Applicable Water Quality Standards 23

3.2 Water Quality-based Conditions for Sites Discharging to Sensitive Waters⁴⁴ 23

3.3 Water quality-based conditions For sites discharging To Sensitive Waters From Construction Dewatering activities 24

4 Site Inspection Requirements 28

4.1 Person(s) Responsible for Inspecting Site 28

4.2 Frequency of Inspections..... 28

4.3 Increase in Inspection Frequency for Certain Sites. 29

4.4 Reductions in Inspection Frequency 30

4.5 Areas that Must Be Inspected 31

4.6 Requirements for Inspections 32

4.7 Inspection Report..... 33

4.8 Inspections By EPA 34

5 Corrective Actions 34

5.1 Conditions Triggering Corrective Action..... 34

5.2 Corrective Action Deadlines 35

5.3 Corrective Action Required by EPA 36

5.4 Corrective Action Log 36

6 Stormwater Team Formation/ Staff Training Requirements 36

6.1 Stormwater Team..... 36

6.2 General Training Requirements For Stormwater Team Members 37

6.3 Training Requirements For Persons Conducting Inspections 37

6.4 Stormwater Team's Access To Permit Documents 38

7 Stormwater Pollution Prevention Plan (SWPPP) 38

7.1 General Requirements 38

7.2 SWPPP Contents..... 38

7.3 On-Site Availability of Your SWPPP 46

7.4 SWPPP Modifications 46

8 How to Terminate Coverage 47

8.1 Minimum Information Required in NOT 47

8.2 Conditions for Terminating CGP Coverage 47

8.3 How to Submit Your NOT..... 48

8.4 Deadline for Submitting the NOT 49

8.5 Effective Date of Termination of Coverage 49

9 Permit Conditions Applicable to Specific States, Indian Country Lands, or Territories..... 49

Appendix A: Definitions.....A-1

Appendix B: Permit Areas Eligible for Coverage and EPA Regional Addresses B-1

Appendix C: Small Construction Waivers and Instructions.....C-1

Appendix D: Eligibility Procedures Relating to Threatened & Endangered Species Protection. D-1

Appendix E: Historic Property Screening ProcessE-1

Appendix F: Buffer Requirements.....F-1

Appendix G: Standard Permit Conditions..... G-1

Appendix H: Notice of Intent (NOI) Form and Instructions H-1

Appendix I: Notice of Termination (NOT) Form and Instructions..... I-1

Appendix J: Suggested Format for Request for Chemical TreatmentJ-1

Appendix K: Turbidity Benchmark Monitoring Report Form K-1

1 HOW TO OBTAIN COVERAGE UNDER THE CONSTRUCTION GENERAL PERMIT (CGP)

To be covered under this permit, you must meet the eligibility conditions and follow the requirements for obtaining permit coverage in this Part.

1.1 ELIGIBILITY CONDITIONS

1.1.1 You are an “operator” of a construction site for which discharges will be covered under this permit. For the purposes of this permit and in the context of stormwater discharges associated with construction activity, an “operator” is any party associated with a construction project that meets either of the following two criteria:

- a.** The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
- b.** The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Where there are multiple operators associated with the same project, all operators must obtain permit coverage.¹ Subcontractors generally are not considered operators for the purposes of this permit.

1.1.2 Your site’s construction activities:

- a.** Will disturb one or more acres of land, or will disturb less than one acre of land but are part of a common plan of development or sale (as defined in Appendix A) that will ultimately disturb one or more acres of land; or
- b.** Have been designated by EPA as needing permit coverage under 40 CFR § 122.26(a)(1)(v) or 40 CFR § 122.26(b)(15)(ii);

1.1.3 Your site is located in an area where EPA is the permitting authority and where coverage under this permit is available (see Appendix B);

1.1.4 Discharges from your site are not:

- a.** Already covered by a different NPDES permit for the same discharge; or
- b.** In the process of having coverage under a different NPDES permit for the same discharge denied, terminated, or revoked.^{2, 3}

1.1.5 You can demonstrate you meet one of the criteria in the Endangered Species Protection section of the Notice of Intent (NOI) that you submit for coverage under this permit, per Part 1.4, with respect to the protection of Federally listed endangered or threatened species and Federally designated critical habitat under the Endangered Species Act

¹ If the operator of a “construction support activity” (see Part 1.2.1c) is different than the operator of the main site, that operator must also obtain permit coverage. See Part 7.1 for clarification on the sharing of permit-related functions between and among operators on the same site and for conditions that apply to developing a SWPPP for multiple operators associated with the same site.

² Parts 1.1.4a and 1.1.4b do not include sites currently covered under the 2017 CGP that are in the process of obtaining coverage under this permit, nor sites covered under this permit that are transferring coverage to a different operator.

³ Notwithstanding a site being made ineligible for coverage under this permit because it falls under the description of Parts 1.1.4a or 1.1.4b, above, EPA may waive the applicable eligibility requirement after specific review if it determines that coverage under this permit is appropriate.

(ESA). If the EPA Regional Office grants you a waiver from electronic reporting per Part 1.4.2, you must complete the ESA worksheet in Appendix D to demonstrate you meet one of the criteria and submit it with your paper NOI (Appendix I).

- 1.1.6** You have completed the screening process in Appendix E relating to the protection of historic properties; and
- 1.1.7** You have complied with all requirements in Part 9 imposed by the applicable State, Indian Tribe, or Territory in which your construction activities and/or discharge will occur.
- 1.1.8** For "new sources" (as defined in Appendix A) only:
 - a.** EPA has not, prior to authorization under this permit, determined that discharges from your site will not meet applicable water quality standards. Where such a determination is made prior to authorization, EPA may notify you that an individual permit application is necessary. However, EPA may authorize your coverage under this permit after you have included appropriate controls and implementation procedures designed to bring your discharge into compliance with this permit, specifically the requirement to meet water quality standards. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3, will result in discharges that meet applicable water quality standards.
 - b.** Discharges from your site to a Tier 2, Tier 2.5, or Tier 3 water⁴ will not lower the water quality of the applicable water. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3.2, will result in discharges that will not lower the water quality of such waters.
- 1.1.9** If you plan to add "cationic treatment chemicals" (as defined in Appendix A) to stormwater and/or authorized non-stormwater prior to discharge, you may not submit your NOI until you notify your applicable EPA Regional Office (see Appendix J) in advance and the EPA Regional Office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will result in discharges that meet applicable water quality standards.

⁴ Note: Your site will be considered to discharge to a Tier 2, Tier 2.5, or Tier 3 water if the first receiving water to which you discharge is identified by a State, Tribe, or EPA as a Tier 2, Tier 2.5, or Tier 3 water. For discharges that enter a storm sewer system prior to discharge, the first receiving water to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system. The current list of Tier 2, Tier 2.5, and Tier 3 waters located in the areas eligible for coverage under this permit can be found at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>. You can also use EPA's Discharge Mapping Tool (<https://www.epa.gov/npdes/epas-stormwater-discharge-mapping-tools>) to assist you in identifying whether any receiving waters to which you discharge are listed as impaired (and the pollutant for which it is impaired) and whether an approved total maximum daily load (TMDL) exists for that waterbody.

1.2 TYPES OF DISCHARGES AUTHORIZED⁵

- 1.2.1** The following stormwater discharges are authorized under this permit provided that appropriate stormwater controls are designed, installed, and maintained (see Parts 2 and 3):
- a.** Stormwater discharges, including stormwater runoff, snowmelt runoff, and surface runoff and drainage, associated with construction activity under 40 CFR § 122.26(b)(14) or § 122.26(b)(15)(i);
 - b.** Stormwater discharges designated by EPA as needing a permit under 40 CFR § 122.26(a)(1)(v) or § 122.26(b)(15)(ii);
 - c.** Stormwater discharges from on or off-site construction support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided that:
 - i.** The support activity is directly related to the construction site required to have permit coverage for stormwater discharges;
 - ii.** The support activity is not a commercial operation, nor does it serve multiple unrelated construction sites;
 - iii.** The support activity does not continue to operate beyond the completion of the construction activity at the site it supports; and
 - iv.** Stormwater controls are implemented in accordance with Part 2 and Part 3 for discharges from the support activity areas; and
 - d.** Stormwater discharges from earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining.
- 1.2.2** The following non-stormwater discharges associated with your construction activity are authorized under this permit provided that, with the exception of water used to control dust and to irrigate vegetation in stabilized areas, these discharges are not routed to areas of exposed soil on your site and you comply with any applicable requirements for these discharges in Parts 2 and 3:
- a.** Discharges from emergency fire-fighting activities;
 - b.** Fire hydrant flushings;
 - c.** Landscape irrigation;
 - d.** Water used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes;
 - e.** Water used to control dust;
 - f.** Potable water including uncontaminated water line flushings;

⁵ See "Discharge" as defined in Appendix A. Note: Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA Section 402(k) by disclosure to EPA, State, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the SWPPP, or during an inspection.

- g.** External building washdown, provided soaps, solvents, and detergents are not used, and external surfaces do not contain hazardous substances (as defined in Appendix A) (e.g., paint or caulk containing polychlorinated biphenyls (PCBs));
 - h.** Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. You are prohibited from directing pavement wash waters directly into any receiving water, storm drain inlet, or constructed or natural site drainage features, unless the feature is connected to a sediment basin, sediment trap, or similarly effective control;
 - i.** Uncontaminated air conditioning or compressor condensate;
 - j.** Uncontaminated, non-turbid discharges of ground water or spring water;
 - k.** Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated ground water; and
 - l.** Uncontaminated construction dewatering water⁶ discharged in accordance with Part 2.4.
- 1.2.3** Also authorized under this permit are discharges of stormwater listed above in Part 1.2.1, or authorized non-stormwater discharges listed above in Part 1.2.2, commingled with a discharge authorized by a different NPDES permit and/or a discharge that does not require NPDES permit authorization.

1.3 PROHIBITED DISCHARGES⁷

The discharges listed in this Part are prohibited outright or authorized only under the identified conditions. To prevent the discharges in Parts 1.3.1 through 1.3.5, operators must comply with the applicable pollution prevention requirements in Part 2.3 or ensure the discharge is authorized by another NPDES permit consistent with Part 1.2.3 for commingled discharges.

- 1.3.1** Wastewater from washout of concrete, unless managed by an appropriate control as described in Part 2.3.4;
- 1.3.2** Wastewater from washout and/or cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;
- 1.3.3** Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
- 1.3.4** Soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and
- 1.3.5** Toxic or hazardous substances from a spill or other release.

⁶ EPA notes that operators may need to comply with additional procedures to verify that the dewatering discharge is uncontaminated. Operators should review Part 9 to determine if any of these requirements apply to their discharge and should ensure that they have complied with any State, Tribal, or local dewatering requirements that apply.

⁷ EPA includes these prohibited non-stormwater discharges here as a reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2. Any unauthorized non-stormwater discharges must be covered under an individual permit or alternative general permit.

1.4 SUBMITTING YOUR NOTICE OF INTENT (NOI)

All “operators” (as defined in Appendix A) associated with your construction site who meet the Part 1.1 eligibility conditions, and who seek coverage under this permit, must submit to EPA a complete and accurate NOI in accordance with the deadlines in Table 1 prior to commencement of construction activities (as defined in Appendix A).

Exception: If you are conducting construction activities in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services), and the related work requires immediate authorization to avoid imminent endangerment to human health, public safety, or the environment, or to reestablish essential public services, you may discharge on the condition that a complete and accurate NOI is submitted within 30 calendar days after commencing construction activities (see Table 1) establishing that you are eligible for coverage under this permit. You must also provide documentation in your Stormwater Pollution Prevention Plan (SWPPP) to substantiate the occurrence of the public emergency pursuant to Part 7.2.3i.

1.4.1 Prerequisite for Submitting Your NOI

You must develop a SWPPP consistent with Part 7 before submitting your NOI for coverage under this permit.

1.4.2 How to Submit Your NOI

You must use EPA’s NPDES eReporting Tool (NeT) to electronically prepare and submit your NOI for coverage under the 2022 CGP unless you received a waiver from your applicable EPA Regional Office.

To access NeT, go to <https://cdx.epa.gov/cdx>.

Waivers from electronic reporting may be granted based on one of the following conditions:

- a. If your operational headquarters is physically located in a geographic area (i.e., ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission; or
- b. If you have limitations regarding available computer access or computer capability.

If the EPA Regional Office grants you approval to use a paper NOI, and you elect to use it, you must complete the form in Appendix H.

1.4.3 Deadlines for Submitting Your NOI and Your Official Date of Permit Coverage

Table 1 provides the deadlines for submitting your NOI and the official start date of your permit coverage, which differ depending on when you commence construction activities.

Table 1 NOI Submittal Deadlines and Official Start Date for Permit Coverage.

Type of Operator	NOI Submittal Deadline ⁸	Permit Authorization Date ⁹
Operator of a new site (i.e., a site where construction activities commence on or after February 17, 2022)	At least 14 calendar days before commencing construction activities.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.
Operator of an existing site (i.e., a site with 2017 CGP coverage where construction activities commenced prior to February 17, 2022)	No later than May 18, 2022.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied. Provided you submit your NOI no later than May 18, 2022, your authorization under the 2017 CGP is automatically continued until you have been granted coverage under this permit or an alternative NPDES permit, or coverage is otherwise terminated.
New operator of a permitted site (i.e., an operator that through transfer of ownership and/or operation replaces the operator of an already permitted construction site that is either a “new site” or an “existing site”)	At least 14 calendar days before the date the transfer to the new operator will take place.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.
Operator of an “emergency-related project” (i.e., a project initiated in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services)	No later than 30 calendar days after commencing construction activities.	You are considered provisionally covered under the terms and conditions of this permit immediately, and fully covered 14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.

⁸ If you miss the deadline to submit your NOI, any and all discharges from your construction activities will continue to be unauthorized under the CWA until they are covered by this or a different NPDES permit. EPA may take enforcement action for any unpermitted discharges that occur between the commencement of construction activities and discharge authorization.

⁹ Discharges are not authorized if your NOI is incomplete or inaccurate or if you are not eligible for permit coverage.

1.4.4 Modifying your NOI

If after submitting your NOI you need to correct or update any fields, you may do so by submitting a "Change NOI" form using NeT. Waivers from electronic reporting may be granted as specified in Part 1.4.2. If the EPA Regional Office has granted you approval to submit a paper NOI modification, you may indicate any NOI changes on the same NOI form in Appendix H.

When there is a change to the site's operator, the new operator must submit a new NOI, and the previous operator must submit a Notice of Termination (NOT) form as specified in Part 8.3.

The following modifications to an NOI form will result in a 14-day review process:

- Changes to the name of the operator;
- Changes to the project or site name;
- Changes to the estimated area to be disturbed;
- Changes to the name of the receiving water¹⁰, or additions to the applicable receiving waters;
- Changes to eligibility information related to endangered species protection or historic preservation;
- Changes to information provided related to the use of chemical treatment at your site; and
- Changes to answers provided regarding the demolition of structures over 10,000 square feet of floor space built or renovated before January 1, 1980.

During the 14-day review process, you may continue to operate based on the information provided in your original NOI, but you must wait until the review period has ended before you may commence or continue activities on any portion of your site that would be affected by any of the above modifications, unless EPA notifies you that the authorization is delayed or denied.

1.4.5 Your Official End Date of Permit Coverage

Once covered under this permit, your coverage will last until the date that:

- a. You terminate permit coverage consistent with Part 8; or
- b. You receive permit coverage under a different NPDES permit or a reissued or replacement version of this permit after expiring on February 16, 2027; or
- c. You fail to submit an NOI for coverage under a reissued or replacement version of this permit before the deadline for existing construction sites where construction activities continue after this permit has expired.

1.5 REQUIREMENT TO POST A NOTICE OF YOUR PERMIT COVERAGE

You must post a sign or other notice of your permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice must be located so it is visible from the public road that is nearest to the active part of the construction

¹⁰ As defined in Appendix A, a "receiving water" is "a "Water of the United States" as defined in 40 CFR §122.2 into which the regulated stormwater discharges.

site, and it must use a font large enough to be readily viewed from a public right-of-way.¹¹ At a minimum, the notice must include:

- a. The NPDES ID (i.e., permit tracking number assigned to your NOI and the EPA webpage where a copy of the NOI can be found (<https://permitsearch.epa.gov/epermit-search/ui/search>));
- b. A contact name and phone number for obtaining additional construction site information;
- c. The Uniform Resource Locator (URL) for the SWPPP (if available), or the following statement: "If you would like to obtain a copy of the Stormwater Pollution Prevention Plan (SWPPP) for this site, contact the EPA Regional Office at [include the appropriate CGP Regional Office contact information found at <https://www.epa.gov/npdes/contact-us-stormwater#regional>];" and
- d. The following statement "If you observe indicators of stormwater pollutants in the discharge or in the receiving water, contact the EPA through the following website: <https://www.epa.gov/enforcement/report-environmental-violations>."

2 TECHNOLOGY-BASED EFFLUENT LIMITATIONS

You must comply with the following technology-based effluent limitations in this Part for all authorized discharges.¹²

2.1 GENERAL STORMWATER CONTROL DESIGN, INSTALLATION, AND MAINTENANCE REQUIREMENTS

You must design, install, and maintain stormwater controls required in Parts 2.2, 2.3, and 2.4 to minimize the discharge of pollutants in stormwater from construction activities.¹³ To meet this requirement, you must:

2.1.1 Account for the following factors in designing your stormwater controls:

- a. The expected amount, frequency, intensity, and duration of precipitation;¹⁴
- b. The nature of stormwater runoff (i.e., flow) and run-on at the site, including factors such as expected flow from impervious surfaces, slopes, and site drainage features. You must design stormwater controls to control stormwater volume, velocity, and peak flow rates to minimize discharges of pollutants in stormwater and to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points; and
- c. The soil type and range of soil particle sizes expected to be present on the site.

¹¹ If the active part of the construction site is not visible from a public road, then place the notice of permit coverage in a position that is visible from the nearest public road and as close as possible to the construction site.

¹² For each of the effluent limits in Part 2, as applicable to your site, you must include in your SWPPP (1) a description of the specific control(s) to be implemented to meet the effluent limit; (2) any applicable design specifications; (3) routine maintenance specifications; and (4) the projected schedule for installation/implementation. See Part 7.2.6.

¹³ The permit does not recommend or endorse specific products or vendors.

¹⁴ Stormwater controls must be designed using the most recent data available to account for recent precipitation patterns and trends.

If your site is exposed to or has previously experienced major storms, such as hurricanes, storm surge, extreme/heavy precipitation, and flood events, you should also include consideration of and contingencies for whether implementing structural improvements, enhanced/resilient stormwater controls, and other mitigation measures may help minimize impacts from stormwater discharges from such major storm events.

2.1.2 Design and install all stormwater controls in accordance with good engineering practices, including applicable design specifications.¹⁵

2.1.3 Complete installation of stormwater controls by the time each phase of construction activities has begun.

- a. By the time construction activity in any given portion of the site begins, install and make operational any downgradient sediment controls (e.g., buffers, perimeter controls, exit point controls, storm drain inlet protection) that control discharges from the initial site clearing, grading, excavating, and other earth-disturbing activities.¹⁶
- b. Following the installation of these initial controls, install and make operational all stormwater controls needed to control discharges prior to subsequent earth-disturbing activities.

2.1.4 Ensure all stormwater controls are maintained and remain in effective operating condition during permit coverage and are protected from activities that would reduce their effectiveness.

- a. Comply with any specific maintenance requirements for the stormwater controls listed in this permit, as well as any recommended by the manufacturer.¹⁷
- b. If at any time you find that a stormwater control needs routine maintenance (i.e., minor repairs or other upkeep performed to ensure the site's stormwater controls remain in effective operating condition, not including significant repairs or the need to install a new or replacement control), you must immediately initiate the needed work, and complete such work by the close of the next business day. If it is infeasible to complete the routine maintenance by the close of the next business day, you must document why this is the case and why the repair or other upkeep to be performed should still be considered routine maintenance in your inspection report under Part 4.7.1c and complete such work no later than seven (7) calendar days from the time of discovery of the condition requiring maintenance.
- c. If you must repeatedly (i.e., three (3) or more times) make the same routine maintenance fixes to the same control at the same location, even if the fix can be completed by the close of the next business day, you must either:
 - i. Complete work to fix any subsequent repeat occurrences of this same problem under the corrective action procedures in Part 5, including keeping any records

¹⁵ Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practices and must be explained in your SWPPP. You must also comply with any additional design and installation requirements specified for the effluent limits in Parts 2.2, 2.3, and 2.4.

¹⁶ Note that the requirement to install stormwater controls prior to each phase of construction activities for the site does not apply to the earth disturbance associated with the actual installation of these controls. Operators should take all reasonable actions to minimize the discharges of pollutants during the installation of stormwater controls.

¹⁷ Any departures from such maintenance recommendations made by the manufacturer must reflect good engineering practices and must be explained in your SWPPP.

of the condition and how it was corrected under Part 5.4; or

- ii. Document in your inspection report under Part 4.7.1c why the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under this Part.¹⁸
- d. If at any time you find that a stormwater control needs a significant repair or that a new or replacement control is needed, you must comply with the corrective action deadlines for completing such work in in Part 5.2.1c.

2.2 EROSION AND SEDIMENT CONTROL REQUIREMENTS

You must implement erosion and sediment controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater from construction activities.

2.2.1 Provide and maintain natural buffers and/or equivalent erosion and sediment controls for discharges to any receiving waters that is located within 50 feet of the site's earth disturbances.

- a. **Compliance Alternatives.** For any discharges to receiving waters located within 50 feet of your site's earth disturbances, you must comply with one of the following alternatives:
 - i. Provide and maintain a 50-foot undisturbed natural buffer; or
 - ii. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or
 - iii. If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

See Appendix F, Part F.2 for additional conditions applicable to each compliance alternative.

- b. **Exceptions.** See Appendix F, Part F.2 for exceptions to the compliance alternatives.

2.2.2 Direct stormwater to vegetated areas and maximize stormwater infiltration and filtering to reduce pollutant discharges, unless infiltration would be inadvisable due to the underlying geology (e.g., karst topography) and ground water contamination concerns, or infeasible due to site conditions.¹⁹

¹⁸ Such documentation could include, for example, that minor repairs completed within the required timeframe are all that is necessary to ensure that the stormwater control continues to operate as designed and installed and that the stormwater control remains appropriate for the flow reaching it.

¹⁹ Operators should consider whether factors such as specific contaminant concerns from the construction site, the underlying soils or geology, hydrology, depth to the ground water table, or proximity to source water or wellhead protection area(s) make the site unsuitable for infiltrating construction stormwater. Site conditions that may be of particular concern include proximity to: a current or future drinking water aquifer; a drinking water well or spring (including private/household wells); highly conductive geology such as karst; known pollutant hot spots, such as hazardous waste sites, landfills, gas stations, brownfields; an on-site sewage system or underground storage tank; or soils that do not allow for infiltration. Operators may find it helpful to consult EPA's [Drinking Water Mapping Application to Protect Source Waters \(DWMAPS\)](#). DWMAPS is an online mapping tool that can be used to locate drinking water providers, potential sources of contamination, polluted waterways, and information on protection initiatives in the site area.

2.2.3 Install sediment controls along any perimeter areas of the site that are downslope from any exposed soil or other disturbed areas.²⁰

- a. The perimeter control must be installed upgradient of any natural buffers established under Part 2.2.1, unless the control is being implemented pursuant to Part 2.2.1a.ii-iii;
- b. To prevent stormwater from circumventing the edge of the perimeter control, install the perimeter control on the contour of the slope and extend both ends of the control up slope (e.g., at 45 degrees) forming a crescent rather than a straight line;
- c. After installation, to ensure that perimeter controls continue to work effectively:
 - i. Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control; and
 - ii. After a storm event, if there is evidence of stormwater circumventing or undercutting the perimeter control, extend controls and/or repair undercut areas to fix the problem.
- d. **Exception.** For areas at “linear construction sites” (as defined in Appendix A) where perimeter controls are infeasible (e.g., due to a limited or restricted right-of-way), implement other practices as necessary to minimize pollutant discharges to perimeter areas of the site.

2.2.4 Minimize sediment track-out.

- a. Restrict vehicle use to properly designated exit points;
- b. Use appropriate stabilization techniques²¹ at all points that exit onto paved roads;
 - i. **Exception:** Stabilization is not required for exit points at linear utility construction sites that are used only episodically and for very short durations over the life of the project, provided other exit point controls²² are implemented to minimize sediment track-out;
- c. Implement additional track-out controls²³ as necessary to ensure that sediment removal occurs prior to vehicle exit; and
- d. Where sediment has been tracked-out from your site onto paved roads, sidewalks, or other paved areas outside of your site, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out

²⁰ Examples of perimeter controls include filter berms; different types of silt fence such as wire-backed silt fence, super silt fence, or multi-layer geotextile silt fence; compost filter socks; gravel barriers; and temporary diversion dikes.

²¹ Examples of appropriate stabilization techniques include the use of aggregate stone with an underlying geotextile or non-woven filter fabric, and turf mats.

²² Examples of other exit point controls include preventing the use of exit points during wet periods; minimizing exit point use by keeping vehicles on site to the extent possible; limiting exit point size to the width needed for vehicle and equipment usage; using scarifying and compaction techniques on the soil; and avoiding establishing exit points in environmentally sensitive areas (e.g., *karst areas*; *steep slopes*).

²³ Examples of additional track-out controls include the use of wheel washing, rumble strips, and rattle plates.

sediment into any constructed or natural site drainage feature, storm drain inlet, or receiving water.²⁴

2.2.5 Manage stockpiles or land clearing debris piles composed, in whole or in part, of sediment and/or soil:²⁵

- a. Locate the piles outside of any natural buffers established under Part 2.2.1 and away from any constructed or natural site drainage features, storm drain inlets, and areas where stormwater flow is concentrated;
- b. Install a sediment barrier along all downgradient perimeter areas of stockpiled soil or land clearing debris piles;²⁶
- c. For piles that will be unused for 14 or more days, provide cover²⁷ or appropriate temporary stabilization (consistent with Part 2.2.14);
- d. You are prohibited from hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any constructed or natural site drainage feature, storm drain inlet, or receiving water.

2.2.6 Minimize dust. On areas of exposed soil, minimize dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged in stormwater from the site.

2.2.7 Minimize steep slope disturbances. Minimize the disturbance of "steep slopes" (as defined in Appendix A).²⁸

2.2.8 Preserve native topsoil, unless infeasible.²⁹

2.2.9 Minimize soil compaction.³⁰ In areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed:

²⁴ Fine grains that remain visible (e.g., staining) on the surfaces of off-site streets, other paved areas, and sidewalks after you have implemented sediment removal practices are not a violation of Part 2.2.4.

²⁵ The requirements in Part 2.2.5 do not apply to the storage of rock, such as rip rap, landscape rock, pipe bedding gravel, and boulders. Refer to Part 2.3.3a for the requirements that apply to these types of materials.

²⁶ Examples of sediment barriers include berms, dikes, fiber rolls, silt fences, sandbags, gravel bags, or straw bale.

²⁷ Examples of cover include tarps, blown straw and hydroseeding.

²⁸ Where disturbance to steep slopes cannot be avoided, operators should consider implementing controls suitable for steep slope disturbances that are effective at minimizing erosion and sediment discharge (e.g., preservation of existing vegetation, hydraulic mulch, geotextiles and mats, compost blankets, earth dikes or drainage swales, terraces, velocity dissipation devices). To identify slopes and soil types that are of comparatively higher risk for sediment discharge in areas of the country where the CGP is in effect, operators can use the tables in Appendix F (see Tables F-2 thru F-6).

²⁹ Stockpiling topsoil at off-site locations, or transferring topsoil to other locations, is an example of a practice that is consistent with the requirements in Part 2.2.8. Preserving native topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed. For example, some sites may be designed to be highly impervious after construction, and therefore little or no vegetation is intended to remain, or may not have space to stockpile native topsoil on site for later use, in which case it may not be feasible to preserve topsoil.

³⁰ Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted.

- a. Restrict vehicle and equipment use in these locations to avoid soil compaction; and
- b. Before seeding or planting areas of exposed soil that have been compacted, use techniques that rehabilitate and condition the soils as necessary to support vegetative growth.

2.2.10 Protect storm drain inlets.

- a. Install inlet protection measures that remove sediment from discharges prior to entry into any storm drain inlet that carries stormwater from your site to a receiving water, provided you have authority to access the storm drain inlet.³¹ Inlet protection measures are not required for storm drain inlets that are conveyed to a sediment basin, sediment trap, or similarly effective control; and
- b. Clean, or remove and replace, the inlet protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.

2.2.11 Control stormwater discharges, including both peak flowrates and total stormwater volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.³²

2.2.12 If you install a sediment basin or similar impoundment:

- a. Situate the basin or impoundment outside of any receiving water, and any natural buffers established under Part 2.2.1;
- b. Design the basin or impoundment to avoid collecting water from wetlands;
- c. Design the basin or impoundment to provide storage for either:
 - i. The calculated volume of runoff from a 2-year, 24-hour storm;³³ or
 - ii. 3,600 cubic feet per acre drained.
- d. Utilize outlet structures that withdraw water from the surface of the sediment basin or similar impoundment, unless infeasible;³⁴
- e. Use erosion controls and velocity dissipation devices to prevent erosion at inlets and outlets; and

³¹ Inlet protection measures can be removed in the event of flood conditions or to prevent erosion.

³² Examples of stormwater controls that can be used to comply with this requirement include the use of erosion controls and/or velocity dissipation devices (e.g., check dams, sediment traps), within and along the length of a constructed site drainage feature and at the outfall to slow down stormwater.

³³ Operators may refer to <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates> for guidance on determining the volume of precipitation associated with their site's local 2-year, 24-hour storm event.

³⁴ The circumstances in which it is infeasible to design outlet structures in this manner are rare. Exceptions may include areas with extended cold weather, where using surface outlets may not be feasible during certain time periods (although they must be used during other periods). If you determine that it is infeasible to meet this requirement, you must provide documentation in your SWPPP to support your determination, including the specific conditions or time periods when this exception will apply.

- f. Remove accumulated sediment to maintain at least one-half of the design capacity and conduct all other appropriate maintenance to ensure the basin or impoundment remains in effective operating condition.

2.2.13 If using treatment chemicals (e.g., *polymers, flocculants, coagulants*):

- a. **Use conventional erosion and sediment controls before and after the application of treatment chemicals.** Chemicals may only be applied where treated stormwater is directed to a sediment control (e.g., *sediment basin, perimeter control*) before discharge.
- b. **Select appropriate treatment chemicals.** Chemicals must be appropriately suited to the types of soils likely to be exposed during construction and present in the discharges being treated (i.e., *the expected turbidity, pH, and flow rate of stormwater flowing into the chemical treatment system or area*).
- c. **Minimize discharge risk from stored chemicals.** Store all treatment chemicals in leak-proof containers that are kept under storm-resistant cover and surrounded by secondary containment structures (e.g., *spill berms, dikes, spill containment pallets*), or provide equivalent measures designed and maintained to minimize the potential discharge of treatment chemicals in stormwater or by any other means (e.g., *storing chemicals in a covered area, having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill*).
- d. **Comply with State/local requirements.** Comply with applicable State and local requirements regarding the use of treatment chemicals.
- e. **Use chemicals in accordance with good engineering practices and specifications of the chemical provider/supplier.** Use treatment chemicals and chemical treatment systems in accordance with good engineering practices, and with dosing specifications and sediment removal design specifications provided by the provider/supplier of the applicable chemicals, or document in your SWPPP specific departures from these specifications and how they reflect good engineering practice.
- f. **Ensure proper training.** Ensure all persons who handle and use treatment chemicals at the construction site are provided with appropriate, product-specific training prior to beginning application of treatment chemicals. Among other things, the training must cover proper dosing requirements.
- g. **Perform additional measures specified by the EPA Regional Office for the authorized use of cationic chemicals.** If you have been authorized to use cationic chemicals at your site pursuant to Part 1.1.9, you must perform all additional measures as conditioned by your authorization to ensure the use of such chemicals will not result in discharges that do not meet water quality standards.

2.2.14 Stabilize exposed portions of the site. Implement and maintain stabilization measures (e.g., *seeding protected by erosion controls until vegetation is established*,³⁵ *sodding, mulching, erosion control blankets, hydromulch, gravel*) that minimize erosion from any areas of exposed soil on the site in accordance with Part.

³⁵ If you will be evaluating the use of some type of erosion control netting to the site as part of your site stabilization, EPA encourages you to consider employing products that have been shown to minimize

a. Stabilization Deadlines:³⁶**Table 2 Deadlines for Initiating and Completing Site Stabilization.**

Total Amount of Land Disturbance Occurring At Any One Time ³⁷	Deadline
i. Five acres or less (≤5.0) Note: this includes sites disturbing more than five acres (>5.0) total over the course of a project, but that limit disturbance at any one time (i.e., phase the disturbance) to five acres or less (≤5.0)	<ul style="list-style-type: none"> • Initiate the installation of stabilization measures immediately³⁸ in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;³⁹ and • Complete the installation of stabilization measures as soon as practicable, but no later than 14 calendar days

impacts on wildlife. For instance, the U.S. Fish & Wildlife Service provides recommendations on the type of netting practices that are considered “wildlife friendly,” including those that use natural fiber or 100 percent biodegradable materials and that use a loose weave with a non-welded, movable jointed netting, as well as those products that are not wildlife friendly including square plastic netting that are degradable (e.g., photodegradable, UV-degradable, oxo-degradable), netting made from polypropylene, nylon, polyethylene, or polyester. Other recommendations include removing the netting product when it is no longer needed. See https://www.fws.gov/midwest/eastlansing/library/pdf/WildlifeFriendlyErosionControlProducts_revised.pdf for further information. There also may be State, Tribal, or local requirements about using wildlife friendly erosion control products.

³⁶ EPA may determine, based on an inspection carried out under Part 4.8 and corrective actions required under Part 5.3, that the level of sediment discharge on the site makes it necessary to require a faster schedule for completing stabilization. For instance, if sediment discharges from an area of exposed soil that is required to be stabilized are compromising the performance of existing stormwater controls, EPA may require stabilization to correct this problem.

³⁷ Limiting disturbances to five (5) acres or less at any one time means that at no time during the project do the cumulative earth disturbances exceed five (5) acres. The following examples would qualify as limiting disturbances at any one time to five (5) acres or less:

1. The total area of disturbance for a project is five (5) acres or less.
2. The total area of disturbance for a project will exceed five (5) acres, but the operator ensures that no more than five (5) acres will be disturbed at any one time through implementation of stabilization measures. In this way, site stabilization can be used to “free up” land that can be disturbed without exceeding the five (5)-acre cap to qualify for the 14-day stabilization deadline. For instance, if an operator completes stabilization of two (2) acres of land on a five (5)-acre disturbance, then two (2) additional acres could be disturbed while still qualifying for the longer 14-day stabilization deadline.

³⁸ The following are examples of activities that would constitute the immediate initiation of stabilization:

1. Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable, but no later than one (1) calendar day of completing soil preparation;
2. Applying mulch or other non-vegetative product to the exposed area;
3. Seeding or planting the exposed area;
4. Starting any of the activities in # 1 – 3 on a portion of the entire area that will be stabilized; and
5. Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization.

³⁹ The requirement to initiate stabilization immediately is triggered as soon as you know that construction work on a portion of the site is temporarily ceased and will not resume for 14 or more days, or as soon as you know that construction work is permanently ceased. In the context of this provision, “immediately” means as soon as practicable, but no later than the end of the next business day, following the day when the construction activities have temporarily or permanently ceased.

Total Amount of Land Disturbance Occurring At Any One Time ³⁷	Deadline
	after stabilization has been initiated. ⁴⁰
ii. More than five acres (>5.0)	<ul style="list-style-type: none"> • Initiate the installation of stabilization measures immediately⁴¹ in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;⁴² and • Complete the installation of stabilization measures as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated.⁴³

b. Exceptions:

i. Arid, semi-arid, and drought-stricken areas (as defined in Appendix A). If it is the seasonally dry period (as defined in Appendix A)⁴⁴ or a period in which drought is occurring, and vegetative stabilization measures are being used:

- (a) Immediately initiate and, within 14 calendar days of temporary or permanent cessation of work in any portion of your site, complete the installation of temporary non-vegetative stabilization measures to the extent necessary to prevent erosion;
- (b) As soon as practicable, given conditions or circumstances on the site, complete all activities necessary to seed or plant the area to be stabilized; and
- (c) If construction is occurring during the seasonally dry period, indicate in your SWPPP the beginning and ending dates of the seasonally dry period and your site conditions. Also include the schedule you will follow for initiating and completing vegetative stabilization.

ii. Unforeseen circumstances. Operators that are affected by unforeseen circumstances⁴⁵ that delay the initiation and/or completion of vegetative stabilization:

⁴⁰ If vegetative stabilization measures are being implemented, stabilization is considered "installed" when all activities necessary to seed or plant the area are completed, including the application of any non-vegetative protective cover (e.g., mulch, erosion control blanket), if applicable. If non-vegetative stabilization measures are being implemented, stabilization is considered "installed" when all such measures are implemented or applied.

⁴¹ See footnote 38.

⁴² See footnote 39.

⁴³ See footnote 40.

⁴⁴ The term "seasonally dry period" as defined in Appendix A refers to a month in which the long-term average total precipitation is less than or equal to 0.5 inches. Refer to EPA's Seasonally Dry Period Locator Tool at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates> and supporting maps for assistance in determining whether a site is operating during a seasonally dry period for the area.

⁴⁵ Examples include problems with the supply of seed stock or with the availability of specialized equipment and unsuitability of soil conditions due to excessive precipitation and/or flooding.

- (a) Immediately initiate and, within 14 calendar days, complete the installation of temporary non-vegetative stabilization measures to prevent erosion;
- (b) Complete all soil conditioning, seeding, watering or irrigation installation, mulching, and other required activities related to the planting and initial establishment of vegetation as soon as conditions or circumstances allow it on your site; and
- (c) Document in the SWPPP the circumstances that prevent you from meeting the deadlines in Part 2.2.14a and the schedule you will follow for initiating and completing stabilization.

iii. Discharges to a sediment- or nutrient-impaired water or to a water that is identified by your State, Tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes. Complete stabilization as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated.

c. Final Stabilization Criteria (for any areas not covered by permanent structures):

- i. Establish uniform, perennial vegetation (*i.e., evenly distributed, without large bare areas*) to provide 70 percent or more of the vegetative cover native to local undisturbed areas; and/or
- ii. Implement permanent non-vegetative stabilization measures⁴⁶ to provide effective cover of any areas of exposed soil.

iii. Exceptions:

- (a) **Arid, semi-arid, and drought-stricken areas** (as defined in Appendix A). Final stabilization is met if the area has been seeded or planted to establish vegetation that provides 70 percent or more of the vegetative cover native to local undisturbed areas within three (3) years and, to the extent necessary to prevent erosion on the seeded or planted area, non-vegetative erosion controls have been applied to provide cover for at least three years without active maintenance.
- (b) **Disturbed areas on agricultural land that are restored to their preconstruction agricultural use.** The Part 2.2.14c final stabilization criteria do not apply.
- (c) **Areas that need to remain disturbed.** In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remain disturbed, and only the minimum area needed remains disturbed (*e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, materials*).

2.3 POLLUTION PREVENTION REQUIREMENTS⁴⁷

You must implement pollution prevention controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater and to prevent the discharge of pollutants from spilled or leaked materials from construction activities.

⁴⁶ Examples of permanent non-vegetative stabilization measures include riprap, gravel, gabions, and geotextiles.

⁴⁷ Under this permit, you are not required to minimize exposure for any products or materials where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

2.3.1 For equipment and vehicle fueling and maintenance:

- a. Provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuels and oils, from these activities;⁴⁸
- b. If applicable, comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR part 112 and Section 311 of the CWA;
- c. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;
- d. Use drip pans and absorbents under or around leaky vehicles;
- e. Dispose of or recycle oil and oily wastes in accordance with other Federal, State, Tribal, or local requirements; and
- f. Clean up spills or contaminated surfaces immediately, using dry clean up measures (do not clean contaminated surfaces by hosing the area down), and eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.

2.3.2 For equipment and vehicle washing:

- a. Provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters;⁴⁹
- b. Ensure there is no discharge of soaps, solvents, or detergents in equipment and vehicle wash water; and
- c. For storage of soaps, detergents, or solvents, provide either (1) cover (e.g., *plastic sheeting, temporary roofs*) to minimize the exposure of these detergents to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

2.3.3 For storage, handling, and disposal of building products, materials, and wastes:⁵⁰

- a. For building materials and building products,⁵¹ provide either (1) cover (e.g., *plastic sheeting, temporary roofs*) to minimize the exposure of these products to

⁴⁸ Examples of effective means include:

- Locating activities away from receiving waters, storm drain inlets, and constructed or natural site drainage feature so that stormwater coming into contact with these activities cannot reach waters of the U.S.;
- Providing secondary containment (e.g., *spill berms, dikes, spill containment pallets*) and cover where appropriate; and
- Having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill.

⁴⁹ Examples of effective means include locating activities away from receiving waters and storm drain inlets or constructed or natural site drainage features and directing wash waters to a sediment basin or sediment trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls.

⁵⁰ Compliance with the requirements of this permit does not relieve compliance requirements with respect to Federal, State, or local laws and regulations governing the storage, handling, and disposal of solid, hazardous, or toxic wastes and materials.

⁵¹ Examples of building materials and building products typically present at construction sites include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures, and gravel and mulch stockpiles.

precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

Exception: Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

- b.** *For pesticides, herbicides, insecticides, fertilizers, and landscape materials:*
- i.** In storage areas, provide either (1) cover (e.g., *plastic sheeting, temporary roofs*) to minimize the exposure of these chemicals to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas; and
 - ii.** Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label (see also Part 2.3.5).
- c.** *For diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals:*
The following requirements apply to the storage and handling of chemicals on your site. If you are already implementing controls as part of an SPCC or other spill prevention plan that meet or exceed the requirements of this Part, you may continue to do so and be considered in compliance with these provisions provided you reference the applicable parts of the SPCC or other plans in your SWPPP as required in Part 7.2.6b.viii.
- i.** If any chemical container has a storage capacity of less than 55 gallons:
 - (a) The containers must be water-tight, and must be kept closed, sealed, and secured when not being actively used;
 - (b) If stored outside, use a spill containment pallet or similar device to capture small leaks or spills; and
 - (c) Have a spill kit available on site that is in good working condition (i.e., not damaged, expired, or used up) and ensure personnel are available to respond immediately in the event of a leak or spill.
 - ii.** If any chemical container has a storage capacity of 55 gallons or more:
 - (a) The containers must be water-tight, and must be kept closed, sealed, and secured when not being actively used;
 - (b) Store containers a minimum of 50 feet from receiving waters, constructed or natural site drainage features, and storm drain inlets. If infeasible due to site constraints, store containers as far away from these features as the site permits. If site constraints prevent you from storing containers 50 feet away from receiving waters or the other features identified, you must document in your SWPPP the specific reasons why the 50-foot setback is infeasible, and how you will store containers as far away as the site permits;
 - (c) Provide either (1) cover (e.g., *temporary roofs*) to minimize the exposure of these containers to precipitation and to stormwater, or (2) secondary containment (e.g., *curbing, spill berms, dikes, spill containment pallets, double-wall, above-ground storage tank*); and
 - (d) Have a spill kit available on site that is in good working condition (i.e., not

damaged, expired, or used up) and ensure personnel are available to respond immediately in the event of a leak or spill. Additional secondary containment measures are listed at 40 CFR § 112.7(c)(1).

- iii. Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.
- d. *For hazardous or toxic wastes:*⁵²
 - i. Separate hazardous or toxic waste from construction and domestic waste;
 - ii. Store waste in sealed containers, constructed of suitable materials to prevent leakage and corrosion, and labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable Federal, State, Tribal, or local requirements;
 - iii. Store all outside containers within appropriately-sized secondary containment (e.g., *spill berms, dikes, spill containment pallets*) to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., *storing chemicals in a covered area, having a spill kit available on site*);
 - iv. Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended method of disposal and in compliance with Federal, State, Tribal, and local requirements;
 - v. Clean up spills immediately, using dry clean-up methods, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and
 - vi. Follow all other Federal, State, Tribal, and local requirements regarding hazardous or toxic waste.
- e. *For construction and domestic wastes:*⁵³
 - i. Provide waste containers (e.g., *dumpster, trash receptacle*) of sufficient size and number to contain construction and domestic wastes;
 - (a) For waste containers with lids, keep waste container lids closed when not in use, and close lids at the end of the business day and during storm events. For waste containers without lids, provide either (1) cover (e.g., *a tarp, plastic sheeting, temporary roof*) to minimize exposure of wastes to precipitation, or (2) a similarly effective means designed to minimize the discharge of pollutants (e.g., *secondary containment*);
 - (b) On business days, clean up and dispose of waste in designated waste

⁵² Examples of hazardous or toxic waste that may be present at construction sites include paints, caulks, sealants, fluorescent light ballasts, solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids.

⁵³ Examples of construction and domestic wastes include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, demolition debris; and other trash or discarded materials.

containers; and

(c) Clean up immediately if containers overflow, and if there is litter elsewhere on the site from escaped trash.

ii. Waste containers are not required for the waste remnant or unused portions of construction materials or final products that are covered by the exception in Part 2.2.3a provided that:

(a) These wastes are stored separately from other construction or domestic wastes addressed by Part 2.3.3e.i (i.e., wastes not covered by the exception in Part 2.3.3a). If the wastes are mixed, they must be stored in waste containers as required in Part 2.3.3e.i; and

(b) These wastes are stored in designated areas of the site, the wastes are described in the SWPPP (see Part 7.2.6b.ix), and identified in the site plan (see Part 7.2.4i).

f. *For sanitary waste*, position portable toilets so they are secure and will not be tipped or knocked over, and are located away from receiving waters, storm drain inlets, and constructed or natural site drainage features.

2.3.4 For washing applicators and containers used for stucco, paint, concrete, form release oils, curing compounds, or other materials:

a. Direct wash water into a leak-proof container or leak-proof and lined pit designed so no overflows can occur due to inadequate sizing or precipitation;

b. Handle washout or cleanout wastes as follows:

i. For liquid wastes:

(a) Do not dump liquid wastes or allow them to enter into constructed or natural site drainage features, storm inlets, or receiving waters;

(b) Do not allow liquid wastes to be disposed of through infiltration or to otherwise be disposed of on the ground;

(c) Comply with applicable State, Tribal, or local requirements for disposal

ii. Remove and dispose of hardened concrete waste consistent with your handling of other construction wastes in Part 2.3.3e; and

c. Locate any washout or cleanout activities as far away as possible from receiving waters, constructed or natural site drainage features, and storm drain inlets, and, to the extent feasible, designate areas to be used for these activities and conduct such activities only in these areas.

2.3.5 For the application of fertilizers:

a. Apply at a rate and in amounts consistent with manufacturer's specifications, or document in the SWPPP departures from the manufacturer specifications where appropriate in accordance with Part 7.2.6b.x;

b. Apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;

- c. Avoid applying before heavy rains that could cause excess nutrients to be discharged;
- d. Never apply to frozen ground;
- e. Never apply to constructed or natural site drainage features; and
- f. Follow all other Federal, State, Tribal, and local requirements regarding fertilizer application.

2.3.6 Emergency Spill Notification Requirements

Discharges of toxic or hazardous substances from a spill or other release are prohibited, consistent with Part 1.3.5. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR part 110, 40 CFR part 117, or 40 CFR part 302 occurs during a 24-hour period, you must notify the National Response Center (NRC) at (800) 424-8802 or, in the Washington, DC metropolitan area, call (202) 267-2675 in accordance with the requirements of 40 CFR part 110, 40 CFR part 117, and 40 CFR part 302 as soon as you have knowledge of the release. You must also, within seven (7) calendar days of knowledge of the release, provide a description of the release, the circumstances leading to the release, and the date of the release. State, Tribal, or local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

2.4 CONSTRUCTION DEWATERING REQUIREMENTS

Comply with the following requirements to minimize the discharge of pollutants from dewatering⁵⁴ operations.

- 2.4.1** Route dewatering water through a sediment control (e.g., sediment trap or basin, pumped water filter bag) designed to prevent discharges with visual turbidity;⁵⁵
- 2.4.2** Do not discharge visible floating solids or foam;
- 2.4.3** The discharge must not cause the formation of a visible sheen on the water surface, or visible oily deposits on the bottom or shoreline of the receiving water. Use an oil-water separator or suitable filtration device (such as a cartridge filter) designed to remove oil, grease, or other products if dewatering water is found to or expected to contain these materials;
- 2.4.4** To the extent feasible, use well-vegetated (e.g., grassy or wooded), upland areas of the site to infiltrate dewatering water before discharge.⁵⁶ You are prohibited from using receiving waters as part of the treatment area;
- 2.4.5** To prevent dewatering-related erosion and related sediment discharges:
 - a. Use stable, erosion-resistant surfaces (e.g., well-vegetated grassy areas, clean filter stone, geotextile underlayment) to discharge from dewatering controls;

⁵⁴ "Dewatering" is defined in Appendix A as "the act of draining accumulated stormwater and/or ground water from building foundations, vaults, and trenches, or other similar points of accumulation."

⁵⁵ For the purposes of this permit, visual turbidity is present where there is a sediment plume in the discharge or the discharge appears cloudy, or opaque, or has a visible contrast that can be identified by an observer.

⁵⁶ See footnote 19.

- b. Do not place dewatering controls, such as pumped water filter bags, on steep slopes (as defined in Appendix A); and
 - c. At all points where dewatering water is discharged, comply with the velocity dissipation requirements of Part 2.2.11.
- 2.4.6** For backwash water, either haul it away for disposal or return it to the beginning of the treatment process;
- 2.4.7** Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications; and
- 2.4.8** Comply with dewatering-specific inspection requirements in Part 4.

3 WATER QUALITY-BASED EFFLUENT LIMITATIONS

3.1 GENERAL EFFLUENT LIMITATION TO MEET APPLICABLE WATER QUALITY STANDARDS

Discharges must be controlled as necessary to meet applicable water quality standards. Discharges must also comply with any additional State or Tribal requirements that are in Part 9.

In the absence of information demonstrating otherwise, EPA expects that compliance with the conditions in this permit will result in stormwater discharges being controlled as necessary to meet applicable water quality standards. If at any time you become aware, or EPA determines, that discharges are not being controlled as necessary to meet applicable water quality standards, you must take corrective action as required in Parts 5.1 and 5.2, and document the corrective actions as required in Part 5.4.

EPA may insist that you install additional controls (to meet the narrative water quality-based effluent limit above) on a site-specific basis, or require you to obtain coverage under an individual permit, if information in your NOI or from other sources indicates that your discharges are not controlled as necessary to meet applicable water quality standards. This includes situations where additional controls are necessary to comply with a wasteload allocation in an EPA-established or approved TMDL.

If during your coverage under a previous permit, you were required to install and maintain stormwater controls specifically to meet the assumptions and requirements of an EPA-approved or established TMDL (for any parameter) or to otherwise control your discharge to meet water quality standards, you must continue to implement such controls as part of your coverage under this permit.

3.2 WATER QUALITY-BASED CONDITIONS FOR SITES DISCHARGING TO CERTAIN IMPAIRED AND HIGH QUALITY RECEIVING WATERS

For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your State, Tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes,⁵⁷ you must comply with the inspection frequency specified in Part 4.3 and you must comply with the stabilization deadline specified in Part 2.2.14b.iii.⁵⁸

⁵⁷ Refer to Appendix A for definitions of "impaired water" and "Tier 2," "Tier 2.5," and "Tier 3" waters. For assistance in determining whether your site discharges to impaired waters, EPA has developed a tool that is available at <https://www.epa.gov/npdes/epas-stormwater-discharge-mapping-tools>. For assistance in determining whether your site discharges to a Tier 2, 2.5, or 3 water, refer to the list of such waters at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>.

⁵⁸ If you qualify for any of the reduced inspection frequencies in Part 4.4, you may conduct inspections in

If you discharge to a water that is impaired for a parameter other than a sediment-related parameter or nutrients, EPA will inform you if any additional controls are necessary for your discharge to be controlled as necessary to meet water quality standards. These controls might include those necessary for your discharge to be consistent with the assumptions of any available wasteload allocation in any applicable TMDL. In addition, EPA may require you to apply for and obtain coverage under an individual NPDES permit.

In addition, on a case-by-case basis, EPA may notify operators of new sites or operators of existing sites with increased discharges that additional analyses, stormwater controls, and/or other measures are necessary to comply with the applicable antidegradation requirements, or notify you that an individual permit application is necessary.

If you discharge to a water that is impaired for polychlorinated biphenyls (PCBs) and are engaging in demolition of any structure with at least 10,000 square feet of floor space built or renovated before January 1, 1980, you must:

- a. Implement controls⁵⁹ to minimize the exposure of PCB-containing building materials, including paint, caulk, and pre-1980 fluorescent lighting fixtures, to precipitation and to stormwater; and
- b. Ensure that disposal of such materials is performed in compliance with applicable State, Federal, and local laws.

3.3 TURBIDITY BENCHMARK MONITORING FOR SITES DISCHARGING DEWATERING WATER TO PROTECT THE WATER QUALITY OF SENSITIVE WATERS

For sites discharging dewatering water to “sensitive waters” (i.e., receiving waters listed as impaired for sediment or a sediment-related parameter (as defined in Appendix A), or receiving waters designated as a Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes) you are required to comply with the benchmark monitoring requirements in this Part and document the procedures you will use at your site in your SWPPP pursuant to Part 7.2.8. A summary of these requirements is included in Table 1.

EPA notes that the benchmark threshold is not an effluent limitation, rather it is an indicator that the dewatering controls may not be working to protect water quality, which the operator must investigate and correct as appropriate. A benchmark exceedance is not a permit violation. However, if a benchmark exceedance triggers corrective action in Part 5.1.5a, failure to conduct any required action is a permit violation.

Where there are multiple operators associated with the same site, the operators may coordinate with one another to carry out the monitoring requirements of this Part in order to avoid duplicating efforts. Such coordinating arrangements must be described in the SWPPP consistent with Part 7.2.8. Regardless of how the operators divide the

accordance with Part 4.4 for any portion of your site that discharges to a sensitive water.

⁵⁹ Examples of controls to minimize exposure of PCBs to precipitation and stormwater include separating work areas from non-work areas and selecting appropriate personal protective equipment and tools, constructing a containment area so that all dust or debris generated by the work remains within the protected area, and using tools that minimize dust and heat (<212°F). For additional information, refer to Part 2.3.3 of the CGP Fact Sheet.

responsibilities for monitoring and reporting, each operator remains responsible for compliance with these requirements.⁶⁰

3.3.1 Turbidity monitoring requirements⁶¹

- a. **Sampling frequency.** You must collect at least one turbidity sample from your dewatering discharge each day a discharge occurs.
- b. **Sampling location.** Samples must be taken at all points where dewatering water is discharged. Samples must be taken after the dewatering water has been treated by installed treatment devices pursuant to Parts 2.4.1 and 2.4.3 and prior to its discharge off site into a receiving water, constructed or natural site drainage feature, or storm drain inlet.
- c. **Representative samples.** Samples taken must be representative of the dewatering discharge for any given day as required in Appendix G (standard permit conditions), Part G.10.2.
- d. **Test methods.** Samples must be measured using a turbidity meter that reports results in nephelometric turbidity units (NTUs) and conforms with a Part 136-approved method (e.g., methods 180.1 and 2130). You are required to use the meter, and conduct a calibration verification prior to each day's use, consistent with the manufacturer's instructions.

3.3.2 Turbidity benchmark

- a. The benchmark threshold for turbidity for this permit is 50 NTUs (referred to elsewhere in this permit as the "standard 50 NTU benchmark") unless EPA has authorized the use of an alternate benchmark in accordance with Part 3.3.2b.
- b. **Request for alternate benchmark threshold.**
 - i. At any time prior to or during your coverage under this permit, you may request that EPA approve a benchmark for your site that is higher than 50 NTUs if you have information demonstrating the higher number is the same as your receiving water's water quality standard for turbidity. Unless EPA approves an alternate benchmark, you will be required to use the standard 50 NTU benchmark. To request approval of an alternate benchmark, you must submit the following information to your applicable EPA Regional Office (see Appendix K):
 - (a) The current turbidity water quality standard that applies to your receiving

⁶⁰ For instance, if Operator A relies on Operator B to meet the Part 3.3.1 turbidity monitoring requirements, the Part 3.3.4 reporting and recordkeeping requirements, and the Part 5.2.2 corrective action provisions when applicable, Operator A does not have to duplicate these same functions if Operator B is implementing them for both operators to be in compliance with the permit. However, Operator A remains responsible for complying with these permit requirements if Operator B fails to take actions that were necessary for Operator A to comply with the permit. See also footnote 83. EPA notes that both Operator A and B are required to submit turbidity monitoring reports as required under Part 3.3.4, however, Operator A's report does not need to include the data collected by Operator B as long as Operator B submits the required data and Operator A's report indicates that it is relying on Operator B to report the data. See Part 3.3.4a.

⁶¹ Operators may find it useful to consult EPA's *Monitoring and Inspection Guide for Construction Dewatering*, available at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>, which provides guidelines on how to correctly monitor for turbidity, determine if the weekly average exceeds the benchmark, and, if so, how to proceed with corrective action.

water and the source/citation.⁶²

(b) If the applicable turbidity water quality standard requires information on natural or background turbidity levels (e.g., “no more than 10 NTU above natural turbidity levels”) to determine the specific standard for the receiving water, include available data that can be used to establish the natural turbidity levels of your receiving water (including literature studies or Federal, State, Tribal, or local government data). Data must be representative of the natural turbidity levels of your specific receiving water. Identify the source(s) of all data provided, including if the data are from samples you collected of the receiving water.

- ii. EPA will inform you of its decision on whether to approve the requested alternate benchmark within 30 days. EPA may approve your request, request additional time (e.g., if additional information is needed to substantiate the data you provided), or deny your request. Unless and until EPA approves your request to use an alternate benchmark, you are required to use the standard benchmark of 50 NTUs and take any required corrective actions if an exceedance occurs.

3.3.3 Comparison of turbidity samples to benchmark. Compare the weekly average⁶³ of your turbidity monitoring results to the standard 50 NTU benchmark, or alternate benchmark if approved by EPA.

- a. If the weekly average of your turbidity monitoring results exceeds the standard benchmark (or your approved alternate benchmark), you are required to conduct follow-up corrective action in accordance with Part 5.2.2 and document any corrective action taken in your corrective action log in accordance with Part 5.4.
- b. For averaging purposes, a “monitoring week” starts with a Monday and ends on Sunday. Once a new monitoring week starts, you will need to calculate a new average for that week of turbidity monitoring results.⁶⁴ A weekly average may consist of one or more turbidity monitoring results.
- c. Although you are not required to collect and analyze more than one turbidity sample per day from your dewatering discharge, if you do collect and analyze more than one sample on any given day, you must include any additional results in the

⁶² For instance, if your site is located in Washington, DC, and you are discharging to a Class B water, for which the water quality standard is that turbidity may not increase above ambient levels by more than 20 percent, you would reference “Water Quality Standards for the District of Columbia, Chapter 11, Section 1104.8.”

⁶³ A “weekly average” is defined as the sum of all of the turbidity samples taken during a “monitoring week” divided by the number of samples measured during that week. Average values should be calculated to the nearest whole number.

⁶⁴ For example, if turbidity samples from your dewatering discharge in week 1 result in values of 30 NTU on Tuesday, 40 NTU on Wednesday, and 45 NTU on Thursday, your weekly average turbidity value would be 38.33 NTU $((30+40+45) \div 3 = 38 \text{ NTU})$. If in week 2, your turbidity samples resulted in values of 45 NTU on Monday, 30 NTU on Tuesday, 25 NTU on Wednesday, and 15 NTU on Thursday, you would calculate a new average for that week, which would yield an average turbidity value of 28.75 NTU $((45+30+25+15) \div 4 = 29 \text{ NTU})$. By comparison, if your samples on consecutive days from Friday to Monday were 60 NTU, 45 NTU, 40 NTU, and 43 NTU, respectively, and there are no other dewatering discharges for the remainder of the week, you would calculate one weekly average for the Friday to Sunday to be 48 NTU $((60+45+40) \div 3 = 48 \text{ NTU})$, and a separate weekly average for the one Monday to be 43 NTU $(43 \div 1 = 43 \text{ NTU})$.

calculation of your weekly average (i.e., add all individual results for that monitoring week and divide by the total number of samples).⁶⁵

- d. If you are conducting turbidity monitoring for more than one dewatering discharge point, you must calculate a weekly average turbidity value for each discharge point and compare each to the turbidity benchmark.

3.3.4 Reporting and recordkeeping.

- a. You must submit reports of your weekly average turbidity data to EPA no later than 30 days following the end of each monitoring quarter. If there are monitoring weeks in which there was no dewatering discharge, or if there is a monitoring quarter with no dewatering discharge, indicate this in your turbidity monitoring report. If another operator associated with your same site is conducting turbidity monitoring on your behalf pursuant to Part 3.3, indicate this in your turbidity monitoring report.
- b. For the purposes of this permit, the following monitoring quarters and reporting deadlines apply:

Table 3. Monitoring Quarters and Deadlines for Reporting Turbidity Benchmark Monitoring Data.

Monitoring Quarter #	Months	Reporting Deadline (no later than 30 days after end of the monitoring quarter)
1	January 1 – March 31	April 30
2	April 1 – June 30	July 30
3	July 1 – September 30	October 30
4	October 1 – December 31	January 30

- c. You must use EPA's NPDES eReporting Tool (NeT) to electronically submit your quarterly turbidity data, unless, consistent with Part 1.4.2, you received a waiver from your applicable EPA Regional Office. If the EPA Regional Office grants you approval to use a paper turbidity monitoring report form, and you elect to use it, you must complete the form in Appendix K. If EPA approves of your request to use an alternate turbidity benchmark pursuant to Part 3.3.2b, EPA will substitute the alternate benchmark in your NeT account.
- d. For each day in which you are required to monitor, you must record the monitoring information required by Appendix G, Parts G.10.2 and G.10.3 and retain all such information for a period of at least three years from the date this permit expires or from the date your authorization is terminated.

⁶⁵ For example, if during a monitoring week you take two turbidity samples on Tuesday with a value of 30 NTU and 35 NTU, three samples on Wednesday with a value of 40 NTU, 45 NTU, and 48 NTU, and one sample on Thursday with a value of 45 NTU, your weekly average turbidity value for this week would be 41 NTU $((30+35+40+45+48+45) \div 6 = 41 \text{ NTU})$.

Table 4. Summary of Turbidity Benchmark Monitoring Requirements.

Applicability	Sampling Requirement	Turbidity Benchmark	Corrective Action	Reporting
Sites discharging dewatering water to a sediment-impaired water or to a water designated as a Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes.	Collect at least one turbidity sample per day, from each discharge point, on any day there is a dewatering discharge. Use turbidity sampling procedures specified in Part 3.3.1.	Compare the weekly average of your turbidity monitoring results to the 50 NTU benchmark (or alternate benchmark if approved by EPA).	If the weekly average of turbidity monitoring results exceeds the 50 NTU turbidity benchmark (or alternate benchmark if approved by EPA), you are required to take follow-up corrective action in accordance with Part 5.2.2.	Report all weekly average turbidity monitoring results on a quarterly basis via NeT-CGP (unless use of the paper monitoring form in Appendix K is approved by EPA) no later than 30 days following the end of each monitoring quarter.

4 INSPECTION REQUIREMENTS

4.1 PERSON(S) RESPONSIBLE FOR CONDUCTING SITE AND DEWATERING INSPECTIONS

The person(s) inspecting your site may be a person on your staff or a third party you hire to conduct such inspections. You are responsible for ensuring that any person conducting inspections pursuant to this Part is a “qualified person.” A qualified person is someone who has completed the training required by Part 6.3.

4.2 FREQUENCY OF INSPECTIONS.⁶⁶

At a minimum, you must conduct a site inspection in accordance with one of the two schedules listed below, unless you are subject to the Part 4.3 site inspection frequency for discharges to sediment or nutrient-impaired or high quality waters, or qualify for a Part 4.4 reduction in the inspection frequency:

4.2.1 At least once every seven (7) calendar days; or

4.2.2 Once every 14 calendar days *and* within 24 hours⁶⁷ of the occurrence of:

- a.** A storm event that produces 0.25 inches or more of rain within a 24-hour period.
 - i.** If a storm event produces 0.25 inches or more of rain within a 24-hour period (including when there are multiple, smaller storms that alone produce less than 0.25 inches but together produce 0.25 inches or more in 24 hours), you are required to conduct one inspection within 24 hours of when 0.25 inches of rain or more has fallen.

⁶⁶ Inspections are only required during the site’s normal working hours.

⁶⁷ For the purposes of the inspection requirements in this Part, conducting an inspection “within 24 hours” means that once either of the two conditions in Parts 4.2.2a or 4.2.2b are met you have 24 hours from that time to conduct an inspection. For clarification, the 24 hours is counted as a continuous passage of time, and not counted by business hours (e.g., 3 business days of 8 hours each). When the 24-hour inspection time frame occurs entirely outside of normal working hours, you must conduct an inspection by no later than the end of the next business day.

- ii. If a storm event produces 0.25 inches or more of rain within a 24-hour period on the first day of a storm and continues to produce 0.25 inches or more of rain on subsequent days, you must conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the last day of the storm that produces 0.25 inches or more of rain (i.e., only two inspections would be required for such a storm event).⁶⁸
 - b. A discharge caused by snowmelt from a storm event that produces 3.25 inches⁶⁹ or more of snow within a 24-hour period. You are required to conduct one inspection once the discharge of snowmelt from a 3.25-inch or more snow accumulation occurs. Additional snowmelt inspections are only required if following the discharge from the first snowmelt, there is a discharge from a separate storm event that produces 3.25 inches or more of snow.
- 4.2.3** To determine whether a storm event meets either of the thresholds in Parts 4.2.2a or 4.2.2b:
- a. For rain, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any 24-hour period during which there is 0.25 inches or more of rainfall, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.
 - b. For snow, you must either take measurements of snowfall at your site,⁷⁰ or rely on similar information from a local weather forecasting provider that is representative of your location.

4.3 INCREASE IN INSPECTION FREQUENCY FOR CERTAIN SITES.

The increased inspection frequencies established in this Part take the place of the Part 4.2 inspection frequencies for the portion of the site affected.

- 4.3.1 For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your State, Tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes (see Part 3.2),** you must conduct an once every seven (7) calendar days *and* within 24 hours of the occurrence of a storm event that produces 0.25 inches or more of rain within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period.

⁶⁸ For example, if 0.30 inches of rain falls on Day 1, 0.25 inches of rain falls on Day 2, and 0.10 inches of rain fall on Day 3, you would be required to conduct a first inspection within 24 hours of the Day 1 rainfall and a second inspection within 24 hours of the Day 2 rainfall, but a third inspection would not be required within 24 hours of the Day 3 rainfall.

⁶⁹ This is the amount of snow that is equivalent to 0.25 inches of rain, based on information from the National Oceanic and Atmospheric Administration (NOAA) indicating that 13 inches of snow is, on average, equivalent to 1 inch of rain. See <https://www.nssl.noaa.gov/education/svrwx101/winter/faq/>.

⁷⁰ For snowfall measurements, EPA suggests use of NOAA's National Weather Service guidelines at https://www.weather.gov/jkl/snow_measurement. These guidelines recommend use of a "snowboard" (a piece of wood about 16 inches by 16 inches) that is placed in an unobstructed part of the site on a hard surface.

Refer to Parts 4.2.3a and 4.2.3b for the requirements to determine if a storm event produces enough rain or snow to trigger the inspection requirement.

4.3.2 For sites discharging dewatering water, you must conduct an inspection in accordance with Part 4.6.3 during the discharge once per day on which the discharge occurs. The Part 4.2 inspection frequency still applies to all other portions of the site, unless the site is affected by either the increased frequency in Part 4.3.1 or the reduced frequency in Part 4.4.

4.4 REDUCTIONS IN INSPECTION FREQUENCY

4.4.1 Stabilized areas.

a. You may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, then once per month until permit coverage is terminated consistent with Part 8 in any area of your site where the stabilization steps in Part 2.2.14a have been completed. If construction activity resumes in this portion of the site at a later date, the inspection frequency immediately increases to that required in Parts 4.2 and 4.3, as applicable. You must document the beginning and ending dates of this period in your SWPPP.

b. Exception. For “linear construction sites” (as defined in Appendix A) where disturbed portions have undergone final stabilization at the same time active construction continues on others, you may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, in any area of your site where the stabilization steps in Part 2.2.14a have been completed. After the first month, inspect once more within 24 hours of the occurrence of a storm event that produces 0.25 inches of rain or more within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period. If there are no issues or evidence of stabilization problems, you may suspend further inspections. If “wash-out” of stabilization materials and/or sediment is observed, following re-stabilization, inspections must resume at the inspection frequency required in Part 4.4.1a. Inspections must continue until final stabilization is visually confirmed following a storm event that produces 0.25 inches of rain or more within a 24-hour period.

4.4.2 Arid, semi-arid, or drought-stricken areas (as defined in Appendix A). If it is the seasonally dry period⁷¹ or a period in which drought is occurring, you may reduce the frequency of inspections to once per month and within 24 hours of the occurrence of a storm event that produces 0.25 inches of rain or more within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period. You must document that you are using this reduced schedule and the beginning and ending dates of the seasonally dry period in your SWPPP. Follow the procedures in Part 4.2.3a and 4.2.3b, accordingly, to determine if a storm event occurs that produces 0.25 inches or more of rain or 3.25 inches or more of snow within a 24-hour period. For any 24-hour period during which there is 0.25 inches or more of rainfall, or 3.25 inches or more of snow, you must record the total rainfall or snow measured for that day in accordance with Part 4.7.1d.

⁷¹ See footnote 44.

4.4.3 Frozen conditions:

- a.** If you are suspending construction activities due to frozen conditions, you may temporarily suspend inspections on your site until thawing conditions (as defined in Appendix A) begin to occur if:
 - i.** Discharges are unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages.⁷² If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable;
 - ii.** Land disturbances have been suspended; and
 - iii.** All disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.
- b.** If you are still conducting construction activities during frozen conditions, you may reduce your inspection frequency to once per month if:
 - i.** Discharges are unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable; and
 - ii.** Except for areas in which you are actively conducting construction activities, disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.

You must document the beginning and ending dates of this period in your SWPPP.

4.5 AREAS THAT MUST BE INSPECTED

During your site inspection, you must at a minimum inspect the following areas of your site:

- 4.5.1** All areas that have been cleared, graded, or excavated and that have not yet completed stabilization consistent with Part 2.2.14a;
- 4.5.2** All stormwater controls, including pollution prevention controls, installed at the site to comply with this permit;⁷³
- 4.5.3** Material, waste, borrow, and equipment storage and maintenance areas that are covered by this permit;
- 4.5.4** All areas where stormwater typically flows within the site, including constructed or natural site drainage features designed to divert, convey, and/or treat stormwater;
- 4.5.5** All areas where construction dewatering is taking place, including controls to treat the dewatering discharge and any channelized flow of water to and from those controls;

⁷² Use data sets that include the most recent data available to account for recent precipitation patterns and trends.

⁷³ This includes the requirement to inspect for sediment that has been tracked out from the site onto paved roads, sidewalks, or other paved areas consistent with Part 2.2.4.

4.5.6 All points of discharge from the site; and

4.5.7 All locations where stabilization measures have been implemented.

You are not required to inspect areas that, at the time of the inspection, are considered unsafe to your inspection personnel.

4.6 REQUIREMENTS FOR INSPECTIONS

4.6.1 During each site inspection, you must at a minimum:

- a.** Check whether all stormwater controls (*i.e., erosion and sediment controls and pollution prevention controls*) are properly installed, appear to be operational, and are working as intended to minimize pollutant discharges.
- b.** Check for the presence of conditions that could lead to spills, leaks, or other accumulations of pollutants on the site.
- c.** Identify any locations where new or modified stormwater controls are necessary to meet the requirements of Parts 2 and/or 3.
- d.** Check for signs of visible erosion and sedimentation (*i.e., sediment deposits*) that have occurred and are attributable to your discharge at points of discharge and, if applicable, on the banks of any receiving waters flowing within or immediately adjacent to the site;
- e.** Check for signs of sediment deposition that are visible from your site and attributable to your discharge (e.g., sand bars with no vegetation growing on top in receiving waters or in other constructed or natural site drainage features, or the buildup of sediment deposits on nearby streets, curbs, or open conveyance channels).
- f.** Identify any incidents of noncompliance observed.

4.6.2 If a discharge is occurring during your inspection:

- a.** Identify all discharge points at the site; and
- b.** Observe and document the visual quality of the discharge, and take note of the characteristics of the stormwater discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants. Check also for signs of these same pollutant characteristics that are visible from your site and attributable to your discharge in receiving waters or in other constructed or natural site drainage features.

4.6.3 For dewatering inspections conducted pursuant to Parts 4.3.2, record the following in a report within 24 hours of completing the inspection:

- a.** The inspection date;
- b.** Names and titles of personnel making the inspection;
- c.** Approximate times that the dewatering discharge began and ended on the day of inspection;⁷⁴
- d.** Estimates of the rate (in gallons per day) of discharge on the day of inspection;

⁷⁴ If the dewatering discharge is a continuous discharge that continues after normal business hours, indicate that the discharge is continuous.

- e. Whether or not any of the following indications of pollutant discharge were observed at the point of discharge to any receiving waters flowing through or immediately adjacent to the site and/or to constructed or natural site drainage features or storm drain inlets:⁷⁵
 - i. a sediment plume, suspended solids, unusual color, presence of odor, decreased clarity, or presence of foam; and/or
 - ii. a visible sheen on the water surface or visible oily deposits on the bottom or shoreline of the receiving water; and
- f. Photographs of (1) the dewatering water prior to treatment by a dewatering control(s) and the final discharge after treatment; (2) the dewatering control(s); and (3) the point of discharge to any receiving waters flowing through or immediately adjacent to the site and/or to constructed or natural site drainage features, storm drain inlets, and other conveyances to receiving waters.

You must also comply with the Part 4.7.2, 4.7.3, and 4.7.4 requirements for signing the reports, keeping them available on site, and retaining copies.

4.6.4 Based on the results of your inspection:

- a. Complete any necessary maintenance repairs or replacements under Part 2.1.4 or under Part 5, whichever applies; and
- b. Modify your SWPPP site map in accordance with Part 7.4.1 to reflect changes to your stormwater controls that are no longer accurately reflected on the current site map.

4.7 INSPECTION REPORT

4.7.1 You must complete an inspection report within 24 hours of completing any site inspection. Each inspection report (except for dewatering inspection reports, which are covered in Part 4.6.3) must include the following:

- a. The inspection date;
- b. Names and titles of personnel making the inspection;
- c. A summary of your inspection findings, covering at a minimum the observations you made in accordance with Part 4.6, including any problems found during your inspection that make it necessary to perform routine maintenance pursuant to Part 2.1.4b or corrective action pursuant to Part 5. Include also any documentation as to why the corrective action procedures under Part 5 are unnecessary to fix a problem that repeatedly occurs as described in Part 2.1.4c;
- d. If you are inspecting your site at the frequency specified in Part 4.2.2, Part 4.3, or Part 4.4.1b, and you conducted an inspection because of a storm event that produced rainfall measuring 0.25 inches or more within a 24-hour period, you must include the applicable rain gauge or weather station readings that triggered the inspection. Similarly, if you conducted an inspection because of a snowmelt discharge from a storm event that produced 3.25 inches or more of snow within a 24-hour period, you must include any measurements taken of snowfall at your site, or weather station information you relied on; and

⁷⁵ If the operator observes any of these indicators of pollutant discharge, corrective action is required consistent with Parts 5.1.5b and 5.2.2.

- e. If you determined that it is unsafe to inspect a portion of your site, you must describe the reason you found it to be unsafe and specify the locations to which this condition applies.

4.7.2 Each inspection report must be signed by the operator's signatory in accordance with Appendix G, Part G.11 of this permit.

4.7.3 You must keep a copy of all inspection reports at the site or at an easily accessible location, so that it can be made immediately available at the time of an on-site inspection or upon request by EPA.⁷⁶

4.7.4 You must retain all inspection reports completed for this Part for at least three (3) years from the date that your permit coverage expires or is terminated.

4.8 INSPECTIONS BY EPA

You must allow EPA, or an authorized representative of EPA, to conduct the following activities at reasonable times. To the extent that you are utilizing shared controls, that are not on site, to comply with this permit, you must make arrangements for EPA to have access at all reasonable times to those areas where the shared controls are located.

4.8.1 Enter onto all areas of the site, including any construction support activity areas covered by this permit, any off-site areas where shared controls are utilized to comply with this permit, discharge locations, adjoining waterbodies, and locations where records are kept under the conditions of this permit;

4.8.2 Access and copy any records that must be kept under the conditions of this permit;

4.8.3 Inspect your construction site, including any construction support activity areas covered by this permit (see Part 1.2.1c), any stormwater controls installed and maintained at the site, and any off-site shared controls utilized to comply with this permit; and

4.8.4 Sample or monitor for the purpose of ensuring compliance.

5 CORRECTIVE ACTIONS

5.1 CONDITIONS TRIGGERING CORRECTIVE ACTION.

You must take corrective action to address any of the following conditions identified at your site:

5.1.1 A stormwater control needs a significant repair or a new or replacement control is needed, or, in accordance with Part 2.1.4c, you find it necessary to repeatedly (i.e., three (3) or more times) conduct the same routine maintenance fix to the same control at the same location (unless you document in your inspection report under Part 4.7.1c that the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under Part 2.1.4); or

5.1.2 A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or

⁷⁶ Inspection reports may be prepared, signed, and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally dependable with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form. For additional guidance on the proper practices to follow for the electronic retention of inspection report records, refer to the Fact Sheet discussion related to Part 4.7.3.

- 5.1.3** Your discharges are not meeting applicable water quality standards;
- 5.1.4** A prohibited discharge has occurred (see Part 1.3); or
- 5.1.5** During discharge from site dewatering activities:
 - a.** The weekly average of your turbidity monitoring results exceeds the 50 NTU benchmark (or alternate benchmark if approved by EPA pursuant to Part 3.3.2b); or
 - b.** You observe or you are informed by EPA, State, or local authorities of the presence of the conditions specified in Part 4.6.3e.

5.2 CORRECTIVE ACTION DEADLINES

- 5.2.1** If responding to any of the Part 5.1.1, 5.1.2, 5.1.3, or 5.1.4 triggering conditions, you must:
 - a.** Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events; and
 - b.** When the problem does not require a new or replacement control or significant repair, the corrective action must be completed by the close of the next business day; or
 - c.** When the problem requires a new or replacement control or significant repair, install the new or modified control and make it operational, or complete the repair, by no later than seven (7) calendar days from the time of discovery. If it is infeasible to complete the installation or repair within seven (7) calendar days, you must document in your records why it is infeasible to complete the installation or repair within the 7-day timeframe and document your schedule for installing the stormwater control(s) and making it operational as soon as feasible after the 7-day timeframe. Where these actions result in changes to any of the stormwater controls or procedures documented in your SWPPP, you must modify your SWPPP accordingly within seven (7) calendar days of completing this work.
- 5.2.2** If responding to either of the Part 5.1.5 triggering conditions related to site dewatering activities, you must:
 - a.** Immediately take all reasonable steps to minimize or prevent the discharge of pollutants until you can implement a solution, including shutting off the dewatering discharge as soon as possible depending on the severity of the condition⁷⁷ taking safety considerations into account;
 - b.** Determine whether the dewatering controls are operating effectively and whether they are causing the conditions; and
 - c.** Make any necessary adjustments, repairs, or replacements to the dewatering controls to lower the turbidity levels below the benchmark or remove the visible plume or sheen.

⁷⁷ For instance, if the weekly average of your turbidity monitoring results or a single sample is extremely high (e.g., a single turbidity sample results in 355 NTUs or higher), you should take action to safely shut off the discharge so that you can evaluate the cause of the high turbidity. Note: A single turbidity sample of 355 NTUs or higher means that the weekly average turbidity value will exceed 50 NTU regardless of the turbidity values the other days during the week.

When you have completed these steps and made any changes deemed necessary, you may resume discharging from your dewatering activities.

5.3 CORRECTIVE ACTION REQUIRED BY EPA

You must comply with any corrective actions required by EPA as a result of permit violations found during an inspection carried out under Part 4.8.

5.4 CORRECTIVE ACTION LOG

5.4.1 For each corrective action taken in accordance with this Part, you must record the following in a corrective action log:

- a.** Within 24 hours of identifying the corrective action condition, document the specific condition and the date and time it was identified.
- b.** Within 24 hours of completing the corrective action (in accordance with the deadlines in Part 5.2), document the actions taken to address the condition, including whether any SWPPP modifications are required.

5.4.2 Each entry into the corrective action log, consisting of the information required by both Parts 5.4.1a and 5.4.1b, must be signed by the operator's signatory in accordance with Appendix G, Part G.11.2 of this permit.

5.4.3 You must keep a copy of the corrective action log at the site or at an easily accessible location, so that it can be made immediately available at the time of an on-site inspection or upon request by EPA.⁷⁸

5.4.4 You must retain the corrective action log for at least three (3) years from the date that your permit coverage expires or is terminated.

6 STORMWATER TEAM FORMATION/STAFF TRAINING REQUIREMENTS

6.1 STORMWATER TEAM

Each operator, or group of multiple operators, must assemble a "stormwater team" that will be responsible for carrying out activities necessary to comply with this permit. The stormwater team must include the following people:

- a.** Personnel who are responsible for the design, installation, maintenance, and/or repair of stormwater controls (including pollution prevention controls);
- b.** Personnel responsible for the application and storage of treatment chemicals (if applicable);
- c.** Personnel who are responsible for conducting inspections as required in Part 4.1; and
- d.** Personnel who are responsible for taking corrective actions as required in Part 5.

Members of the stormwater team must be identified in the SWPPP pursuant to Part 7.2.2.

⁷⁸ The corrective action log may be prepared, signed, and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally dependable with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form. For additional guidance on the proper practices to follow for the electronic retention of corrective action log records, refer to the Fact Sheet discussion related to Part 4.7.3.

6.2 GENERAL TRAINING REQUIREMENTS FOR STORMWATER TEAM MEMBERS

Prior to the commencement of construction activities, you must ensure that all persons⁷⁹ assigned to the stormwater team understand the requirements of this permit and their specific responsibilities with respect to those requirements, including the following related to the scope of their job duties:

- a. The permit requirements and deadlines associated with installation, maintenance, and removal of stormwater controls, as well as site stabilization;
- b. The location of all stormwater controls on the site required by this permit and how they are to be maintained;
- c. The proper procedures to follow with respect to the permit's pollution prevention requirements; and
- d. When and how to conduct inspections, record applicable findings, and take corrective actions. Specific training requirements for persons conducting site inspections are included in Part 6.3.

You are responsible for ensuring that all activities on the site comply with the requirements of this permit. You are not required to provide or document formal training for subcontractors or other outside service providers (unless the subcontractors or outside service providers are responsible for conducting the inspections required in Part 4, in which case you must provide such documentation consistent with Part 7.2.2), but you must ensure that such personnel understand any requirements of this permit that may be affected by the work they are subcontracted to perform.

6.3 TRAINING REQUIREMENTS FOR PERSONS CONDUCTING INSPECTIONS

For projects that receive coverage under this permit on or after February 17, 2023, to be considered a qualified person under Part 4.1 for conducting inspections under Part 4, you must, at a minimum, either:

- a. Have completed the EPA construction inspection course developed for this permit and have passed the exam; or
- b. Hold a current valid construction inspection certification or license from a program that, at a minimum, covers the following:⁸⁰
 - i. Principles and practices of erosion and sediment control and pollution prevention practices at construction sites;
 - ii. Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites; and
 - iii. Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of Part 4.

⁷⁹ If the person requiring training is a new employee who starts after you commence construction activities, you must ensure that this person has the proper understanding as required above prior to assuming particular responsibilities related to compliance with this permit. For emergency-related projects, the requirement to train personnel prior to commencement of construction activities does not apply, however, such personnel must have the required training prior to NOI submission.

⁸⁰ If one of the following topics (e.g., installation and maintenance of pollution prevention practices) is not covered by the non-EPA training program, you may consider supplementing the training with the analogous module of the EPA course (e.g., Module 4) that covers the missing topic.

For projects that receive coverage under this permit prior to February 17, 2023, any personnel conducting site inspections pursuant to Part 4 on your site must, at a minimum, be a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.⁸¹

6.4 STORMWATER TEAM'S ACCESS TO PERMIT DOCUMENTS

Each member of the stormwater team must have easy access to an electronic or paper copy of applicable portions of this permit, the most updated copy of your SWPPP, and other relevant documents or information that must be kept with the SWPPP.

7 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

7.1 GENERAL REQUIREMENTS

All operators associated with a construction site under this permit must develop a SWPPP consistent with the requirements in Part 7 prior to their submittal of the NOI.^{82, 83, 84} The SWPPP must be kept up-to-date throughout coverage under this permit.

If a SWPPP was prepared under a previous version of this permit, the operator must review and update the SWPPP to ensure that this permit's requirements are addressed prior to submitting an NOI for coverage under this permit.

7.2 SWPPP CONTENTS

At a minimum, the SWPPP must include the information specified in this Part and as specified in other parts of this permit.

7.2.1 All Site Operators. Include a list of all other operators who will be engaged in construction activities at the site, and the areas of the site over which each operator has control.

⁸¹ If you receive coverage for a project prior to February 17, 2023, and construction activities for the same project will continue after February 17, 2023, the personnel conducting inspections do not need to take the additional training specified in Parts 6.3a and 6.3b for inspections conducted on the project site. If the same operator obtains coverage for a different project on or after February 17, 2023, personnel conducting inspections would be required to meet the requirements for a qualified person by completing the training in either Part 6.3a or Part 6.3b.

⁸² The SWPPP does not establish the effluent limits and/or other permit terms and conditions that apply to your site's discharges; these limits, terms, and conditions are established in this permit.

⁸³ Where there are multiple operators associated with the same site, they may develop a group SWPPP instead of multiple individual SWPPPs. Regardless of whether there is a group SWPPP or multiple individual SWPPPs, each operator is responsible for compliance with the permit's terms and conditions. In other words, if Operator A relies on Operator B to satisfy its permit obligations, Operator A does not have to duplicate those permit-related functions if Operator B is implementing them such that both operators are in compliance with the permit. However, Operator A remains responsible for permit compliance if Operator B fails to take actions necessary for Operator A to comply with the permit. In addition, all operators must ensure, either directly or through coordination with other operators, that their activities do not cause a violation or compromise any other operators' controls and/or any shared controls. See also footnote 60.

⁸⁴ There are a number of commercially available products to assist operators in developing the SWPPP, as well as companies that can be hired to help develop a site-specific SWPPP. The permit does not state which are recommended, nor does EPA endorse any specific products or vendors. Where operators choose to rely on these products or services, the choice of which ones to use to comply with the requirements of this Part is a decision for the operator alone.

7.2.2 Stormwater Team. Identify the personnel (by name and position) that you have made part of the stormwater team pursuant to Part 6.1, as well as their individual responsibilities, including which members are responsible for conducting inspections.

Include verification that each member of the stormwater team has received the training required by Part 6.2. Include documentation that members of the stormwater team responsible for conducting inspections pursuant to Part 4 have received the training required by Part 6.3. If personnel on your team elect to complete the EPA inspector training program pursuant to Part 6.3a, you must include copies of the certificate showing that the relevant personnel have completed the training and passed the exam. If personnel on your team elect to complete a non-EPA inspector training program pursuant to Part 6.3b, you must include documentation showing that these persons have successfully completed the program and their certification or license is still current. You must also confirm that the non-EPA inspector training program satisfies the minimum elements for such programs in Part 6.3b.

7.2.3 Nature of Construction Activities. Include the following:

- a. A description of the nature of your construction activities, including the age or dates of past renovations for structures that are undergoing demolition;
- b. The size of the property (in acres or length in miles if a linear construction site);
- c. The total area expected to be disturbed by the construction activities (to the nearest quarter acre or nearest quarter mile if a linear construction site);
- d. A description of any on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c);
- e. The maximum area expected to be disturbed at any one time, including on-site and off-site construction support activity areas;
- f. A description and projected schedule for the following:⁸⁵
 - i. Commencement of construction activities in each portion of the site, including clearing and grubbing, mass grading, demolition activities, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization;
 - ii. Temporary or permanent cessation of construction activities in each portion of the site;
 - iii. Temporary or final stabilization of exposed areas for each portion of the site; and
 - iv. Removal of temporary stormwater controls and construction equipment or vehicles, and the cessation of construction-related pollutant-generating activities.

⁸⁵ If plans change due to unforeseen circumstances or for other reasons, the requirement to describe the sequence and estimated dates of construction activities is not meant to "lock in" the operator to meeting these dates. When departures from initial projections are necessary, this should be documented in the SWPPP itself, or in associated records, as appropriate.

- g.** A list and description of all pollutant-generating activities⁸⁶ on the site. For each pollutant-generating activity, include an inventory of pollutants or pollutant constituents (e.g., *sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels*) associated with that activity, which could be discharged in stormwater from your construction site. You must take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed or removed during construction;
- h.** Business days and hours for the project;
- i.** If you are conducting construction activities in response to a public emergency (see Part 1.4), a description of the cause of the public emergency (e.g., *mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services*), information substantiating its occurrence (e.g., *State disaster declaration or similar State or local declaration*), and a description of the construction necessary to reestablish affected public services.

7.2.4 Site Map. Include a legible map, or series of maps, showing the following features of the site:

- a.** Boundaries of the property;
- b.** Locations where construction activities will occur, including:
 - i.** Locations where earth-disturbing activities will occur (note any phasing), including any demolition activities;
 - ii.** Approximate slopes before and after major grading activities (note any steep slopes (as defined in Appendix A));
 - iii.** Locations where sediment, soil, or other construction materials will be stockpiled;
 - iv.** Any receiving water crossings;
 - v.** Designated points where vehicles will exit onto paved roads;
 - vi.** Locations of structures and other impervious surfaces upon completion of construction; and
 - vii.** Locations of on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c).
- c.** Locations of any receiving waters within the site and all receiving waters within one mile downstream of the site's discharge point(s). Also identify if any of these receiving waters are listed as impaired or are identified as a Tier 2, Tier 2.5, or Tier 3 water;
- d.** Any areas of Federally listed critical habitat within the action area of the site as defined in Appendix A;
- e.** Type and extent of pre-construction cover on the site (e.g., vegetative cover, forest, pasture, pavement, structures);
- f.** Drainage patterns of stormwater and authorized non-stormwater before and after major grading activities;

⁸⁶ Examples of pollutant-generating activities include paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering activities.

- g.** Stormwater and authorized non-stormwater discharge locations, including:
 - i.** Locations where stormwater and/or authorized non-stormwater will be discharged to storm drain inlets, including a notation of whether the inlet conveys stormwater to a sediment basin, sediment trap, or similarly effective control;⁸⁷
 - ii.** Locations where stormwater or authorized non-stormwater will be discharged directly to receiving waters (i.e., not via a storm drain inlet); and
 - iii.** Locations where turbidity benchmark monitoring will take place to comply with Part 3.3, if applicable to your site.
- h.** Locations of all potential pollutant-generating activities identified in Part 7.2.3g;
- i.** Designated areas where construction wastes that are covered by the exception in Part 2.3.3e.ii because they are not pollutant-generating will be stored;
- j.** Locations of stormwater controls, including natural buffer areas and any shared controls utilized to comply with this permit; and
- k.** Locations where polymers, flocculants, or other treatment chemicals will be used and stored.

7.2.5 Non-Stormwater Discharges. Identify all authorized non-stormwater discharges in Part 1.2.2 that will or may occur.

7.2.6 Description of Stormwater Controls.

- a.** For each of the Part 2.2 erosion and sediment control requirements, Part 2.3 pollution prevention requirements, and Part 2.4 construction dewatering requirements, as applicable to your site, you must include the following:
 - i.** A description of the specific control(s) to be implemented to meet these requirements;
 - ii.** The design specifications for controls described in Part 7.2.6a.i (including references to any manufacturer specifications and/or erosion and sediment control manuals/ordinances relied upon);⁸⁸
 - iii.** Routine stormwater control maintenance specifications; and
 - iv.** The projected schedule for stormwater control installation/implementation.
- b.** You must also include any of the following additional information as applicable.
 - i. Natural buffers and/or equivalent sediment controls** (see Part 2.2.1 and Appendix F). You must include the following:
 - (a) The compliance alternative to be implemented;
 - (b) If complying with alternative 2, the width of natural buffer retained;

⁸⁷ The requirement to show storm drain inlets in the immediate vicinity of the site on your site map only applies to those inlets that are easily identifiable from your site or from a publicly accessible area immediately adjacent to your site.

⁸⁸ Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practice and must be explained in the SWPPP.

- (c) If complying with alternative 2 or 3, the erosion and sediment control(s) you will use to achieve an equivalent sediment reduction, and any information you relied upon to demonstrate the equivalency;
 - (d) If complying with alternative 3, a description of why it is infeasible for you to provide and maintain an undisturbed natural buffer of any size;
 - (e) For "linear construction sites" where it is infeasible to implement compliance alternative 1, 2, or 3, a rationale for this determination, and a description of any buffer width retained and/or supplemental erosion and sediment controls installed; and
 - (f) A description of any disturbances that are exempt under Part 2.2.1 that occur within 50 feet of a receiving water.
- ii. Perimeter controls for a "linear construction site"** (see Part 2.2.3d). For areas where perimeter controls are not feasible, include documentation to support this determination and a description of the other practices that will be implemented to minimize discharges of pollutants in stormwater associated with construction activities.
- Note: Routine maintenance specifications for perimeter controls documented in the SWPPP must include the Part 2.2.3c.i requirement that sediment be removed before it has accumulated to one-half of the above-ground height of any perimeter control.
- iii. Sediment track-out controls** (see Parts 2.2.4b and 2.2.4c). Document the specific stabilization techniques and/or controls that will be implemented to remove sediment prior to vehicle exit.
- iv. Inlet protection measures** (see Part 2.2.10a). Where inlet protection measures are not required because the storm drain inlets to which your site discharges are conveyed to a sediment basin, sediment trap, or similarly effective control, include a short description of the control that receives the stormwater flow from the site.
- v. Sediment basins** (see Part 2.2.12). In circumstances where it is infeasible to utilize outlet structures that withdraw water from the surface, include documentation to support this determination, including the specific conditions or time periods when this exception will apply.
- vi. Treatment chemicals** (see Part 2.2.13), you must include the following:
- (a) A listing of the soil types that are expected to be exposed during construction in areas of the project that will drain to chemical treatment systems. Also include a listing of soil types expected to be found in fill material to be used in these same areas, to the extent you have this information prior to construction;
 - (b) A listing of all treatment chemicals to be used at the site and why the selection of these chemicals is suited to the soil characteristics of your site;
 - (c) If the applicable EPA Regional Office authorized you to use cationic treatment chemicals for sediment control, include the specific controls and implementation procedures designed to ensure that your use of cationic

treatment chemicals will not lead to a discharge that does not meet water quality standards;

- (d) The dosage of all treatment chemicals to be used at the site or the methodology to be used to determine dosage;
- (e) Information from any applicable Safety Data Sheet (SDS);
- (f) Schematic drawings of any chemically enhanced stormwater controls or chemical treatment systems to be used for application of the treatment chemicals;
- (g) A description of how chemicals will be stored consistent with Part 2.2.13c;
- (h) References to applicable State or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems; and
- (i) A description of the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to use of the treatment chemicals at your site.

vii. Stabilization measures (see Part 2.2.14). You must include the following:

- (a) The specific vegetative and/or non-vegetative practices that will be used;
- (b) The stabilization deadline that will be met in accordance with Part 2.2.14;
- (c) If complying with the deadlines for sites in arid, semi-arid, or drought-stricken areas, the beginning and ending dates of the seasonally dry period (as defined in Appendix A)⁸⁹ and the schedule you will follow for initiating and completing vegetative stabilization; and
- (d) If complying with deadlines for sites affected by unforeseen circumstances that delay the initiation and/or completion of vegetative stabilization, document the circumstances and the schedule for initiating and completing stabilization.

viii. Spill prevention and response procedures (see Parts 1.3.5, 2.3.3c, 2.3.3d, and 2.3.6). You must include the following:

- (a) Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for detection and response of spills or leaks; and
- (b) Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 2.3.6 and established under either 40 CFR part 110, 40 CFR part 117, or 40 CFR part 302, occurs

⁸⁹ See footnote 44.

monitoring requirements, describe the procedures you will follow to collect and evaluate samples, report results to EPA and keep records of monitoring information, and take corrective action when necessary. Include the specific type of turbidity meter you will use for monitoring, as well as any manuals or manufacturer instructions on how to operate and calibrate the meter. Describe any coordinating arrangement you may have with any other permitted operators on the same site with respect to compliance with the turbidity monitoring requirements, including which parties are tasked with specific responsibilities. If EPA has approved of an alternate turbidity benchmark pursuant to Part 3.3.2b, include any data and other documentation you relied on to request use of the specific alternative benchmark.

7.2.9 Compliance with Other Requirements.

- a. Threatened and Endangered Species Protection.** Include documentation required in the Endangered Species Protection section of the NOI in NeT, or the ESA worksheet in Appendix D, supporting your eligibility with regard to the protection of threatened and endangered species and designated critical habitat.
- b. Historic Properties.** Include documentation required in Appendix E supporting your eligibility with regard to the protection of historic properties.
- c. Safe Drinking Water Act Underground Injection Control (UIC) Requirements for Certain Subsurface Stormwater Controls.** If you are using any of the following stormwater controls at your site, document any contact you have had with the applicable State agency⁹¹ or EPA Regional Office responsible for implementing the requirements for underground injection wells in the Safe Drinking Water Act and EPA's implementing regulations at 40 CFR § 144 -147. Such controls would generally be considered Class V UIC wells:
 - i.** Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system);
 - ii.** Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow; and
 - iii.** Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system).

7.2.10 SWPPP Certification. Your signatory must sign and date your SWPPP in accordance with Appendix G, Part G.11.

7.2.11 Post-Authorization Additions to the SWPPP. Once you are authorized for coverage under this permit, you must include the following documents as part of your SWPPP:

- a.** A copy of your NOI submitted to EPA along with any correspondence exchanged between you and EPA related to coverage under this permit;
- b.** A copy of the acknowledgment letter you receive from NeT assigning your NPDES ID (i.e., *permit tracking number*);

⁹¹ For State UIC program contacts, refer to the following EPA website: <https://www.epa.gov/uic>.

- c. A copy of this permit (an electronic copy easily available to the stormwater team is also acceptable).

7.3 ON-SITE AVAILABILITY OF YOUR SWPPP

You must keep a current copy of your SWPPP at the site or at an easily accessible location so that it can be made available at the time of an on-site inspection or upon request by EPA; a State, Tribal, or local agency approving stormwater management plans; the operator of a storm sewer system receiving discharges from the site; or representatives of the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS).⁹²

EPA may provide access to portions of your SWPPP to a member of the public upon request. Confidential Business Information (CBI) will be withheld from the public, but may not be withheld from EPA, USFWS, or NMFS.⁹³

If an on-site location is unavailable to keep the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance of your construction site.

7.4 SWPPP MODIFICATIONS

7.4.1 You must modify your SWPPP, including the site map(s), within seven (7) days of any of the following conditions:

- a. Whenever new operators become active in construction activities on your site, or you make changes to your construction plans, stormwater controls, or other activities at your site that are no longer accurately reflected in your SWPPP. This includes changes made in response to corrective actions triggered under Part 5. You do not need to modify your SWPPP if the estimated dates in Part 7.2.3f change during the course of construction;
- b. To reflect areas on your site map where operational control has been transferred (and the date of transfer) since initiating permit coverage;
- c. If inspections or investigations by EPA or its authorized representatives determine that SWPPP modifications are necessary for compliance with this permit;
- d. Where EPA determines it is necessary to install and/or implement additional controls at your site in order to meet the requirements of this permit, the following must be included in your SWPPP:
 - i. A copy of any correspondence describing such measures and requirements; and

⁹² The SWPPP may be prepared, signed, and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally dependable with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form. For additional guidance on the proper practices to follow for the electronic retention of the SWPPP, refer to the Fact Sheet discussion related to Part 4.7.3.

⁹³ Information covered by a claim of confidentiality will be disclosed by EPA only to the extent of, and by means of, the procedures set forth in 40 CFR part 2, Subpart B. In general, submitted information protected by a business confidentiality claim may be disclosed to other employees, officers, or authorized representatives of the United States concerned with implementing the CWA. The authorized representatives, including employees of other executive branch agencies, may review CBI during the course of reviewing draft regulations.

- ii. A description of the controls that will be used to meet such requirements.
 - e. To reflect any revisions to applicable Federal, State, Tribal, or local requirements that affect the stormwater controls implemented at the site; and
 - f. If applicable, if a change in chemical treatment systems or chemically enhanced stormwater control is made, including use of a different treatment chemical, different dosage rate, or different area of application.
- 7.4.2** You must maintain records showing the dates of all SWPPP modifications. The records must include the name of the person authorizing each change (see Part 7.2.9 above) and a brief summary of all changes.
- 7.4.3** All modifications made to the SWPPP consistent with Part 7.4 must be authorized by a person identified in Appendix G, Part G.11.b.
- 7.4.4** Upon determining that a modification to your SWPPP is required, if there are multiple operators covered under this permit, you must immediately notify any operators who may be impacted by the change to the SWPPP.

8 HOW TO TERMINATE COVERAGE

Until you terminate coverage under this permit, you must comply with all conditions and effluent limitations in the permit. To terminate permit coverage, you must submit to EPA a complete and accurate Notice of Termination (NOT), which certifies that you have met the requirements for terminating in Part 8.

8.1 MINIMUM INFORMATION REQUIRED IN NOT

- 8.1.1** NPDES ID (i.e., *permit tracking number*) provided by EPA when you received coverage under this permit;
- 8.1.2** Basis for submission of the NOT (see Part 8.2);
- 8.1.3** Operator contact information;
- 8.1.4** Name of site and address (or a description of location if no street address is available); and
- 8.1.5** NOT certification.

8.2 CONDITIONS FOR TERMINATING CGP COVERAGE

You may terminate CGP coverage only if one or more of the conditions in Parts 8.2.1, 8.2.2, or 8.2.3 has occurred. Until your termination is effective consistent with Part 8.5, you must continue to comply with the conditions of this permit.

- 8.2.1** You have completed all construction activities at your site and, if applicable, construction support activities covered by this permit (see Part 1.2.1c), and you have met all of the following requirements:
- a. For any areas that (1) were disturbed during construction, (2) are not covered by permanent structures, and (3) over which you had control during the construction activities, you have met the requirements for final vegetative or non-vegetative stabilization in Part 2.2.14c.

To document that you have met these stabilization requirements, you must take either ground or aerial photographs that show your site's compliance with the Part 2.2.14 stabilization requirements and submit them with your NOT. If any portion of your

site is covered by one of the exceptions in Part 2.2.14c.iii, indicate which exception applies and include a supplementary explanation with your photographs that provides the necessary context for why this portion of the site is in compliance with the final stabilization criteria even though it appears to be unstabilized. You are not required to take photographs of every distinct part of your site that is being stabilized, however, the conditions of the site portrayed in any photographs that are submitted must be substantially similar⁹⁴ to those of the areas that are not photographed. You must also comply with the following related to these photographs:

- i. Take photographs both before and after the site has met the final stabilization criteria in Part 2.2.14c;
 - ii. All photographs must be clear and in focus, and in the original format and resolution; and
 - iii. Include the date each photograph was taken, and a brief description of the area of the site captured by the photograph (e.g., photo shows application of seed and erosion control mats to remaining exposed surfaces on northeast corner of site).
- b. You have removed and properly disposed of all construction materials, waste and waste handling devices, and have removed all equipment and vehicles that were used during construction, unless intended for long-term use following your termination of permit coverage;
 - c. You have removed all stormwater controls that were installed and maintained during construction, except those that are intended for long-term use following your termination of permit coverage or those that are biodegradable (as defined in Appendix A); and
 - d. You have removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following your termination of permit coverage; or
- 8.2.2** You have transferred control of all areas of the site for which you are responsible under this permit to another operator, and that operator has submitted an NOI and obtained coverage under this permit; or
- 8.2.3** Coverage under an individual or alternative general NPDES permit has been obtained.

8.3 HOW TO SUBMIT YOUR NOT

You must use EPA's NPDES eReporting Tool (NeT) to electronically prepare and submit an NOT for the 2022 CGP.

To access NeT, go to <https://cdx.epa.gov/cdx>.

Waivers from electronic reporting may be granted as specified in Part 1.4.2. If the EPA Regional Office grants you approval to use a paper NOT, and you elect to use it, you must complete the form in Appendix I.

⁹⁴ Stabilization conditions that are substantially similar would include areas that are using the same type of stabilization measures and that have similar slopes, soils, and topography, and have achieved the same level of stabilization.

8.4 DEADLINE FOR SUBMITTING THE NOT

You must submit an NOT within 30 calendar days after any one of the conditions in Part 8.2 occurs.

8.5 EFFECTIVE DATE OF TERMINATION OF COVERAGE

Your authorization to discharge under this permit terminates at midnight of the calendar day that a complete NOT is submitted to EPA.

9 PERMIT CONDITIONS APPLICABLE TO SPECIFIC STATES, INDIAN COUNTRY LANDS, OR TERRITORIES

The provisions in this Part provide additions to the applicable conditions of this permit to reflect specific additional conditions required as part of the State or Tribal CWA Section 401 certification process, or the Coastal Zone Management Act (CZMA) certification process, or as otherwise established by the permitting authority. The specific additional revisions and requirements only apply to activities in those specific States, Indian country, and areas in certain States with Federal Facilities or areas subject to construction projects by Federal Operators. States, Indian country, and other areas not included in this Part do not have any additions to the applicable conditions of this permit.

9.1 EPA REGION 1**9.1.1 NHR100000 State of New Hampshire**

- a.** Should the permit coverage for an individual applicant be insufficient to achieve water quality standards, the New Hampshire Department of Environmental Services (NHDES) may prepare additional 401 certification conditions for that applicant. Any additional 401 certification conditions will follow all required NHDES public participation requirements.
- b.** If you disturb 100,000 square feet or more of contiguous area, you must also comply with RSA 485-A:17 and Env-Wq 1500, and, unless exempt, apply for an Alteration of Terrain (AoT) permit from NHDES. This requirement also applies to a lower disturbance threshold of 50,000 square feet or more when construction occurs within the protected shoreline under the Shoreland Water Quality Protection Act (see RSA 483-B and Env-Wq 1400). A permit application must also be filed if your project disturbs an area of greater than 2,500 square feet, is within 50 feet of any surface water, and has a flow path of 50 feet or longer disturbing a grade of 25 percent or greater. Project sites with disturbances smaller than those discussed above, that have the potential to adversely affect state surface waters, are subject to the conditions of an AoT General Permit by Rule (Env-Wq 1503.03).
- c.** You must determine that any excavation dewatering discharges are not contaminated before they will be authorized as an allowable non-stormwater discharge under this permit (see Part 1.2.2 of the Construction General Permit or CGP). In the absence of information demonstrating otherwise, the water is considered uncontaminated if there is no groundwater contamination within 1,000 feet of the groundwater dewatering location. Information on groundwater contamination can be generated over the Internet via the NHDES web site <http://des.nh.gov/> by using the One Stop Data Mapper. For a toxic substance included in the New Hampshire surface water quality standards, see Env-Wq 1703.21 (see <https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/Env-Wg>

1700.pdf). If it is determined that the groundwater to be dewatered is near a remediation or other waste site, you must apply for the Remediation General Permit (see <https://www3.epa.gov/region1/npdes/rgp.html>)

- d.** As a minimum, you must treat any uncontaminated excavation "dewatering" discharges and "stormwater" discharges, as those terms are defined in Appendix A of the CGP, as necessary, to remove suspended solids and turbidity so that the surface waters receiving the construction discharges⁹⁵ meet New Hampshire surface water quality standards for turbidity (Env-Wq 1703.11 and Env-Wq 1703.03(c)(1)c), benthic deposits (Env-Wq 1703.03(c)(1)a), and Env-Wq 1703.08) and foam, debris, scum or other visible substances (i.e., plumes or visual turbidity)⁹⁶ (Env-Wq 1703.03(c)(1)b).
- i.** For all Construction Activities covered under this CGP, the following shall apply to ensure compliance with the aforementioned regulations for turbidity, benthic deposits and visible substances:
- Unless otherwise specified, site inspection requirements shall comply with Part 4 of the CGP. As a minimum site inspection frequency shall be in accordance with Part 4.2.2 of the CGP (and Part 4.3.2 of the CGP for sites discharging dewatering water). Site inspection frequency may be reduced in accordance with Part 4.4 of the CGP (Reductions in Inspection Frequency). Monitoring of the receiving water for visible turbidity and benthic sediment deposits shall be conducted each site inspection and results reported in the Inspection Report required in Part 4.7 of the CGP. Should visible turbidity or benthic sediment deposits attributable or partly attributable to your construction activities be present in the receiving water, the "Corrective Actions" specified in Part 5 shall be immediately implemented to correct the water quality standard violations. In addition, daily monitoring (including photographs) of the receiving water shall be conducted until there is no visible turbidity or benthic deposits. Inspection Reports required in Part 4.7 of the CGP shall include, but not be limited to, the distance downstream and the percent of the river width⁹⁷ where visible turbidity was observed, and the period of time that the visible turbidity persisted. A copy of the Inspection Report(s) shall be made available to NHDES within 24 hours of receiving a written request from NHDES.
- ii.** For Construction Activities, disturbing 5 acres or more of land at any one time (excluding areas that have been completely stabilized in accordance with the final stabilization criteria specified in Part 2.2.14.c of the CGP), the following shall

⁹⁵ Construction Discharges include uncontaminated "dewatering" and "stormwater" discharges as those terms are defined in Appendix A of the CGP. Controlled construction discharges are construction discharges where the rate of flow can be regulated such as from a construction settling basin or NHDES approved flocculation system.

⁹⁶ For the definition of visual turbidity, see the definition for "Non-Turbid" in Appendix A of the CGP, which states the following: "Non-Turbid" - a discharge that is free from visual turbidity. For the purposes of this permit, visual turbidity refers to a sediment plume or other cloudiness in the water caused by sediment that can be identified by an observer." [EPA interprets the text of this footnote as intending to reference the Appendix A definitions of "visual turbidity" and "non-turbid" in the final permit.]

⁹⁷ The distance downstream and the percent of river width where visible turbidity (i.e., plume) is observed is required to determine the extent of the river affected and to determine if there was a "zone of passage" (i.e., a portion of the receiving water where there was no visible turbidity where mobile organisms could pass without being adversely impacted). The percent of river width affected is equal 100 multiplied by the width of the plume (in feet) divided by the width of the receiving water (in feet).

apply to ensure compliance with the aforementioned regulations for turbidity, benthic deposits and visible substances.

Item 9.1.1.d.i) above shall apply to all construction discharges and the minimum site inspection frequency shall comply with Part 4.3.1 of the CGP (and Part 4.3.2 of the CGP for sites discharging dewatering water). Site inspection frequency may be reduced in accordance with Part 4.4 of the CGP (Reductions in Inspection Frequency).

With regards to controlled construction discharges, if there is no visible turbidity (i.e., plumes) or benthic deposits, and, in the absence of information demonstrating otherwise, turbidity measurements of less than or equal to 50 nephelometric turbidity units (NTU) in the controlled construction discharges at the outlet prior to mixing with the receiving surface waters, shall be presumed to meet New Hampshire surface water quality standards for the parameters listed above. As a minimum, the controlled construction discharges must be sampled at each site inspection.

If any controlled construction discharge exceeds 50 NTU, or if visible turbidity or benthic sediment deposits attributable or partly attributable to any construction discharge are observed in the receiving water, then the "Corrective Actions" specified in Part 5 of the CGP shall be immediately implemented.

In addition, should such violation occur, and, in order to determine compliance with surface water quality standards for turbidity (Env-Wq 1703.11 and Env-Wq 1703.03(c)(1)c), benthic deposits (Env-Wq 1703.03(c)(1)a), and Env-Wq 1703.08) and foam, debris, scum or other visible substances (Env-Wq 1703.03(c)(1)b)), turbidity monitoring shall be immediately implemented as specified below:

Turbidity samples of the receiving water shall be immediately taken in the receiving water upstream and beyond the influence of the construction activity, and, unless a mixing zone⁹⁸ is approved by NHDES, no more than 75 feet downstream of each controlled construction discharge that exceeded 50 NTU and no more than 75 feet downstream of each construction discharge that caused visible turbidity.

Downstream samples shall be taken at locations in the receiving water that are most likely influenced by the discharge (e.g., if visible turbidity (i.e., a plume) is present, the sample shall be taken in the plume). Samples shall be collected a minimum of 2 times per day during the daylight hours at times when construction activities are most likely to cause turbidity in the receiving water and shall continue until the turbidity water quality standards are met in the receiving water (i.e., the difference between the upstream and downstream turbidity level is no greater than 10 NTU).

⁹⁸ Permittees may request a distance greater than 75 feet downstream of a construction discharge for determining compliance with turbidity standards in Class B surface waters, by submitting a mixing zone request to NHDES that complies with Env-Wq 1707.02. If a mixing zone is approved, NHDES is required to include conditions to ensure that the criteria on which the approval is based are met (Env-Wq 1707.03).

If water quality standards are not met during daylight hours on any day, sampling shall resume the next day and continue no fewer than 2 times per day until water quality standards are met. The date, time, location and results of turbidity measurements, as well as a summary identifying the cause of the violations, corrective actions that were implemented, the period of time that the receiving water exceeded turbidity standards and the distance downstream and the percent of the river width where visible turbidity was observed, and the period of time that the visible turbidity persisted, shall be recorded and included in the Inspection Report required in Part 4.7 of the CGP. Turbidity measurements shall be conducted via a field meter in accordance with the requirements for turbidity specified in Table 1B in 40 CFR 136.3 (see 40 CFR § 136.3 Identification of test procedures - Code of Federal Regulations ecfrio). Field meters shall be calibrated every day sampling is conducted and prior to the first sample.

- e. Construction site owners and operators are encouraged to consider opportunities for post- construction groundwater recharge using infiltration best management practices (BMPs) during site design and preparation of the SWPPP in order to assure compliance with Env-Wq 1703.03 and Env-Wq 1703.11. If your construction site is in a town that is required to obtain coverage under the NPDES General Permit for discharges from Municipal Separate Storm Sewer Systems (MS4) you may be required to use such practices. The SWPPP must include a description of any on-site infiltration that will be installed as a post-construction stormwater management measure or reasons for not employing such measures such as 1) The facility is located in a wellhead protection area as defined in RSA 485- C:2; or 2) The facility is located in an area where groundwater has been reclassified to GAA, GA1 or GA2 pursuant to RSA 485-C and Env-DW 901; or 3) Any areas that would be exempt from the groundwater recharge requirements contained in Env-Wq 1507.04, including all land uses or activities considered to be a "High-load Area" (see Env-Wq 1502.30). For design considerations for infiltration measures see Env-Wq 1508.06. Note that there may be additional local requirements that fall under the NH MS4 permittee's Authorization to Discharge Permit for those regulated areas.
- f. Appendix F of the CGP contains information regarding Tier 2, or high quality waters in the various states. **[EPA notes that this information has now been moved to <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>]** Although there is no official list of tier 2 waters for New Hampshire, it can be assumed that all New Hampshire surface waters are tier 2 for turbidity unless 1) the surface water that you are proposing to discharge into is listed as impaired for turbidity in the states listing of impaired waters (see <https://nhdes-surface-water-quality-assessment-site-nhdes.hub.arcgis.com/>) or 2) sampling upstream of the proposed discharge location shows turbidity values greater than 10 NTU (Env-Wq 1703.11). A single grab sample collected during dry weather (no precipitation within 48 hours) is acceptable.
- g. To ensure compliance with RSA 485-C, RSA 485-A, RSA 485-A:13, I(a), Env-Wq 1700 and Env-Wq 302, the following information may be requested by NHDES. This information must be kept on site unless you receive a written request from NHDES that it be sent to the address shown below in 9.1.1.h.

- i. A list of all non-stormwater discharges that occur at the facility, including their source locations and the control measures being used (see Part 1.2.2 of the CGP).
 - ii. Records of sampling and analysis required for construction dewatering and stormwater discharges (see 9.1.1.d above).
- h.** All required or requested documents must be sent to: NH Department of Environmental Services, Watershed Management Bureau, P.O. Box 95 Concord, NH 03302-0095.

9.1.2 MAR100000 Commonwealth of Massachusetts (except Indian country)

- a.** All discharges covered by the Construction General Permit shall comply with the provisions pursuant to 314 CMR 3.00, 314 CMR 4.00, 314 CMR 9.00, including applicable construction stormwater standards and 310 CMR 10.00.
- b.** Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, permittees are prohibited from discharging dewatering water under the CGP from sites that are designated as Superfund/CERCLA or RCRA, and must make accommodations to dispose of the dewatering discharges appropriately, such as coverage under the Remediation General Permit (RGP).
- c.** Pursuant to 314 CMR 3.11 (2)(a), and in accordance with MassDEP's obligation to protect Outstanding Resource Waters under 314 CMR 4.04(3), applicants seeking coverage under the 2022 CGP that propose to carry out construction activities near Outstanding Resource Waters as identified in 314 CMR 4.06, shall submit to MassDEP for review:
- i. a copy of the Stormwater Pollution Prevention Plan (SWPPP),
 - ii. a copy of the EPA NOI, and
 - iii. MassDEP's Stormwater BMP Checklist.

For purposes of this review, the permittee shall submit these documents to MassDEP at the same time they are submitted to EPA. Instructions on how to submit these documents to MassDEP and where to find the MassDEP Stormwater BMP Checklist and obtain authorization to discharge can be found here: <https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent>.

- d.** Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, applicants that propose to dewater under the 2022 CGP and plan to discharge to certain waters as described below, shall determine that any dewatering discharges are not contaminated by testing the proposed discharge as described below as part of the application for WM15 authorization. Unless otherwise specified, testing described in this section should be conducted using the methods in 40 CFR 136.
- i. Applicants for sites that plan to discharge to Outstanding Resource Waters as identified in 314 CMR 4.06 shall test one sample of the proposed dewatering discharge water for pH, E. Coli (for discharges to freshwater), fecal coliform (for

discharges to salt water), Enterococci (for discharges to salt water), total suspended solids, oil and grease, total nitrogen, total phosphorus, and all parameters with numeric criteria listed in the Massachusetts Surface Water Quality Standards at 314 CMR 4.05(e). Results shall be reported to MassDEP as part of the WM15 application. To determine if the dewatering discharge could be covered under the 2022 CGP, the effluent at zero dilution must meet numeric water quality criteria. If the effluent does not meet numeric water quality criteria, the applicant shall contact EPA Region 1 to discuss coverage under the Remediation General Permit.

- ii. Applicants for sites that propose to discharge to Public Water Supplies (314 CMR 4.06(1)(d)1) shall also test one sample of the proposed dewatering discharge water for per- and polyfluoroalkyl substances (PFAS), as outlined in the table below. Results shall be reported to MassDEP as part of the WM15 application. If any PFAS compounds are detected, the applicant shall apply for coverage under the NPDES Remediation General Permit for Massachusetts if required.

PFAS Testing Parameters for Discharges to Public Drinking Water Supplies⁹⁹	
Perfluorohexanesulfonic acid (PFHxS), grab	Report ng/L
Perfluoroheptanoic acid (PFHpA), grab	Report ng/L
Perfluorononanoic acid (PFNA), grab	Report ng/L
Perfluorooctanesulfonic acid (PFOS), grab	Report ng/L
Perfluorooctanoic acid (PFOA), grab	Report ng/L
Perfluorodecanoic acid (PFDA), grab	Report ng/L

- iii. Applicants for sites that propose to discharge to an impaired water as identified in the most recent final Massachusetts Integrated List of Waters, shall test one sample of the proposed dewatering discharge water for the parameter(s) for which the waterbody is impaired. To determine if the dewatering discharge could be covered under the 2022 CGP, the effluent at zero dilution must meet numeric water quality criteria. If the effluent does not meet numeric water quality criteria, the applicant shall contact EPA Region 1 to discuss coverage under the Remediation General Permit and shall apply for RGP coverage if required.
- iv. For dewatering discharges to all other waters, if any pollutants are known or believed present in the proposed dewatering discharge water, the applicant shall apply for coverage under the NPDES Remediation General Permit for Massachusetts if required. For the purposes of this condition, a pollutant is "known present" if measured above the analytical detection limit using a sufficiently sensitive test method in an environmental sample, and "believed present" if a pollutant has not been measured in an environmental sample but will be added or generated prior to discharge, such as through a treatment process. Consequently, a pollutant is "known absent" if measured as non-detect relative to the analytical detection limit using a sufficiently sensitive test method in an environmental sample, and "believed absent" if a pollutant has not been measured in an environmental sample but will not be added or generated prior to discharge and is not a parameter that applies to the applicable activity category for a site. If any pollutants are known or believed present in the

⁹⁹ PFAS testing shall follow established EPA methods 537 or 537.1 for drinking water until EPA Method 3512 for non-potable water becomes available.

proposed dewatering discharge water, the applicant shall test one sample of the proposed dewatering discharge water for the pollutants known or believed to be present. To determine if the dewatering discharge could be covered under the 2022 CGP, the effluent at zero dilution must meet numeric water quality criteria. If the effluent does not meet numeric water quality criteria, the applicant shall contact EPA Region 1 to discuss coverage under the Remediation General Permit.

- e. Pursuant to 314 CMR 3.11 (2)(a), and in accordance with MassDEP's obligation to protect Outstanding Resource Waters under 314 CMR 4.04(3), applicants that propose to dewater under the 2022 CGP and discharge to Outstanding Resource Waters as identified in 314 CMR 4.06, shall submit the SWPPP and associated documents to MassDEP to review. MassDEP shall complete review within 30 days of receipt.
- f. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05 to maintain surface waters free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to the waterbody, permittees that have been authorized to dewater under the 2022 CGP and that discharge to Outstanding Resource Waters as identified in 314 CMR 4.06 shall carry out daily benchmark monitoring for turbidity¹⁰⁰ for the duration of dewatering. Permittees shall compare the weekly average of the turbidity monitoring results with the established benchmark turbidity value of 25 Nephelometric Turbidity Units (NTU). If a permittee's weekly average turbidity results exceed the benchmark, the operator shall conduct follow-up corrective action to determine the source of the problem and to make any necessary repairs or upgrades to the dewatering controls to lower the turbidity levels. The permittee shall document any corrective action taken in its corrective action log. Furthermore, permittees at these sites shall carry out inspections at higher frequency, specifically, daily inspections of the dewatering discharge treatment for the duration of the discharge. The permittee shall inspect the site for sediment plume or whether a hydrocarbon sheen is visible at the point of discharge, estimate the flow rate at the point of discharge, and inspect the site downstream to assess whether sedimentation is attributable to the dewatering discharges.
- g. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05 to maintain surface waters free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to the waterbody, permittees shall store materials outside the Base Flood Elevation¹⁰¹ when feasible to prevent displacing runoff and erosion.
- h. Pursuant to 314 CMR 3.11 (2)(a), and in accordance with MassDEP's obligation to maintain surface waters free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses under 314 CMR 4.05(5)(c), all applicants who apply for coverage under the 2022 CGP shall follow guidelines on fertilizer application, including use of fertilizer containing no phosphorus, in accordance with 330 CMR 31.00 Plant Nutrient Application Requirements for

¹⁰⁰ Applicants shall follow EPA Method 180.1 to monitor for turbidity

¹⁰¹ Base Flood Elevation (BFE) is the elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year. The BFE is shown on the Flood Insurance Rate Map (FIRM) for zones AE, AH, A1-A30, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO, V1-V30 and VE. (Source: <https://www.fema.gov/node/404233>).

- Agricultural Land and Non-Agricultural Turf and Lawns. Further, fertilizer shall never be applied to a site when a rain event greater than 0.5 inches is forecast in the next 48 hours.
- i. Pursuant to 314 CMR 3.11 (2)(a), all applicants who apply for coverage under the 2022 CGP and elect to carry out site inspections every 14 days shall also inspect sites within 24 hours of 0.25 inches of precipitation events or greater over 24 hours, or within 24 hours of a discharge that occurred due to snowmelt from 3.25 inches or greater of snow accumulation.¹⁰² During the high flow periods in spring (i.e., months of April to June), inspection frequency shall be increased to once per week for all sites.
 - i. To determine whether 3.25 inches or greater of snow accumulation has occurred at a site, snowfall measurements can be taken at the site,¹⁰³ or the operator can rely on similar information from a local weather forecast.
 - j. Implementing structural improvements, enhanced/resilient pollution prevention measures, and other mitigation measures can help to minimize impacts from stormwater discharges from major storm events such as hurricanes, storm surge, extreme/heavy precipitation,¹⁰⁴ and flood events. Pursuant to 314 CMR 3.11 (2)(a), if such stormwater control measures are already in place due to existing requirements mandated by other state, local or federal agencies, the SWPPP shall include a brief description of the controls and a reference to the existing requirement(s). If the site may be exposed to or has previously experienced such major storm events¹⁰⁵, additional stormwater control measures that may be considered, and implemented as necessary, include, but are not limited to:
 - i. Reinforce materials storage structures to withstand flooding and additional exertion of force;
 - ii. Prevent floating of semi-stationary structures by elevating to the Base Flood Elevation (BFE) level or securing with non-corrosive device;
 - iii. When a delivery of exposed materials is expected, and a storm is anticipated within 48 hours, delay delivery until after the storm or store materials as appropriate (refer to emergency procedures);

¹⁰² This is the amount of snow that is equivalent to 0.25 inches of rain, based on information from the National Oceanic and Atmospheric Administration (NOAA) indicating that 13 inches of snow is, on average, equivalent to 1 inch of rain. See <https://www.nssl.noaa.gov/education/svrwx101/winter/faq/>.

¹⁰³ NOAA's National Weather Service has guidelines on snowfall measurements at https://www.weather.gov/jkl/snow_measurement. These guidelines recommend use of a "snowboard" (a piece of wood about 16 inches by 16 inches) that is placed in an unobstructed part of the site on a hard surface.

¹⁰⁴ Heavy precipitation refers to instances during which the amount of rain or snow experienced in a location substantially exceeds what is normal. What constitutes a period of heavy precipitation varies according to location and season. Heavy precipitation does not necessarily mean the total amount of precipitation at a location has increased— just that precipitation is occurring in more intense or more frequent events.

¹⁰⁵ To determine if your facility is susceptible to an increased frequency of major storm events that could impact the discharge of pollutants in stormwater, you may reference FEMA, NOAA, or USGS flood map products at https://www.usgs.gov/faqs/where-can-i-find-flood-maps?qt-news_science_products=0#qtnews_science_products.

- iv. Temporarily store materials and waste above the Base Flood Elevation **[EPA notes that it has deleted a footnote reference to the term “Base Flood Elevation” since the same footnote is already included in Part 9.1.2.g, above.]** level;
 - v. Temporarily reduce or eliminate outdoor storage;
 - vi. Temporarily relocate any mobile vehicles and equipment to higher ground;
 - vii. Develop scenario-based emergency procedures for major storms that are complementary to regular stormwater pollution prevention planning and identify emergency contacts for staff and contractors; and
 - viii. Conduct staff training for implementing your emergency procedures at regular intervals.
- k. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, permittees who seek coverage under the 2022 CGP and anticipate to carry out dust control shall limit their dust control methodology to using water only and specifically avoid using other techniques, such as solutions containing calcium chloride.
 - l. If MassDEP requests a copy of the Stormwater Pollution Prevention Plan (SWPPP) for any construction site at any time, the permittee shall submit the SWPPP to MassDEP within 14 days of such a request. MassDEP may conduct an inspection of any site covered by this permit to ensure compliance with state law requirements, including state water quality standards.

9.1.3 MTR10F000 Areas in the State of Vermont located at a federal facility

- a. Earth disturbance at any one time is limited to five acres.
- b. All areas of earth disturbance must have temporary or final stabilization within 14 days of the initial disturbance. After this time, disturbed areas must be temporarily or permanently stabilized in advance of any runoff producing event. A runoff producing event is an event that produces runoff from the construction site. Temporary stabilization is not required if precipitation is not forecast and work is to continue in the next 24-hours or if the work is occurring in a self-contained excavation (i.e. no outlet) with a depth of two feet or greater (e.g. house foundation excavation, utility trenches). Areas of a construction site that drain to sediment basins are not considered eligible for this exemption, and the exemption applies only to the excavated area itself.
- c. Site inspections on active construction sites shall be conducted daily during the period from October 15 through April 15.
- d. The use of chemical treatments (e.g. polymers, flocculants, and coagulants) for the settling and/or removal of sediment from stormwater runoff associated with construction and construction-related activities requires prior written approval and an approved site and project-specific plan, from the Vermont Agency of Natural Resources. In addition, the use of cationic polymers is prohibited unless approved by the Vermont Agency of Natural Resources under a site and project-specific plan.
- e. Any applicant under EPA's CGP shall allow authorized Vermont Agency of Natural Resources representatives, at reasonable times and upon presentation of credentials, to enter upon the project site for purposes of inspecting the project and determining

compliance with this Certification.

- f. The Vermont Agency of Natural Resources may reopen and alter or amend the conditions of this Certification over the life of the EPA 2022 Construction General Permit when such action is necessary to assure compliance with the VWQS.

9.2 EPA REGION 2

9.2.1 NYR10I000 Indian country within the State of New York

a. Saint Regis Mohawk Tribe

- i. Any Responsible-Person/Decision-Maker required under the CGP to submit a Notice of Intent (NOI) to EPA for coverage under the CGP, must concurrently submit an electronic copy of the NOI to the SRMT Environmental Division, Water Resource Program Manager. Additionally, an electronic copy of the Notice of Termination (NOT) must be provided within three business days after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT must be electronically provided to the following addresses:

Mr. Tieman W. Smith

Water Resources Program Manager Saint Regis Mohawk Tribe

449 Frogtown Road

Akwesasne, NY 13655 Tieman.Smith@srmt-nsn.gov 518.358.2272 ext. 5073

- ii. Any Responsible-Person/Decision-Maker that is required as part of the CGP to prepare a Discharge Management Plan (OMP) or Storm Water Management Plan (SWMP) and/or Storm Water Pollution Prevention Plan (SWPPP) must submit an electronic copy of the DMP, SWMP and/or SWPPP to the SRMT Environment Division, Water Resources Program Manager IO business days prior to the start of construction of any work to be conducted under the CGP. The applicable documents must be provided to the electronic address listed above.
- iii. Any Responsible-Person/Decision-Maker that is required under the CGP to submit an annual report to EPA must submit an electronic copy of the annual report concurrently to the SRMT Water Resource Program. Additionally, any correspondences between the applicant and EPA related to analytical data, written reports, corrective action, enforcement, monitoring, or an adverse incident must likewise be routed to the SRMT Water Resources Program at the above electronic address.
- iv. An "Authorization to Proceed Letter" with site-specific mitigation requirements may be sent out to the permittee when a review of the NOI and OMP, SWMP and /or SWPPP on a case-by-case basis, is completed by the SRMT Environment Division, Water Resource Program. This approval will allow the application to proceed if all mitigation requirements are met.

b. Seneca Nation

- i. Under Part 1.1.5 of the CGP, the Seneca Nation requests that an applicant must demonstrate that they meet the eligibility criteria listed in Appendix D (certify in your Notice of Intent (NOI) that you meet one of the eligibility criteria [Criterion A-F]) as well as species and critical habitats that are listed under the Seneca Nation's "Fishing and Conservation Laws" and the "Seneca Nation of Indians Comprehensive Conservation Law".

- ii. The Tribal Historic Preservation Office (THPO) was established in 2000 after the Seneca Nation received a recognition letter from the National Park Service (NPS); therefore under Part 1.1.6 of the CGP (Appendix E) and prior to submitting a Notice of Intent (NOI) operators must complete the Nation's THPO, Project Review Form (<https://sni.org/media/246603/sni-thpo-project-review-form.pdf>) and submit the completed form with associated information to the Tribal Historic Preservation Officer at 90 Ohi:yo' Way, Salamanca, NY 14779. Federal agencies engaging in construction activities must provide for construction review by a certified construction reviewer in accordance with 7 Del. C. §§4010 & 4013 and 7 DE Admin. Code 5101, subsection 6.1.6.
- iii. Under Part 1.2 of the CGP, discharges must also follow the Section 13 of the Guide for Construction (Seneca Nation of Indians Source Water Code) and respectively, Council Resolution, dated April 13, 2013 (CN: R-04-13-13-11) to ensure that the health, safety and welfare of the citizens of the Seneca Nation, and all other within the Lands and Territories of the Seneca Nation of Indians, and to facilitate the adequate provisions of water through the elimination or prevention of ground water contamination in the vicinity of wells that supply drinking water for the Nation. The area is known as the Source Water Protection Area (SWPA) and specified activities are regulated within this SWPA, as cited in Section 13 of the Guide for Construction and Section VI, of CN: R-04-13-13-11.
- iv. Under Part 1.4, any operator who seeks coverage of the CGP, and is required to submit a notice of intent NOI and Notice of Termination (NOT) (as necessary) to the EPA for coverage, under Part 1.4.2 must also submit a copy of the NOI to the Seneca Nation's Environmental Protection Department (EPD) within three business days of submittal to the EPA, (address shown below). Respectively, a copy of the NOT (as described under Part 8.3 of the CGP), which certifies that you have met the requirements of Part 8, must be provided within three business days after electronic confirmation is received from the EPA that the NOT has been accepted. In addition to a NOI and NOT, the Seneca Nation (Environmental Protection Department [EPD]) would require an Environmental Impact Assessment (EA) (Long Form), as shown in Section 2 of the Seneca Nation of Indians Laws, Ordinances & Policies (Guide for Construction), to be completed and submitted to the EPD prior to any project to determine whether the impacts from a project would create significant and detrimental effects to the Nation's lands, water (violate WQS), and environment. The NOI, NOT, and EA must be submitted electronically to epd@sni.org and provided to the following address:
Seneca Nation
Environmental Protection Department (EPD) Attn: Director of EPD
12837 Route 438
Irving, NY 14081
- v. Under Part 3.0 of the CGP, discharges must be controlled as necessary to meet applicable WQS. The Seneca Nation is working actively towards finalizing and implementing the; therefore, the EPD would require an applicant to submit or grant access to the permit to obtain information on the impact of effluents on receiving waters, including the capability of receiving waters to support future designated uses and achieve the WQS of the Nation; and to advise prospective dischargers of discharge requirements, and coordinate with the appropriate

permitting agencies. As stated in the Decision Document, under Section 303(c) of the CWA, 33 U.S.C. § 1313(c), states develop, review, and revise (as appropriate) water quality standards for surface waters of the United States. At a minimum, such standards are to include designated water uses, water quality criteria to protect such uses, and an antidegradation policy. 40 C.F.R. § 131.6. In addition, under Section 401 of the CWA states may grant, condition, or deny "certification" for federally permitted or licensed activities that may result in a discharge to the waters of the United States 33 U.S.C. § 1341.

- vi. Under Part 7.2.8(a)(b)(c) and for Part 9 of the CGP, the following Sections of the Seneca Nation's Guide for Construction shall be considered, in conjunction with the CGP:
 - (a) Section 1. Executive Order - To Establish a Policy for Governing Access to Nation Territories and Facilities by Officials of Foreign Government, dated March 31, 2011
 - (b) Section 3. Natural Resources Committee, Sand and Gravel Law (CN: R-06-24-05-08)
 - (c) Section 4. Fishing and Conservation Laws - Part 1.1.5 of the CGP
 - (d) Section 5. Seneca Nation of Indians Comprehensive Conservation Law, adopted January 14, 2012
 - (e) Section 9. Food is Our Medicine (FIOM) Program/Native Planting Policy (CN: R-03-08-14-14)
 - (f) Section 10. Forestry Management Plan (CN: R-08-14-10-23)
 - (g) Section 11. Timber Ordinance #411-092, dated May 8, 1982
 - (h) Section 14. Flood Damage Prevention Local Law, dated September 27, 1988
 - (i) Section 16. Utilities Ordinance No. 87-100
 - (j) Authorizing Emergency Action and Contingency Plan to Restrain Pollution of Nations Waters, (Council Resolution: R-03-01-18-10), dated March 10, 2018
Seneca Nation of Indians Permit Application for Construction within Waterways Permit, Form NR98-01.00

9.3 EPA REGION 3

9.3.1 DCR100000 District of Columbia

- a. Discharges authorized by this permit shall comply with the District of Columbia Water Pollution Control Act of 1984, as amended (DC Official Code § 8-103.01 and § 8-103.06, et seq.) to ensure that District of Columbia waters, waters in adjacent and downstream states, and the beneficial uses of these waters will not be harmed or degraded by the discharges.
- b. Discharges authorized by this permit must comply with §§ 1104.1 and 1104.8 of Chapter 11 and the provisions of Chapter 19 of Title 21 of District of Columbia Municipal Regulations in order to attain and maintain designated uses of the District of Columbia waters.

- c. The permittee shall comply with the District of Columbia Stormwater Management and Soil Erosion and Sediment Control regulations in Chapter 5 of Title 21 of the District of Columbia Municipal Regulations.
- d. The permittee shall comply with the District of Columbia Flood Management Control regulations in Chapter 31 of Title 20 of the District of Columbia Municipal Regulations.
- e. The permittee shall submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Regulatory Review Division, Department of Energy & Environment, Government of the District of Columbia, 1200 First Street, NE, 5th Floor, Washington, DC 20002, during the review and approval of the permittee's DOEE Erosion and Sediment Control Plan in accordance with the provisions of Chapter 542 of Title 21 of the District of Columbia Municipal Regulations.
- f. Upon request, the permittee shall submit all inspection and monitoring reports as required by this permit and 40 CFR § 122.41 to the Associate Director, Inspection and Enforcement Division, Department of Energy & Environment, Government of the District of Columbia, 1200 First Street, NE, 5th Floor, Washington, DC 20002; telephone (202) 535-2226, or by email at Joshua.Rodriguez@dc.gov.
- g. In the event the permittee intends to discharge dewatering water, groundwater, or groundwater comingled with stormwater from a known contaminated site, the permittee shall contact the Regulatory Review Division, Department of Energy & Environment, Government of the District of Columbia, 1200 First Street, NE, 5th Floor, Washington, DC 20002; telephone (202) 535-2600, or by email at MS4DischargeAuthorization@dc.gov to request authorization to discharge dewatering water, groundwater, or groundwater comingled with stormwater to the District's Municipal Separate Storm Sewer System (MS4) or to a surface water body pursuant to §§ 8-103.02, 8-103.06, and 8-103.07 of the District of Columbia Water Pollution Control Act of 1984, as amended.

9.3.2 DER10F000 Areas in the State of Delaware located at a federal facility (as defined in Appendix A)

- a. Federal agencies must submit a sediment and stormwater management plan (SSMP) and receive Department approval prior to undertaking any land clearing, soil movement or construction activity unless conducting an exempt activity.
- b. Federal construction activities are required to have a third-party Certified Construction Reviewer (CCR) perform weekly reviews to ensure the adequacy of construction activities pursuant to the approved SSMP and regulations. Implementation of approved SSMPs requires the daily oversight of construction activity by certified responsible personnel.
- c. Implementation of approved SSMPs requires the daily oversight of construction activity by certified responsible personnel.
- d. A current copy of the SSMP must be maintained at the construction site.
- e. Unless authorized by the Department, not more than 20 acres may be disturbed at any one time.

9.4 EPA REGION 4

No additional conditions

9.5 EPA REGION 5**9.5.1 MIR101000 Indian country within the State of Minnesota****a. Fond du Lac Reservation**

- i. New dischargers wishing to discharge to an Outstanding Reservation Resource Water (ORRW)¹⁰⁶ must obtain an individual permit from EPA for storm water discharges from large and small construction activities.
- ii. A copy of the Storm Water Pollution Prevention Plan (SWPPP) must be submitted to the Office of Water Protection at least fifteen (15) days in advance of sending the Notice of Intent to EPA. The SWPPP can be submitted electronically to richardgitar@FDLREZ.com or by hardcopy sent to:
 - Fond du Lac Reservation
 - Office of Water Protection
 - 1720 Big Lake Road
 - Cloquet, MN 55720
- iii. Copies of the Notice of Intent (NOI) and the Notice of Termination (NOT) must be sent to the Fond du Lac Office of Water Protection at the same time they are submitted to EPA. [The condition helps the Office of Water Protection keep track of when a project is about to start and when it has ended. FDL Water Quality Certification Ordinance, Section 204 (a) (2)].
- iv. If the project will entail a discharge to any watercourse or open water body, the turbidity limit shall NOT exceed 10% of natural background within the receiving water(s) as determined by Office of Water Protection staff. For such discharges, turbidity sampling must take place within 24 hours of a ½-inch or greater rainfall event. The results of the sampling must be reported to the Office of Water Protection within 7 days of the sample collection. All sample reporting must include the date and time, location (GPS: UTM/Zone 15), and NTU. CGP applicants are encouraged to work with the Office of Water Protection in determining the most appropriate location(s) for sampling. [This condition helps both the Office of Water Protection and the project proponent in knowing whether or not their erosion control efforts are effective. FDL Water Quality Certification, Section 204 (b) (1)].
- v. Receiving waters with open water must be sampled for turbidity prior to any authorized discharge as determined by Office of Water Protection staff. This requirement only applies to receiving waters which no ambient turbidity data exists. [This condition allows the Office of Water Protection to obtain a baseline turbidity sample in which to compare to other samples. FDL Water Quality Certification Ordinance, Section 204 (b) (2)].
- vi. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in the Water Quality Standards of the Fond du Lac Reservation, Ordinance #12/98, as amended. This includes, but is not limited to, the prevention of any discharge that causes a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of water of the Fond du Lac

¹⁰⁶ Although additional waters may be designated in the future, currently Perch Lake, Rice Portage Lake, Miller Lake, Deadfish Lake, and Jaskari Lake are designated as ORRWs.

Reservation for any of the uses designated in the Water Quality Standards of the Fond du Lac Reservation. These uses include wildlife, aquatic life, warm water fisheries, cold water fisheries, subsistence fishing (netting), primary contact recreation, secondary contact recreation, cultural, wild rice areas, aesthetic waters, agriculture, navigation, commercial and wetlands. It also includes the designated uses of wetlands including, but not limited to, baseflow discharge, cultural opportunities, flood flow attenuation, groundwater recharge, indigenous floral and fauna) diversity and abundance, nutrient cycling, organic carbon export/cycling, protection of downstream water quality, recreation, resilience against climactic effects, sediment/shoreline stabilization, surface water storage, wild rice, and water dependent wildlife. [In addition to listing the designated uses of waters of the Fond du Lac Reservation, this condition also limits the project proponent to discharges that will not violate our Water Quality Standards. FDL Water Quality Certification Ordinance, Section 204 (a) (7)].

- vii.** Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the Fond du Lac Reservation. All spills must be reported to the appropriate emergency management Agency (National Response Center AND the State Duty Officer), and measures shall be taken immediately to prevent the pollution of waters of the Fond du Lac Reservation, including groundwater. The Fond du Lac Office of Water Protection must also be notified immediately of any spill regardless of size. [This condition helps protect water quality and also reminds project proponents of their responsibility in reporting spill events. FDL Water Quality Certification Ordinance, Section 204 (b) (3)].
- viii.** All seed mixes, whether used for temporary stabilization or permanent seeding, shall NOT contain any annual ryegrass (*Lolium* species). Wild rye (*Elymus* species) or Oats (*Avena* species) may be used as a replacement in seed mixes. [This condition prevents the use of annual ryegrass on the Reservation. Annual ryegrass is allelopathic, which means it produces biochemical in its roots that inhibit the growth of native plants. If used in seed mixes, annual ryegrass could contribute to erosion, especially on slopes. However, the condition also specifies substitute grasses that germinate almost as fast as annual ryegrass for use as a cover crop to help prevent erosion. FDL Water Quality Certification Ordinance, Section 204 (t) (1)].
- ix.** To prevent the introduction of invasive species, ALL contractors and subcontractors MUST disclose information stating prior equipment location(s) and ALL known invasive species potentially being transported from said location(s). All equipment MUST undergo a high pressure wash (including any equipment mats) BEFORE ENTERING the Fond du Lac Reservation. Personal equipment such as work boots, gloves, vest, etc. MUST be clean of debris, dirt and plant and animal material BEFORE ENTERING the Fond du Lac Reservation. Equipment being transported from known infested areas MUST undergo a high pressure wash as soon as possible after leaving the infested site and again BEFORE ENTERING the Fond du Lac Reservation, to avoid transport of invasive species into areas surrounding the Reservation. Written certification of equipment cleaning MUST be provided to the Fond du Lac Office of Water Protection. Upon arrival, ALL contractor and subcontractor equipment will be inspected by appointed Fond du Lac staff. If equipment is deemed unsatisfactory, the equipment MUST

undergo a high pressure washing until the equipment is cleared by the inspector, until such time, minimal travel will be allowed through the Reservation. The contractor shall be held responsible for the control of any invasive species introduced as a result of their project. [This condition requires the project proponent to prevent the inadvertent introduction of invasive species by taking an active role in cleaning all vehicles, equipment, and equipment mats before entering the Reservation. This condition has been placed in certifications since 2012, due to the introduction of Wild Parsnip in 2011 from a pipeline contractor. It is much easier to prevent the introduction of an invasive species than it is to eradicate it once it has been introduced. Many invasive plant species form monocultures, preventing native plants from growing. This situation often leads to cases of erosion, which in turn effects water quality. FOL Water Quality Certification Ordinance, Section 204 (g) (1)].

- x. A copy of this certification MUST be kept by the contractor on-site at all times and be available for viewing by all personnel, including inspectors. [This condition ensures that the information contained in the certification, especially the conditions, is readily available onsite for reference. FOL Water Quality Certification Ordinance, Section 204 (a) (9)].

b. The Grand Portage Band of Lake Superior Chippewa

- i. The CGP authorization is for construction activities that may occur within the exterior boundaries of the Grand Portage Reservation in accordance to the Grand Portage Land Use Ordinance. The CGP regulates stormwater discharges associated with construction sites of one acre or more in size. Only those activities specifically authorized by the CGP are authorized by this certification (the "Certification").
- ii. All construction stormwater discharges authorized by the CGP must comply with the Water Quality Standards and Water Resources Ordinance, as well as Applicable Federal Standards (as defined in the Water Resources Ordinance).
- iii. All appropriate steps must be taken to ensure that petroleum products or other chemical pollutants are prevented from entering the Waters of the Reservation. All spills must be reported to the appropriate emergency-management agency, and measures must be taken to prevent the pollution of the Waters of the Reservation, including groundwater.
- iv. The 2022 CGP requires inspections and monitoring reports of the construction site stormwater discharges by a qualified person. Monitoring and inspection reports must comply with the minimum requirements contained in the 2022 CGP. The monitoring plan must be prepared and incorporated into the Storm Water Pollution Prevention Plan (the "SWPP"). A copy of the SWPP must be submitted to the Board at least 30 days in advance of sending the requisite Notice of Intent to EPA. The SWPP should be sent to:

Grand Portage Environmental Resources Board
P.O. Box 428
Grand Portage, MN 55605

Copies of the Notice of Intent and Notice of Termination required under the General Permit must be submitted to the Board at the address above at the same time they are submitted to the EPA.

- v. If requested by the Grand Portage Environmental Department, the permittee must provide additional information necessary for a case-by-case eligibility determination to assure compliance with the Water Quality Standards and any Applicable Federal Standards. The burden is on the applicant to demonstrate compliance with the Water Quality Standards, the Water Resources Ordinance, and Applicable Federal Standards whether or not the application is ultimately eligible for the CGP.
 - vi. CGP discharges must not cause nuisance conditions as defined in Grand Portage Water Quality Standards.
 - vii. The Board retains full authority to ensure compliance with and to enforce the provisions of the Water Resource Ordinance and Water Quality Standards, Applicable Federal Standards, and these Certification conditions. Nothing herein affects the scope or applicability of other controlling tribal or federal requirements, including but not limited to impacts to cultural, historical, or archeological features or sites, or properties that may be eligible for listing on the National Register of Historic Places under the National Historic Preservation Act, 54 U.S.C. §§ 300101 et seq.
 - viii. Appeals related to Board actions taken in accordance with any of the preceding conditions may be heard by the Grand Portage Tribal Court.
- c. Leech Lake Band of Ojibwe**
- i. The water quality standards that apply to the construction site are the standards at the time the operator submits its Notice of Intent (NOI) to EPA and the LLBO WRP (see conditions # 2 and # 3).
 - ii. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be submitted to the LLBO WRP at least 30 days in advance of sending the NOI for the project to EPA. See attached LLBO 401 Water Quality Certification Ordinance. Section 304(a)(1). The SWPPP should be submitted electronically to Jeff.Harper@llojibwe.net and by hardcopy sent to:
Leech Lake Band of Ojibwe
ATTN: Water Resources Program - 401 Cert
Division of Resource Management
190 Sailstar Drive NW
Cass Lake, Minnesota 56633
 - iii. Copies of the NOI and the Notice of Termination (NOT) must be submitted to the LLBO WRP at the same time they are submitted to EPA. See attached LLBO 401 Water Quality Certification Ordinance, Section 304(a)(2). The NOI and NOT should be submitted electronically to Jeff.Harper@llojibwe.net and sent by hardcopy to the address cited in condition # 2.
 - iv. Any and all other conditions listed in Section 304 of the attached LLBO 401 Water Quality Certification Ordinance shall be observed unless the LLBO WRP deems that certain conditions therein are not applicable to the project in need of a permit under this certification.
 - v. A copy of this certification MUST be kept by the contractor on-site at all times and be available for viewing by all personnel, including inspectors.

- vi. Upon consideration of the NOI, if the LLBO WRP finds that the discharge will not be controlled as necessary to meet applicable water quality standards, the LLBO WRP may insist, consistent with Part 3.1 of the CGP, that additional controls are installed to meet applicable water quality standards, or recommend to EPA that the operator obtain coverage under an individual permit.

9.5.2 WIR10I000 Indian country within the State of Wisconsin

a. Bad River Band of Lake Superior Tribe of Chippewa Indians

- i. Only those activities specifically authorized by the CGP are authorized by this Certification. This Certification does not authorize impacts to cultural properties, or historical sites, or properties that may be eligible for listing as such.
- ii. All projects which are eligible for coverage under the CGP and are located within the exterior boundaries of the Bad River Reservation shall be implemented in such a manner that is consistent with the Tribe's Water Quality Standards (WQS). The Tribe's WQS can be viewed at: http://www.badriver-nsn.gov/wp-content/uploads/2020/01/NRD_WaterQualityStandards_2011.pdf
- iii. Operators are not eligible to obtain authorization under the CGP for all new discharges to an Outstanding Tribal Resource Water (OTRW or Tier 3 water). OTRWs, or Tier 3 waters, include the following: Kakagon Slough and the lower wetland reaches of its tributaries that support wild rice, Kakagon River, Bad River Slough, Honest John Lake, Bog Lake, a portion of Bad River, from where it enters the Reservation through the confluence with the White River, and Potato River. OTRWs can be viewed at: <https://www.arcgis.com/apps/View/index.html?appid=6f44c371217e4ee8b5f1c2c705c7c7c5>
- iv. An operator proposing to discharge to an Outstanding Resource Water (ORW or Tier 2.5 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. ORWs, or Tier 2.5 waters, include the following: a portion of Bad River, from downstream the confluence with the White River to Lake Superior, White River, Marengo River, Graveyard Creek, Bear Trap Creek, Wood Creek, Brunsweller River, Tyler Forks, Bell Creek, and Vaughn Creek. ORWs can be viewed at: <https://www.arcgis.com/apps/View/index.html?appid=6f44c371217e4ee8b5f1c2c705c7c7c5>. The antidegradation demonstration materials described in provision E.4.iii., and included on the antidegradation demonstration template found at: <https://www.badriver-nsn.gov/natural-resources/projectreviews/>, must be submitted to the following address:
 Bad River Tribe's Natural Resources Department
 Attn: Water Regulatory Specialist
 P.O. Box 39 Odanah, WI 54861
 WaterReg@badriver-nsn.gov
- v. An operator proposing to discharge to an Exceptional Resource Water (ERW or Tier 2 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. ERWs, or Tier 2 waters, include the following: any surface water within the exterior boundaries of the Reservation that is not specifically classified as an Outstanding Resource Water (Tier 2.5 water) or an Outstanding Tribal Resource Water (Tier 3 water). ERWs can be viewed at:

<https://www.arcgis.com/apps/View/index.html?appid=6f44c371217e4ee8b5f1c2c705c7c7c5>. The antidegradation demonstration materials described in provision E.4.ii., and included on the antidegradation demonstration template found at: <https://www.badriver-nsn.gov/natural-resources/projectreviews/>, must be submitted to the following address:

Bad River Tribe's Natural Resources Department
Attn: Water Regulatory Specialist
P.O. Box 39 Odanah, WI 54861
WaterReg@badriver-nsn.gov

- vi.** Projects utilizing cationic treatment chemicals within the Bad River Reservation boundaries are not eligible for coverage under the CGP.
- vii.** A discharge to a surface water within the Bad River Reservation boundaries shall not cause or contribute to an exceedance of the turbidity criterion included in the Tribe's WQS, which states: Turbidity shall not exceed 5 NTU over natural background turbidity when the background turbidity is 50 NTU or less, or turbidity shall not increase more than 10% when the background turbidity is more than 50 NTU.
- viii.** All projects which are eligible for coverage under the CGP within the exterior boundaries of the Bad River Reservation must comply with the Bad River Reservation Wetland and Watercourse Protection Ordinance, or Chapter 323 of the Bad River Tribal Ordinances, including the erosion and sedimentation control, natural buffer, and stabilization requirements. Questions regarding Chapter 323 and requests for permit applications can be directed to the Wetlands Specialist in the Tribe's Natural Resources Department at (715) 682-7123 or wetlands@badriver-nsn.gov.
- ix.** An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must notify the Tribe prior to the commencing earth-disturbing activities. The operator must submit a copy of the Notice of Intent (NOI) to the following addresses at the same time it is submitted to the U.S. EPA:

Bad River Tribe's Natural Resources Department
Attn: Water Regulatory Specialist
P.O. Box 39 Odanah, WI 54861
WaterReg@badriver-nsn.gov

Bad River Tribe's Natural Resources Department
Attn: Tribal Historic Preservation Officer (THPO)
P.O. Box 39 Odanah, WI 54861
THPO@badriver-nsn.gov

The operator must also submit a copy of the Notice of Termination (NOT) to the above addresses at the same time it is submitted to the U.S. EPA. Photographs showing the current site conditions must be included as part of the NOT to document the stabilization requirements have been met.

- x.** The THPO must be provided 30 days to comment on the project.

- xi.** The operator must obtain THPO concurrence in writing. This written concurrence will outline measures to be taken to prevent or mitigate effects to historic properties. For more information regarding the specifics of the cultural resources process, see 36 CFR Part 800. A best practice for an operator is to consult with the THPO during the planning stages of an undertaking.
- xii.** An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the following address at the same time as submitting the NOI:
 - Bad River Tribe's Natural Resources Department
 - Attn: Water Regulatory Specialist
 - P.O. Box 39 Odanah, WI 54861
 - WaterReg@badriver-nsn.gov
- xiii.** Any corrective action reports that are required under the CGP must be submitted to the following address within one (1) working day of the report completion:
 - Bad River Tribe's Natural Resources Department
 - P.O. Box 39 Odanah, WI 54861
 - WaterReg@badriver-nsn.gov
- xiv.** An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must submit a copies of the inspection reports (including photographs) to the following address within 24 hours of completing any site inspection required:
 - Bad River Tribe's Natural Resources Department Attn: Water Regulatory Specialist
 - P.O. Box 39 Odanah, WI 54861
 - WaterReg@badriver-nsn.gov
- xv.** An operator shall be responsible for meeting any additional permit requirements imposed by the U.S. EPA necessary to comply with the Tribe's antidegradation policies if the discharge point is located upstream of waters designated by the Tribe.

9.6 EPA REGION 6

9.6.1 NMR100000 State of New Mexico, except Indian country

- a.** In Outstanding National Resource Waters (ONRWs) in New Mexico, no degradation is permitted except in limited, specifically defined instances. Therefore, Operators are not eligible to obtain authorization under this general permit for stormwater discharges to waters classified as ONRWs listed in Paragraph D of 20.6.4.9 New Mexico Administrative Code (NMAC), also referred to as "Tier 3 waters" as defined in Appendix A of this permit. Exception: When construction activities are in response to a public emergency (e.g., wildfire, extreme flooding, etc.) and the related work requires immediate authorization to avoid a threat to public health or safety.
 - i.** Operators who conduct construction activities in response to a public emergency to mitigate an immediate threat to public health or safety shall

adhere to the requirements in 20.6.4.8(A)(3)(c) NMAC, including notifying the New Mexico Environment Department (NMED) within seven days of initiation of the emergency action and providing NMED with a summary of the action taken within 30 days of initiation of the emergency action.

- ii. For all other scenarios, Operators with proposed discharges to ONRWs in New Mexico shall obtain coverage from EPA under an NPDES Individual Permit and will comply with the additional standards and regulations related to discharges to ONRWs in 20.6.4.8(A) NMAC. Additional information is available from:
 - New Mexico Environment Department Surface Water Quality Bureau
 - P.O. Box 5469
 - Santa Fe, NM 87502-5469 Telephone: 505-827-0187
 - <https://www.env.nm.gov/surface-water-quality/wqs/>
 - <https://gis.web.env.nm.gov/oem/?map=swqb>
- b. If construction dewatering activities are anticipated at a construction site and non-stormwater discharges of groundwater, subsurface water, spring water, and/or other dewatering water are anticipated, the Operators/Permittees must complete the following steps:
 1. Review the state's Ground Water Quality Bureau Mapper (<https://gis.web.env.nm.gov/GWQB/>) and Petroleum Storage Tank Bureau Mapper (<https://gis.web.env.nm.gov/GWQB/>).

Check if the following sources are located within the noted distance from the anticipated construction dewatering activity. At a minimum, a list of the following potential sources of contaminants and pollutants at the noted distance is to be kept in the SWPPP.

Source of Potential Contamination or Pollutants*	Constituents likely to be required for testing*
Within 0.5 mile of an open Leaking Underground Storage Tank (LUST) site	BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) plus additional parameters depending on site conditions**
Within 0.5 mile of an open Voluntary Remediation site	All applicable parameters or pollutants listed in 20.6.4.13, 20.6.4.52, 20.6.4.54, 20.6.4.97 thru 20.6.4.99, 20.6.4.101 through 20.6.4.899, and 20.6.4.900 NMAC (or an alternate list approved by the NMED-SWQB)*
Within 0.5 mile of an open RCRA Corrective Action Site	
Within 0.5 mile of an open Abatement Site	
Within 0.5 mile of an open Brownfield Site	
Within 1.0 mile or more of a Superfund site or National Priorities List (NPL) site with associated groundwater contamination.	
Construction activity contaminants and/or natural water pollutants	Additional parameters depending on site activities and conditions (Contact NMED- SWQB for an alternate list)*

*For further assistance determining whether dewatering may encounter contaminated sources, please contact the NMED Ground Water Quality Bureau at 505-827-2965 or NMED Surface Water Quality Bureau (SWQB) at 505-827-0187.

** EPA approved sufficiently sensitive methods must be used. For known PCB sources and analysis, EPA Method 1668C must be used (see <https://www.epa.gov/cwa-methods>).

2. If dewatering activities are anticipated, information on the flow rate and potential to encounter contaminated groundwater, subsurface water, spring water, or dewatering water must be provided directly to NMED at the following address:

NMED Surface Water Quality Bureau
 Program Manager, Point Source Regulation
 Section PO Box 5469, Santa Fe, NM 87502

Please call the SWQB to obtain the appropriate email address (505-827-0187).

3. In addition, the Operator/Permittee must characterize the quality of the groundwater and subsurface water, spring water, or dewatering water being considered for discharge according to the table above and including dissolved hardness and pH. Considering the contaminant sources listed in the table above, water quality data may already be available. For further assistance, contact the

NMED Surface Water Quality Bureau (505-827-0187), Ground Water Quality Bureau (505-827- 2965), Petroleum Storage Tank Bureau (505-476-4397), or Hazardous Waste Bureau (505-476- 6000).

- i. The Operator/Permittee must submit recent analytical test results (i.e., within the past 5 years) according to the table above, and including dissolved hardness and pH, to the EPA Region 6 Stormwater Permit Contact and the NMED Surface Water Quality Bureau (see contact information in #2 above). If the test data exceed applicable water quality standards, then the groundwater, subsurface water, spring water, or dewatering water cannot be discharged into surface waters under this general permit. Operators/Permittees may submit an NPDES Individual Permit application to treat and discharge to waters of the U.S. or find alternative disposal measures. No discharges to surface waters are allowed until authorized.
 - ii. If the discharge has the potential to affect groundwater (e.g., land application), the Operator/Permittee must submit an NOI to the NMED Ground Water Quality Bureau (see 20.6.2.1201 NMAC – Notice of Intent to Discharge).
4. The Operator/Permittee must document any findings and all correspondence with NMED and EPA in the SWPPP.
- c.** Operators who intend to obtain authorization under this permit for new and existing storm water discharges from construction sites must satisfy the following condition:
- i.** The SWPPP must include site-specific interim and permanent stabilization, managerial, and structural solids, erosion and sediment control best management practices (BMPs) and/or other controls that are designed to prevent to the maximum extent practicable an increase in the sediment yield and flow velocity from pre-construction, pre-development conditions to assure that applicable standards in 20.6.4 NMAC, including the antidegradation policy, and TMDL waste load allocations (WLAs) are met. This requirement applies to discharges both during construction and after construction operations have been completed. The SWPPP must identify and document the rationale for selecting these BMPs and/or other controls. The SWPPP must also describe design specifications, construction specifications, maintenance schedules (including a long-term maintenance plan), criteria for inspections, and expected performance and longevity of these BMPs. For sites greater than 5 acres in size, BMP selection must be made based on the use of appropriate soil loss prediction models (i.e. SEDCAD, RUSLE, SEDIMOT, MULTISED, etc.) OR equivalent generally accepted (by professional erosion control specialists) soil loss prediction tools.
 - ii.** For all sites, the Operator(s) must demonstrate, and include documentation in the SWPPP, that implementation of the site-specific practices will ensure that the applicable standards and TMDL WLAs are met, and will result in sediment yields and flow velocities that, to the maximum extent practicable, will not be greater than the sediment yield levels and flow velocities from preconstruction, pre-development conditions.
 - iii.** All SWPPPs must be prepared in accordance with good engineering practices by qualified (e.g., CPESC certified, engineers with appropriate training) erosion control specialists familiar with the use of soil loss prediction models and design of erosion and sediment control systems based on these models (or equivalent soil

loss prediction tools). Qualifications of the preparer (e.g., professional certifications, description of appropriate training) must be documented in the SWPPP. The Operator(s) must design, implement, and maintain BMPs in the manner specified in the SWPPP.

NMED supports the use of EPA's small residential lot template if a site qualifies to use it as explained in the permit, as long as it is consistent with the above requirements. NMED's requirement does not preclude small residential sites from using the template, but it may require an additional short paragraph to justify the selection of specific BMPs for the site.

- d. Operators must notify NMED when discharges of toxic or hazardous substances or oil from a spill or other release occurs - see Emergency Spill Notification Requirements, Part 2.3.6 of the permit. For emergencies, Operators can call 505-827-9329 at any time. For non-emergencies, Operators can call 866-428-6535 (voice mail 24-hours per day) or 505-476-6000 during business hours from 8am-5pm, Monday through Friday. Operators can also call the NMED Surface Water Quality Bureau directly at 505-827-0187.
- e. Operators of small construction activities (i.e., 1-5 acres) are not eligible to qualify for a waiver in lieu of needing to obtain coverage under this general permit based on Item C.3 of Appendix C (Equivalent Analysis Waiver) in the State of New Mexico.

9.6.2 NMR10I000 Indian country within the State of New Mexico, except Navajo Reservation Lands that are covered under Arizona permit AZR10000I and Ute Mountain Reservation Lands that are covered under Colorado permit COR10000I.

a. Nambe Pueblo

- i. The operator must provide a copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Nambe Pueblo Governor's Office at the same time it is provided to the US Environmental Protection Agency. The NOI and NOT should be provided to the following address:
 - Office of the Governor Nambe Pueblo
 - ISA NPI02 WEST
 - Nambe Pueblo, New Mexico 87506
- ii. The operator must provide a copy of the Storm Water Pollution Prevention Plan (SWPPP) to Nambe Pueblo at the same time it is submitted to the EPA, either by email to governor@nambepueblo.org or mailed to the above address.
- iii. The operator must provide copies of inspection reports, a copy of the corrective action log, and modifications made to the SWPPP as a result of inspection findings, upon request by the Nambe Pueblo Department of Environmental and Natural Resources or Nam be Governor.

b. Ohkay Owingeh Tribe

- i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Ohkay Owingeh Office of Environmental Affairs, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following address:

Naomi L. Archuleta - Environmental Programs Manager Ohkay Owingeh
Office of Environmental Affairs
P.O. Box 717
Ohkay Owingeh, NM 87566
naomi.archuleta@ohkay.org

Noah Kaniatobe - Environmental Specialist Ohkay Owingeh, Office of
Environmental Affairs
P.O. Box 717
Ohkay Owingeh, NM 87566
noah.kaniatohe@ohkay.org

- ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Storm Water Pollution Prevention Plan (SWPPP) to Ohkay Owingeh Office of Environmental Affairs at the same time that the NOI is submitted to the tribe (see contact information listed above).
- iii. Following each incident where the operator takes a corrective action the operator must provide the corrective action log to the Ohkay Owingeh Office of Environmental Affairs.
- iv. The operator must notify Ohkay Owingeh Office of Environmental Affairs within 24 hours, in the event of an emergency spill in addition to the notification requirements at Part 2.3.6 of the CGP. Please contact: Ohkay Owingeh Tribal Police Department at 505.852.2757.

*Please contact:
Ohkay Owingeh
Tribal Police Department
505.852.2757*

c. Pueblo of Isleta

- i. All operators obtaining permit coverage under the EPA CGP must submit a copy of the certified Notice of Intent (NOI) to the Pueblo of Isleta at the same time it is submitted to EPA for projects occurring within the exterior boundaries of the Pueblo of Isleta. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The Notices must be provided to the following address:
Water Quality Control Officer Pueblo of Isleta
Environment Department PO Box 1270
Isleta NM 87022
505-869-7565
WQCO@isletapueblo.com
- ii. The operator must notify the Pueblo of Isleta's Dispatch at 505-869-3030 as soon as possible and the Pueblo of Isleta Water Quality Control Officer within 10 hours, in the event of a spill of hazardous or toxic substances or if health or the

environment become endangered in addition to the notification requirements at Part 2.3.6 and at I.12.6.1 of the CGP.

- iii. All operators obtaining permit coverage under the EPA CGP must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo of Isleta Water Quality Control Officer at the above address, 30 days prior to submitting the certified NOI to EPA. If the electronic file is too large to send through e-mail, a zip file or flash drive may be submitted.
 - iv. All operators obtaining permit coverage under the EPA CGP must give 2 days advance notice to the Pueblo of Isleta Water Quality Control Officer of any planned changes in the permitted activity which may result in noncompliance with permit requirements.
 - v. All operators obtaining permit coverage under the EPA CGP must post a sign or other notice of permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice must be located so that it is visible from the public road or tribal road that is nearest to the active part of the construction site. The sign must be maintained on-site from the time construction activities begin until final stabilization is met.
 - vi. Erosion and sediment controls shall be designed to retain sediment on-site and project-generated waste materials that have the potential to discharge pollutants shall not be placed on open soil or on a surface that is not stabilized. Volumes of sediment over five (5) cubic yards must be removed from the active construction site; additionally, if sediment is placed for disposal within the exterior boundaries of the Pueblo of Isleta, disposal must be within a tribally approved sediment disposal site.
- d. Pueblo of Laguna**
- i. All operators obtaining permit coverage under the EPA CGP must submit an electronic copy of the certified (signed) Notice of Intent (NOI) to the Pueblo of Laguna's Environmental & Natural Resources Department (ENRD) within three business days of submittal to the EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after the EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be electronically submitted to info.environmental@pol-nsn.gov.
 - ii. All operators obtaining permit coverage under the EPA CGP must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo of Laguna's ENRD 14 days prior to the submittal of the NOI (see contact information listed above).
 - iii. The operator must provide copies of corrective actions logs and modifications made to the SWPPP as a result of inspection findings to the Pueblo of Laguna ENRD (see contact information above).
 - iv. In addition to the notification requirements of Part 2.3.6 of the CPG **[EPA interprets this intending to refer to the CGP]**, the operator must notify the Pueblo of Laguna ENRD at 505-552-7512 in the event of an emergency spill as soon as possible.
- e. Pueblo of Sandia. The following conditions apply only to discharges on the Pueblo of Sandia Reservation:**

- i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Pueblo of Sandia Environment Department concurrently with submittal to the EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided concurrently with submittal to the EPA. The NOI and NOT must be provided electronically to the following addresses:
Electronic Addresses:

Amy Rosebrough (Water Quality Manager): rosebrough@sanidapueblo.nsn.us
Greg Kaufman (Environment Director): gkaufman@sandiapueblo.nsn.us
 - ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo of Sandia Environment Department at least 14 days prior to submittal of the NOI to the Pueblo (see contact information listed above).
 - iii. If requested by the Pueblo of Sandia Environment Department, the permittee must provide additional information necessary on a case-by-case basis to assure compliance with the Pueblo of Sandia Water Quality Standards and/or applicable Federal Standards.
 - iv. An "Authorization to Proceed Letter" with site specific mitigation requirements may be sent out to the permittee when a review of the NOI and SWPPP, on a case-by-case basis, is completed by the Pueblo of Sandia Environment Department. This approval will allow the application to proceed if all mitigation requirements are met.
 - v. The Pueblo of Sandia will not allow Small Construction Waivers (Appendix C) to be granted for any small construction activities.
 - vi. The operator must provide copies of inspection reports, a copy of the corrective action log, and modifications made to the SWPPP as a result of inspection findings to the Pueblo of Sandia Environment Department upon request. An inspection report and corrective action log must be submitted to the Pueblo within 3 days of any inspection that results in corrective action (see contact information listed above).
 - vii. The operator must notify the Pueblo of Sandia within 24 hours in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the COP (see contact information listed above).
 - viii. Before submitting a Notice of Termination (NOT) to the EPA, permittees must clearly demonstrate to the Pueblo of Sandia Environment Department through a site visit or documentation that requirements for site stabilization have been met and any temporary erosion control structures have been removed. A short letter stating that the NOT is acceptable and all requirements have been met will be sent to the permittee to add to the permittee's NOT submission to the EPA.
- f. Pueblo of Santa Ana. The following conditions apply only to discharges on the Pueblo of Santa Ana Reservation:**
- i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Pueblo's Department of Natural Resources within three business days of submittal to EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be

provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following address:

Regular U.S. Delivery Mail:

Pueblo of Santa Ana
Department of Natural Resources Water Resources Division
Attn: Andrew Sweetman 02 Dove Rd
Santa Ana Pueblo, NM 87004

Electronically:

Andrew Sweetman
Water Resources Division Manager Andrew.Sweetman@santaana-nsn.gov
Tammy Montoya Hydrologist
Tammy.Montoya@santaana-nsn.gov

- ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo's Department of Natural Resources at the same time that the NOI is submitted to the tribe (see contact information listed above).
 - iii. The operator must provide copies of inspection reports, a copy of the corrective action log, and modifications made to the SWPPP as a result of inspection findings, upon request by the Pueblo's Department of Natural Resources.
 - iv. The operator must notify the Pueblo's Department of Natural Resources within 24 hours in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the CGP.
- g. Pueblo of Taos**
- i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Taos Pueblo Environmental Office and Taos Pueblo Governor's Office within three business days of submittal to EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following addresses:

Honorable Governor of Taos Pueblo PO Box 1846
Taos, New Mexico 87571

Taos Pueblo Environmental Office PO Box 1846
Taos, New Mexico 87571
 - ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Taos Pueblo Environmental Office when the NOI is submitted to the tribe. Electronic copy of SWPPP downloaded on flash drive may be sent to the above address for the Taos Pueblo Environmental Office.
 - iii. The operator must provide a copy of the corrective action log following each corrective action undertaken and modifications made to the SWPPP as a result of

a corrective action to the Taos Pueblo Environmental Office at address listed above.

h. Pueblo of Tesuque.

- i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Pueblo of Tesuque Department of Environment and Natural Resources (DENR) and the Pueblo's Governor within three business days of submittal to EPA. Additionally, a copy of any NOI modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following address:

Governor Mark Mitchell Pueblo of Tesuque
20 TP 828
Santa Fe, NM 87506 governor@pueblooftesuque.org

Sage Mountain.flower Pueblo of Tesuque
Department of Environment and Natural Resources Director
20 TP 828

- ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to Pueblo of Tesuque DENR and the Pueblo's Governor at the same time that the NOI is submitted to the EPA (see contact information listed above).
- iii. The operator must provide a copy of the corrective action log, and any modifications made to the SWPPP as a result of inspection findings, or upon request by the Pueblo of Tesuque DENR.
- iv. The operator must notify the Pueblo of Tesuque DENR within 24 hours in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the CGP (see contact information listed above).

i. Santa Clara Indian Pueblo.

- i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Santa Clara Pueblo Office of Environmental Affairs at the same time the NOI is submitted to the U.S. EPA. Additionally, a copy of the NOI modifications and the Notice of Termination (NOT), must be provided at the same time after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT shall be provided to the following address in electronic format:

Dino Chavarria,
Santa Clara Pueblo
Office of Environmental Affairs
dinoc@santaclarapueblo.org

- ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan to the Santa Clara Pueblo Office of Environmental Affairs at the same time the NOI is submitted to the U.S. EPA (see contact information listed above).

- iii. The operator must notify the Santa Clara Pueblo Office of Environmental Affairs at the address above within 24 hours, in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the CGP

9.6.3 OKR10I000 Indian country within the State of Oklahoma, except areas of Indian country covered by an extension of state program authority pursuant to Section 10211 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA).

a. Pawnee Nation. The following conditions apply only to discharges within Pawnee Indian country:

- i. Copies of the Notice of Intent (NOI) and Notice of Termination (NOT) must be provided to the Pawnee Nation at the same time it is submitted to the Environmental Protection Agency to the following address:
 Pawnee Nation Department of Environmental Conservation and Safety
 P.O. Box 470
 Pawnee, OK 74058
 Or email to dners@pawneenation.org
- ii. An electronic copy of the Storm Water Pollution Prevention Plan (SWPPP) must be submitted to the Pawnee Nation Department of Environmental Conservation and Safety at the same time the NOI is submitted.
- iii. The operator must provide access to the site for inspections and for copies of inspection reports, copy of the corrective action log and modifications, made to the SWPPP because of inspection findings, upon request by the Pawnee Nation DECS.
- iv. The Pawnee Nation Department of Environmental Conservation and Safety must be notified at 918.762.3655 immediately upon discovery of any noncompliance with any provision of the permit conditions.

9.6.4 OKR10F000 Discharges in the State of Oklahoma that are not under the authority of the Oklahoma Department of Environmental Quality, or the Oklahoma Department of Agriculture and Forestry including activities associated with oil and gas exploration, drilling, operations, and pipelines (includes SIC Groups 13 and 46, and SIC codes 492 and 5171), and point source discharges associated with agricultural production, services, and silviculture (includes SIC Groups 01, 02, 07, 08, 09).

- a. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated "ORW" in Oklahoma's Water Quality Standards, this permit may only be used to authorize discharges from temporary construction activities. Certification is denied for any on-going activities such as sand and gravel mining or any other mineral mining.
- b. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated "ORW" in Oklahoma's Water Quality Standards, certification is denied for any discharges originating from support activities, including, but not limited to, concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, or borrow areas.

- c. Dewatering discharges into sediment or nutrient-impaired waters, and waters identified as Tier 2, Tier 2.5, or Tier 3 (OAC 785:46-13) shall be controlled to meet water quality standards for turbidity in those waters as follows:
 - i. Cool Water Aquatic Community/Trout Fisheries: 10 NTUs (OAC 785: 45-5-12(f)(7)(A)(i))
 - ii. Lakes: 25 NTUs (OAC 785: 45-5-12(f)(7)(A)(ii))
 - iii. In waters where background turbidity exceeds these values, turbidity from dewatering discharges should be restricted to not exceed ambient levels (OAC 785: 45-5-12(f)(7)(B))

9.7 EPA REGION 7

No additional conditions.

9.8 EPA REGION 8

9.8.1 MTR10I000 Indian country within the State of Montana

a. Blackfeet Nation.

- i. The Applicant and applicants for projects authorized under the NWP should obtain all other permits, licenses, and certifications that may be required by federal, state, or tribal authority. Primary relevant tribal permit will be ALPO (Ordinance 117). Others may apply. It is the applicant's responsibility to know the tribal and local ordinances and complete all necessary permissions before they can commence work.
- ii. If a project is unable to meet the enclosed conditions, or if certification is denied for an applicable NWP, the Applicant may request an individual certification from Blackfeet. An individual certification request must follow the requirements outlined in 40 CFR 121.5 of EPA's CWA § 401 Certification Rule, effective September 11, 2020.
- iii. Copies of this certification should be kept on the job site and readily available for reference.
- iv. If the project is constructed and/or operated in a manner not consistent with the applicable NWP, general conditions, or regional conditions, the permittee may be in violation of this certification.
- v. Blackfeet and EPA representatives may inspect the authorized activity and any mitigation areas to determine compliance with the terms and conditions of the NWP.
- vi. This NWP Reissuance does not reduce Tribal authority under any other rule.
- vii. The project, including any stream relocations and restoration, must be built as shown and as otherwise described in the application, the construction plans, cross sections, mitigation plans and other supporting documents submitted to this office. Impacts to aquatic systems and restoration efforts will be monitored by an appropriate aquatic resource professional to ensure that disturbed areas are restored to at least their original condition.
- viii. All existing water uses will be fully maintained during and after the completion of the project. (If applicable)

- ix.** Where practicable, perform all in-channel and wetland work during periods of low flow or drawn—down or when dry
- x.** Equipment staging areas must be located out of all delineated wetlands
- xi.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during and immediately after construction, and all exposed soil and other fills, as well as any work below the ordinary high-water mark or in a wetland, must be permanently stabilized as soon as possible
- xii.** Materials such as piling, culverts, sandbags, fabric, mats, timbers used for temporary facilities in wetlands or below the high- water mark of Waters of the US must be free from oil, gas, excess dirt, loose paint and other pollutants.
- xiii.** Equipment staging areas in wetlands or in stream or river channels must be placed on mats, or other measures must be taken to minimize soil disturbance and compaction.
- xiv.** Clearing of riparian or wetland vegetation for the sole purpose of constructing work bridges, detours, staging areas or other temporary facilities must be limited to the absolute minimum necessary. When temporary impacts to native riparian or wetland vegetation are unavoidable, it must be mowed or cut above ground with the topsoil and root mass left intact.
- xv.** Remove all temporary fills and structures in the entirety when they are no longer needed. Restore affected areas to the appropriate original and planned contours where possible. Re-vegetate disturbed areas with appropriate native species when native species are impacted.
- xvi.** Construction methods and best management practices (BMPs) must minimize aquatic resource impacts to the maximum extent possible. Any BMPs described in the Joint Application must be followed. BMPs should include installation and maintenance of sediment control measures; separation, storage and reuse of any topsoil; and recovery of all disturbed areas where possible. All best management practices must in place prior to the onset of construction or as soon as practicable during the construction process.
- xvii.** Best available technology and/or best management practices must be utilized to protect existing water uses and maintain turbidity and sedimentation at the lowest practical level.
- xviii.** Applicant/contractor should manage disturbed streambank topsoil in a manner that optimizes plant establishment for the site.
- xix.** When operating equipment or otherwise undertaking construction in wetlands and water bodies the following conditions apply:
 - (a) Work should be done in dry conditions if possible.
 - (b) All equipment is to be inspected for oil, gas, diesel, anti-freeze, hydraulic fluid or other petroleum leaks. All such leaks will be properly repaired and equipment cleaned prior to being allowed on the project site. Leaks that occur after the equipment is moved to the project site will be fixed the same day or the next day or removed from the project area. The equipment is not allowed to continue operation once a leak is discovered.

- (c) All equipment is to be inspected and cleaned before and after use to minimize the spread or introduction of invasive or undesirable species.
- (d) Construction equipment shall not operate below the existing water surface except as follows:
- Impacts from construction should be minimized through the use of best management practices submitted in the permit application.
 - Essential work below the waterline shall be done in a manner to minimize impacts to aquatic system and water quality.
- (e) Containment booms and/or absorbent material must be available onsite. Any spills of petroleum products must be reported to the Army Corps, Blackfeet Nation BEO Office and the US EPA within 24 hours.
- xx.** Upland, riparian and in-stream vegetation should be protected except where its removal is necessary for completion of work. Revegetation should be completed as soon as possible. Applicant/contractor should revegetate disturbed soil in a manner that optimizes plant establishment for the site. Revegetation must include topsoil replacement, planting, seeding, fertilization, liming and weed-free mulching as necessary. Applicant must use native plant material and soils where appropriate and feasible. This certification does not allow for the introduction of non-native flora and fauna. All disturbed surface areas must be restored to pre-construction contours and elevation.
- xxi.** Spoils piles should not be placed or stored within the delineated wetlands or streams unless protected by a temporary structure designed to divert and handle high flows that can be anticipated during permit activity. Spoils piles should be placed on landscaping fabric or some other material to separate spoils material and allow retrieval of spoils material with minimal impact.
- xxii.** Impacts to wetlands shall not exceed 4.92 acres.
- xxiii.** Any unexpected and additional impacts to waters of the US should be reported to the
- xxiv.** Army Corps, Blackfeet Environmental Office Water Quality Coordinator and the US EPA.
- xxv.** All instream and stream channel reconstruction work must be completed before the stream is diverted into the new channel.
- xxvi.** Any temporary crossings, bridge supports, cofferdams, or other structures that are necessary during permit activity should be designed to handle high flows that can be anticipated during permit activity. All temporary structures should be completely removed from the water body at the conclusion of the permitted activity and the area restored to a natural function and appearance.
- xxvii.** The certification does not authorize any unconfined discharge of liquid cement into the waters of the United States. Grouting riprap must occur under dry conditions with no exposure of wet concrete to the water body.
- xxviii.** BMPs shall include application of certified weed-free straw or hay across all disturbed wetland areas that are temporarily impacted; installation and maintenance of sediment control measures during construction and if necessary, after construction is completed; use of heavy mud mats if necessary; separation,

storage and reuse of all streambank topsoil and wetland topsoil, as appropriate; and recovery of all disturbed wetland and streambank areas where possible. All conditions set by the Blackfeet Tribe and US Army Corps must be followed.

- xxix.** All applicants, including federal agencies, must notify EPA and the Blackfeet Environmental Office of the use of all NWP for which certification has been granted prior to commencing work on the project. Notifications must include:
- (a) project location (lat. Long., exact point on map);
 - (b) NWP that will be used and the specific activity that will be authorized under the NWP;
 - (c) amount of permanent and temporary fills;
 - (d) a short summary of the proposed activity, and all other federal, state, tribal or local permits or licenses required for the project;
 - (e) complete contact information of both the applicant and contractor (name, name of the company or property if applicable, telephone, mobile, and email); and,
 - (f) Summary of best management practices that will be used.
 - (g) A summary of communications with the affected Tribe's water quality staff regarding the project, including any concerns or issues.
 - (h) Notify Blackfeet and EPA at least 7 days before the completion of construction and operations begin.
- xxx.** Point source discharges may not occur: (1) in fens, bogs or other peatlands; (2) within 100 feet of the point of discharge of a known natural spring source; or (3) hanging gardens.
- xxxi.** Except as specified in the application, no debris, silt, sand, cement, concrete, oil or petroleum, organic material, or other construction related materials or wastes shall be allowed to enter into or be stored where it may enter into waters of the U.S.
- xxxii.** Silt fences, straw wattles, and other techniques shall be employed as appropriate to protect waters of the U.S. from sedimentation and other pollutants.
- xxxiii.** Water used in dust suppression shall not contain contaminants that could violate water quality standards.
- xxxiv.** Erosion control matting that is either biodegradable blankets or loose-weave mesh must be used to the maximum extent practicable.
- xxxv.** All equipment used in waters of the U.S. must be inspected for fluid leaks and invasive species prior to use on a project. All fluid leaks shall be repaired and cleaned prior to use or when discovered, or if the fluid leak can't be repaired, the equipment shall not be used on site. Equipment used in waters with the possibility of aquatic nuisance species infestation must be thoroughly cleaned and effectively decontaminated before they are used on the project.

- xxxvi.** Vegetation should be protected except where its removal is necessary for completion of the work. Locations disturbed by construction activities should be revegetated with appropriate native vegetation in a manner that optimizes plant establishment for the specific site.
- xxxvii.** Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching, as necessary. Where practical, stockpile weed- seed-free topsoil and replace it on disturbed areas. All revegetation materials, including plants and plant seed shall be on site or scheduled for delivery prior to or upon completion of the earth moving activities.
- xxxviii.** Activities may not result in any unconfined discharge of liquid cement into waters of the U.S. Grouting riprap must occur under dry conditions with no exposure of wet concrete to the waterbody.
- xxxix.** Activities that may result in a point source discharge shall occur during seasonal low flow or no flow periods to the extent practicable.
- xl.** The placement of material (discharge) for the construction of new dams is not certified, except for stream restoration projects.
- xli.** Any decision-maker that is required under 7.0 of the CGP to prepare a Stormwater Pollution Prevention Plan (SWPPP), must submit an electronic copy of the SWPPP to the Blackfeet Environmental Office at least 30 days before construction starts for review and approval. Any modifications to the SWPPP should be submitted to the Blackfeet Environmental Office.
- xlii.** Any Decision-maker required under Part 1.4 of the CGP to submit a Notice of Intent (NOI) to EPA for coverage under the CGP, must submit a copy of the NOI to the Blackfeet Environmental Office within three business days of submittal to EPA. Additionally, a copy of the Notice of Termination (NOT) must be provided within three business days after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT must be provided to the following address Gerald Wagner, Blackfeet Environmental Office Director.
62 Hospital Drive, Browning, MT 59417
beo.director@gmail.com
- b. Fort Peck Tribes.**
- i.** Any Decision-maker required under Part 1.4 of the CGP to submit a Notice of Intent (NOI) to EPA for coverage under the CGP, must submit a copy of the NOI to the Fort Peck Tribes Office of Environmental Protection within three business days of submittal to EPA. Additionally, a copy of the Notice of Termination (NOT) must be provided within three business days after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT must be provided to the following address:
Martina Wilson, Office of Environmental Protection Director
501 Medicine Bear Rd Poplar, MT 59255
martinawilson@fortpecktribes.net
- ii.** Any Decision-maker that is required under Part 7.0 of the CGP to prepare a Stormwater Pollution Prevention Plan (SWPPP), must submit an electronic copy of the SWPPP to the Fort Peck Tribes Office of Environmental Protection at least 30 days before construction starts for review and approval. Any modifications to the

SWPPP should be submitted to the Fort Peck Tribes Office of Environmental Protection.

- iii. Any Decision-maker that is required under Part 8.0 of the CGP to submit a weekly, bi-weekly, and/or annual report to EPA, must submit an electronic copy of the annual report to the Fort Peck Tribes Office of Environmental Protection within three business days after submittal to EPA.

9.9 EPA REGION 9

9.9.1 CAR10I000 Indian country within the State of California

a. Morongo Band of Mission Indians

- i. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be submitted (either mailed or electronically) to the MEPD no less than thirty (30) days before commencing construction activities:
 - Morongo Band of Mission Indians
 - Environmental Protection Department
 - 12700 Pumarra Road
 - Banning, CA 92220
 - Email: epd@morongo-nsn.gov
- ii. Copies of the Notice of Intent (NOI) and the Notice of Termination (NOT) must be sent to the MEPD at the same time they are submitted to EPA.
- iii. Operators of an "emergency-related project" must submit notice to the MEPD within twenty- four (24) hours after commencing construction activities.
- iv. Spills, leaks, or unpermitted discharges must be reported to the MEPD within twenty-four (24) hours of the incident, in addition to the reporting requirements of the CGP.
- v. Projects utilizing cationic treatment chemicals (as defined in Appendix A of the CGP) within the Morongo Reservation are not eligible for coverage under this certification of the CGP.
- vi. Facilities covered under the CGP will be subject to compliance inspections by MEPD staff, including compliance with final site stabilization criteria prior to submitting an NOI **[EPA assumes this intended to refer to an NOT]**.

9.9.2 GUR100000 Island of Guam

- a. For purposes of this Order, the term "Project Proponent" shall mean U.S. Environmental Protection Agency, and its agents, assignees, and contractors.
- b. For purposes of this Order, the permit "Operator" shall mean any party associated with a construction project that meets either of the following two criteria:
 - i. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications (e.g. in most cases this is the owner of the site); or
 - ii. The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the permit; in most cases this is the general contractor of the project).

Subcontractors generally are not considered operators for the purposes of this permit.

- c. The Project Proponent shall enforce the proposed 2022 CGP and ensure that the Operator complies with the conditions of the permit at all times.¹⁰⁷ (40 CFR §121.11(c))
- d. All submittals required by this Order shall be sent to the Guam Environmental Protection Agency Attn: 401 Federal Permit Manager, Non-Point Source Program, EMAS Division, 3304 Mariner Avenue, Bldg. 17-3304, Barrigada, Guam 96913, AND via email to jesse.cruz@epa.guam.gov. The submittals shall be identified with WQC Order #2021- 04 and include the COP Permit Number, certifying representative's name, title, mailing address and phone number. (§51060)(4) 2017 GWQS)
- e. A copy of the Operator's signed Stormwater Pollution Prevention Plan (SWPPP) and signed Notice of Intent (NOI) and Notice of Termination (NOT) submitted to EPA for review and approval, shall concurrently be submitted to Guam EPA, consistent with condition A4. Coordination with Guam EPA is encouraged when the receiving water(s) for the proposed discharge is/are being identified. (§10105.B.5.d.) GSESCR; (§51060)(4) 2017 GWQS)
- f. The Operator must comply with the conditions and requirements set forth in 22 GAR 10, Guam Soil Erosion and Sediment Control Regulations (GSESCR).
- g. Before submitting the NOT to EPA, Operators shall comply with GSESCR regulations at §10105.B10. (Stabilization of Affected Areas) and §10107.B. (Final Inspection and Approval)
- h. All operators/owners shall comply with the general design criteria for best management practices (BMPs) acceptable for meeting the Construction and Post-construction stormwater criteria in the 2006 CNMI and Guam Stormwater Management Manual. (E.O. 2012-02)
- i. Operating reports and monitoring and analytical data (e.g. Discharge Monitoring Reports (DMRs), follow-up monitoring reports, Exceedance Reports for Numerical Effluent Limits, etc.) submitted to EPA shall be concurrently submitted to Guam EPA, consistent with condition A4. §51060)(4) 2017 GWQS
- j. The Operators who install a sediment basin or similar impoundment shall maintain the storage capacity of five thousand cubic feet {5,000 cu. ft.) per acre of project area tributary to the basin. (§10105.B.5.i.) GSESCR
- k. (1) This Order does not authorize EPA to qualify Rainfall Erosivity Waivers to stormwater discharges associated with small construction activities (i.e. 1-5 acres). Operators are required to apply for an NOI for those projects eligible for coverage under the proposed 2022 CGP. An Erosion and Sediment Control Plan is required for every site that would be covered by the proposed 2022 CGP. (22 GAR §10104) The average annual rainfall for Guam and the CNMI exceeds 100 inches per year in many locations. These climatic conditions combined with the region's unique limestone, volcanic geologic formations, sensitive water resources and significant land

¹⁰⁷ By incorporating this condition into the permit, EPA acknowledges receipt of Guam's certification conditions.

development forces make stormwater discharges a very significant environmental and economic issue. (2006 CNMJ/Guam Stormwater Management Manual) E.O. 2012-02

(2) This Order does not authorize EPA to approve a Sediment TMDL Waiver for the Ugum River. Operators of construction activities eligible for a TMDL Waiver in lieu of coverage under the proposed 2022 CGP, shall submit a complete and accurate waiver certification as described in C.2., Appendix C - (Small Construction Waivers) to Guam EPA per condition A4., prior to notifying EPA of its intention to obtain a waiver. §51060)(4) 2017 GWQS

- l.** The Project Proponent shall submit to Guam EPA a signed Statement of Understanding of Water Quality Certification Conditions.¹⁰⁸ (see Attachment A for an example) per condition A4. §51060)(4) 2017 GWQS
- m.** The Operator shall comply with applicable provisions of the Guam Pesticides Act of 2007 (10 GCA Chapter 50) and implementing regulations at Title 22 GAR Chapter 15 for any use and application of pesticides.
- n.** Point source discharge(s) to waterbodies under the jurisdiction of Guam EPA must be consistent with the antidegradation policy in 22 GAR §5101(b).
- o.** The operator shall carry out construction activities in such a manner that will not violate Guam Water Quality Standards (GWQS). Proposed 2022 CGP discharges are prohibited as follows:
 - i.** In Marine Waters, Category M-1 Excellent 22 GAR Chapter 5 §5102(b)(I); and
 - ii.** In Surface Waters, Category S-1 High 22 GAR Chapter 5 §5102(c)(I)
- p.** In addition to complying with construction dewatering requirements in Part 2.4 and site inspection requirements for all areas where construction dewatering is taking place in Part 4 of the proposed 2022 CGP, Operators shall comply with all dewatering conditions and requirements set forth in 22 GAR 7, Water Resources Development and Operating Regulations, to include securing Guam EPA permits prior to any dewatering activities.
- q.** The Operator shall develop and implement a Spill Prevention and Containment Plan.
- r.** The Operator shall have adequate and appropriate spill response materials on hand to respond to emergency release of oil, petroleum or any other material into waters of the territory.
- s.** Any unpermitted discharge into territorial waters or onto land with a potential for entry into territorial waters, is prohibited. If this occurs, the Operator shall immediately take the following actions:
 - i.** Cease operations at the location of the violation or spill.
 - ii.** Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.
 - iii.** Notify Guam EPA of the failure to comply. All petroleum spills shall be reported immediately to:

¹⁰⁸ By incorporating this condition into the permit, EPA acknowledges receipt of Guam's certification conditions.

- (a) Guam's Emergency 911 system
 - (b) Guam EPA's 24-Hour Spill Response Team at (671) 888-6488 or during working hours (671) 300-4751
 - (c) US Coast Guard Sector Guam (671) 355-4824
 - (d) National Response Center 1-800-424-8802
- iv.** Submit a detailed written report to Guam EPA within five days of noncompliance that describes the nature of the event corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.
- f.** Compliance with this condition does not relieve the Operator from responsibility to maintain continuous compliance with the terms and conditions of this Order or the resulting liability from failure to comply.
- u.** Submittal or reporting of any of this information does not provide relief from any subsequent enforcement actions for unpermitted discharges to waters of the United States.
- v.** This Order is valid for five (5) Years from Date of Certification, unless otherwise approved by the Guam EPA Administrator.
- w.** The Operator shall be required to adhere to the current Guam Coral Spawning Moratorium dates for both hard and soft corals where in-water activities and/or construction activity in close proximity with marine waters may impair water quality. These dates can be obtained from the Guam Department of Agriculture, Division of Aquatic and Wildlife Resources, or the NOAA NMFS Pacific Islands Regional Office Habitat Conservation Division.
- x.** The Operator shall provide notice to Guam EPA consistent with Condition A4:
- (a) Immediately upon discovery of noncompliance with the provisions of this Order.
- y.** A Notice of Violation/Work Stop Order will be issued if certification conditions are not adhered to or when significant or sustained water quality degradation occurs. Work or discharge shall be suspended or halted until the Operator addresses environmental problems/concerns to Guam EPA's satisfaction. Guam EPA may also levy penalties and fines (10 GCA §47111). Invalidity or enforceability of one or more provisions of this certification shall not affect any other provision of this certification.

9.10 EPA REGION 10

9.10.1 IDR10I000 Indian country within the State of Idaho, except Duck Valley Reservation lands (see Region 9)

a. Shoshone-Bannock Tribes

- i.** Copies of the following information must be sent to the SBT-WRD:
 - (a) Notice of Intent (NOI)

The Notice of Intent shall be forwarded to the SBT-WRD within thirty (30) days of receipt of submitting NOI to the USEPA.

Shoshone-Bannock Tribes Water Resources Department
 PO Box 306 Pima Drive
 Fort Hall, ID 83203 Phone: (208) 239-4582
 Fax: (208) 239-4592
 Or Email ctanaka@sbttribes.com

- b. If requested by the SBT-WRD, the permittee must submit a copy of the SWPPP to SBT-WRD within fourteen (14) days of the request.

9.10.2 ORR10I000 Indian country within the State of Oregon, except Fort McDermitt Reservation lands (see Region 9)

a. Confederated Tribes of Coos, Lower Umpqua, and Siuslaw

- i. No activities allowed under the CGP shall result in the degradation of any Tribal waters or affect resident aquatic communities or resident or migratory wildlife species at any life stage.
- ii. The operator shall be responsible for achieving compliance with CTCLUSI Water Quality Standards and all other tribal codes, regulations, and laws as they exist at the time that the permit is submitted.
- iii. The operator shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to the CTCLUSI Water Quality Program before, or at the same time as, it is submitted to EPA.
- iv. The operator shall be responsible for submitting all Stormwater Pollution Prevention Plans (SWPPP) required under this general permit to the CTCLUSI Water Quality Program for review and determination that the SWPPP is sufficient to meet Tribal Water Quality Standards, prior to the beginning of any discharge activities taking place.
- v. The operator shall be responsible for reporting an exceedance to Tribal Water Quality Standards to the CTCLUSI Water Quality Program at the same time it is reported to EPA.
- vi. The THPO will be provided 30 days to comment on the APE as defined in the permit application.
- vii. If the project is an undertaking, a cultural resource assessment must occur. All fieldwork must be permitted by the THPO (as appropriate), conducted by qualified personnel (as outlined by the Secretary of Interior's Standards and Guidelines; http://www.nps.gov/history/local-law/arch_stnds_O.htm) and documented according to Oregon Reporting Standards (Reporting_Guidelines.pdf) (oregon.gov). The resulting report must be submitted to the THPO and the THPO must concur with the finding of effect and recommendations before any ground disturbing work can occur. The THPO requires 30 days to review all reports.
- viii. The operator must obtain THPO concurrence in writing. If historic properties are present, this written concurrence will outline measures to be taken to prevent or mitigate adverse effects to historic properties.

b. Confederated Tribes of the Umatilla Indian Reservation

- i. The operator shall be responsible for achieving compliance with the

Confederated Tribes of the Umatilla Indian Reservation's (CTUIR) Water Quality Standards.

- ii. The operator shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to the CTUIR Water Resources Program at the address below, at the same time it is submitted to EPA.
- iii. The operator shall be responsible for submitting all Stormwater Pollution Prevention Plans (SWPPP) required under this general permit to the CTUIR Water Resources Program for review and determination that the SWPPP is sufficient to meet Tribal Water Quality Standards, prior to the beginning of any discharge activities taking place.
- iv. The operator shall be responsible for reporting an exceedance to Tribal Water Quality Standards to the CTUIR Water Resources Program at the same time it is reported to EPA.

Confederated Tribes of the Umatilla Indian Reservation
Water Resources Program
46411 Timíne Way
Pendleton, OR 97801
(541) 429-7200

- v. The THPO will be provided 30 days to comment on the APE as defined in the permit application.
- vi. If the project is an undertaking, a cultural resource assessment must occur. All fieldwork must be permitted by the Tribal Historic Preservation Office (as appropriate), conducted by qualified personnel (as outlined by the Secretary of Interior's Standards and Guidelines; http://www.nps.gov/history/local-law/arch_stnds_0.htm) and documented according to Oregon Reporting Standards (Reporting_Guidelines.pdf (oregon.gov)). The resulting report must be submitted to the THPO and the THPO must concur with the finding of effect and recommendations before any ground disturbing work can occur. The THPO requires 30 days to review all reports.
- vii. The operator must obtain THPO concurrence in writing. If historic properties are present, this written concurrence will outline measures to be taken to prevent or mitigate adverse effects to historic properties.

9.10.3 WAR10F000 Areas in the State of Washington, except those located on Indian country, subject to construction activity by a Federal Operator

- a. For purposes of this Order, the term "Project Proponent" shall mean those that are seeking coverage under this permit, and its agents, assignees and contractors.
- b. The Federal Agency shall mean the US Environmental Protection Agency. The Federal Agency shall enforce the permit and ensure that the Project Proponent complies with the conditions of the permits at all times.
- c. Failure of any person or entity to comply with this Certification may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Certification.
- d. The Certification conditions within this Order must be incorporated into EPA's final NPDES permit. Per 40 CFR 121.10(a), all certification conditions herein that satisfy the

requirements of 40 CFR 121.7(d) must be incorporated into the permit. Per 40 CFR 121.10(b), the permit must clearly identify all certification conditions.

- e. This Certification does not authorize exceedances of water quality standards established in chapter 173-201A WAC.
- f. Discharges from construction activity must not cause or contribute to violations of the Water Quality Standards for Surface Water of the State of Washington (chapter 173-201A WAC), Ground Water Quality Standards (chapter 173-200 WAC), Sediment Management Standards (chapter 173-204 WAC), and standards in the EPA's Revision of certain Federal water quality criteria applicable to Washington (40 CFR 131.45). Discharges that do not comply with these standards are prohibited.
- g. Prior to discharge of stormwater and non-stormwater to waters of the State, the Permittee must apply all known, available, and reasonable methods of prevention, control, and treatment (AKART). This includes the preparation and implementation of an adequate Stormwater Pollution Prevention Plan (SWPPP), with all appropriate Best Management Practices (BMPs) installed and maintained in accordance with the SWPPP and the terms and conditions of the permit.
 - i. BMPs must be consistent with:
 - (a) The Stormwater Management Manual for Western Washington (most current approved edition at the time this permit was issued), for sites west of the crest of the Cascade Mountains; or
 - (b) The Stormwater Management Manual for Eastern Washington (most current approved edition at the time this permit was issued), for sites east of the crest of the Cascade Mountains; or
 - (c) Revisions to either manual, or other stormwater management guidance documents or manuals which provide equivalent level of pollution prevention, that are approved by Ecology and incorporated into this permit in accordance with the permit modification requirements of WAC 173-226-230. (For purposes of this section, the stormwater manuals listed in Appendix 10 of the Phase I Municipal Stormwater Permit are approved by Ecology); or
 - (d) Documentation in the SWPPP that the BMPs selected provided an equivalent level of pollution prevention, compared to the applicable stormwater management manuals, including:
 - The technical basis for the selection of all stormwater BMPs (scientific, technical studies, and/or modeling) that support the performance claims for the BMPs being selected.
 - An assessment of how the selected BMP will satisfy AKART requirements and the applicable federal technology-based treatment requirements under 40 CFR part 125.3.
 - ii. An adequate SWPPP must include a narrative and drawings. All BMPs must be clearly referenced in the narrative and marked on the drawings. The SWPPP

The Stormwater Management Manuals for Eastern and Western Washington can be found at: <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Stormwater-manuals>.

narrative must include documentation to explain and justify the pollution prevention decisions made for the project. Documentation must include:
 (a) Information about existing site conditions (topography, drainage, soils, vegetation, etc.).

(b) Potential erosion problem areas.

(c) The 13 elements of a SWPPP, including BMPs used to address each element. Unless site conditions render the element unnecessary and the exemption is clearly justified in the SWPPP, the 13 elements are as follows:

- Preserve Vegetation/Mark Clearing Limits
- Establish Construction Access
- Control Flow Rates
- Install Sediment Controls
- Stabilize Soils
- Protect Slopes
- Protect Drain Inlets
- Stabilize Channels and Outlets
- Control Pollutants
- Control Dewatering
- Maintain BMPs
- Manage the Project
- Protect Low Impact Development (LID) BMPs

h. Discharges of stormwater and authorized non-stormwater must be monitored for turbidity (or transparency) and, in the event of significant concrete work or engineered soils, pH must also be monitored. As applicable based on project specifics, monitoring, benchmarks, and reporting requirements contained in Condition S.4. (pp.10-16) of the Washington State Construction Stormwater General Permit, effective January 1, 2021, shall apply.

i. Discharges to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, phosphorus, or pH must comply with the following numeric effluent limits:

Parameter identified in 303(d) listing	Parameter Sampled	Unit	Analytical Method	Numeric Effluent Limit
<ul style="list-style-type: none"> • Turbidity • Fine Sediment • Phosphorus 	Turbidity	NTU	SM2130	25 NTUs at the point where the stormwater is discharged from the site.
High pH	pH	su	pH meter	In the range of 6.5 – 8.5

All references and requirements associated with Section 303(d) of the Clean Water Act mean the most current EPA-approved listing of impaired waters that exists on the

effective date of the permit, or the date when the operator's complete permit application is received by EPA, whichever is later.

The EPA approved WQ Assessment can be found at: <https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d>

- j.** Discharges to a waterbody that is subject to a Total Maximum Daily Load (TMDL) for turbidity, fine sediment, high pH, or phosphorus must be consistent with the TMDL.
 - i.** Where an applicable TMDL sets specific waste load allocations or requirements for discharges covered by this permit, discharges shall be consistent with any specific waste load allocations or requirements established by the applicable TMDL.
 - ii.** Where an applicable TMDL has established a general waste load allocation for construction stormwater discharges, but no specific requirements have been identified, compliance with this permit will be assumed to be consistent with the approved TMDL.
 - iii.** Where an applicable TMDL has not specified a waste load allocation for construction stormwater discharges, but has not excluded these discharges, compliance with this permit will be assumed to be consistent with the approved TMDL.
 - iv.** Where an applicable TMDL specifically precludes or prohibits discharges from construction activity, the operator is not eligible for coverage under this permit.

Applicable TMDL means a TMDL for turbidity, fine sediment, high pH, or phosphorus which has been completed and approved by EPA as of the effective date of the permit, or prior to the date of the operator's complete application for permit coverage is received by EPA, whichever is later.

- k.** Discharges to waters of the state from the following activities are prohibited:
 - i.** Concrete wastewater.
 - ii.** Wastewater from washout and clean-up of stucco, paint, form release oils, curing compounds and other construction materials.
 - iii.** Process wastewater as defined by 40 Code of Federal Regulations (CFR) 122.2.
 - iv.** Slurry materials and waste from shaft drilling, including process wastewater from shaft drilling for construction of building, road, and bridge foundations unless managed to prevent discharge to surface water.
 - v.** Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance.
 - vi.** Soaps or solvents used in vehicle and equipment washing.
 - vii.** Wheel wash wastewater, unless managed to prevent discharge to surface water.
 - viii.** Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, unless managed according to appropriate controls described within the permit.
- l.** This Certification is valid until the expiration date including any administrative extension or termination date of the NPDES 2022 Construction General Permit. (40 CFR § 122.46)

- m. The Federal Agency shall enforce and the Project Proponent must comply with all the reporting and notification conditions of the NPDES 2022 Construction General Permit in order to comply with this Order and the certification conditions herein (40 CFR § 121.11).
- n. You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do all of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person (see addresses below). E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
<p>Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503</p> <p>Pollution Control Hearings Board 1111 Israel RD SW STE 301 Tumwater, WA 98501</p>	<p>Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608</p> <p>Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903</p>

CONTACT INFORMATION

Please direct all questions about this Order to:

Noel Tamboer
 Department of Ecology
 P.O. Box 47600
 Olympia, WA 98503-7600
 (360) 701-6171
noel.tamboer@ecy.wa.gov

9.10.4 WAR10I000 Indian country within the State of Washington

a. Lummi Nation

- i. This certification does not exempt and is provisional upon compliance with other applicable statutes and codes administered by federal and Lummi tribal agencies. Pursuant to Lummi Code of Laws (LCL) 17.05.020(a), the operator must also obtain a land use permit from the Lummi Planning Department as provided in Title 15 of the Lummi Code of Laws and regulations adopted thereunder.
 - ii. Pursuant to LCL 17.05.020(a), each operator shall develop and submit a Storm Water Pollution Prevention Plan to the Lummi Water Resources Division for review and approval by the Water Resources Manager prior to beginning any discharge activities.
 - iii. Pursuant to LCL Title 17, each operator shall be responsible for achieving compliance with the Water Quality Standards for Surface Waters of the Lummi
 - iv. Indian Reservation (Lummi Administrative Regulations [LAR] 17 LAR 07.010 through 17 LAR 07.210 together with supplements and amendments thereto).
 - v. Each operator shall submit a signed copy of the Notice of Intent (NOI) to the Lummi Water Resources Division at the same time it is submitted electronically to the Environmental Protection Agency (EPA) and shall provide the Lummi Water Resources Division the acknowledgement of receipt of the NOI from the EPA and the associated NPDES tracking number provided by the EPA within 7 calendar days of receipt from the EPA.
 - vi. Each operator shall submit a signed copy of the Notice of Termination (NOT) to the Lummi Water Resources Division at the same time it is submitted electronically to the EPA and shall provide the Lummi Water Resources Division the EPA acknowledgement of receipt of the NOT.
 - vii. Storm Water Pollution Prevention Plans, Notice of Intent, Notice of Termination and associated correspondence with the EPA shall be submitted to:
 - Lummi Natural Resources Department
 - ATTN: Water Resources Manager 2665 Kwina Road
 - Bellingham, WA 98226-9298
- b. Port Gamble S'Klallam Tribe**
- i. No discharge from the project site shall cause exceedances of Port Gamble S'Klallam Surface Water Quality Standards narrative or numeric criteria in Tribal waters. This includes activities outside of Tribal lands that occur upstream of Tribal waters.
 - (a) If any exceedance of these water quality standards occurred, the Natural Resources Department shall be notified immediately.
 - The Department shall additionally be provided a complete draft of the proposed corrective action within a reasonable timeframe and its approval will be required before any corrective action may be taken.
 - ii. Operators performing activities under the CGP that may affect Tribal waters will require a permit and shall submit their plans to the Port Gamble S'Klallam Natural Resources Department for review.
 - The Department has the right to require conditions outside of this Water Quality Certification prior to permit approval.

- iii. No activities allowed under the CGP shall result in the degradation of any Tribal waters or change in designated uses.
 - iv. No activities allowed under the CGP shall affect resident aquatic communities or resident/migratory wildlife species at any life stage.
 - Biological assessment methods used to determine the effect of an activity allowed under the CGP shall be approved by the PGST Natural Resources Department.
 - v. No activities allowed under the CGP shall be conducted within wetland and stream buffer zones, nor shall said activities affect in any way wetland or stream buffers, as defined by *PGST Law and Order Code 24.08.01(c)*.
 - vi. Concentrations for substances listed within the table in *Water Quality Standards for Surface Waters* sec. 7(7) shall not be exceeded by activities allowed under the CGP.
- c. Spokane Tribe of Indians**
- i. Pursuant to Tribal Law and Order Code (TLOC) Chapter 30 each operator shall be responsible for achieving compliance with the Surface Water Quality Standards of the Spokane Tribe. The operator shall notify the Spokane Tribe, Water Control Board (WCB) of any spills of hazardous material and;
 - ii. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the WCB at the same time it is submitted to EPA.
 - iii. The permittee shall allow the Tribal Water Control Board or its designee to inspect and sample at the construction site as needed.
 - iv. Each operator shall submit a signed copy of the Notice of Termination (NOT) to the WCB at the same time it is submitted to EPA
- The correspondence address for the Spokane Tribe Water Control Board is:
- Water Control Board c/o Brian Crossley PO Box 480
Wellpinit WA 99040
(509) 626-4409
crossley@spokanetribe.com
- d. Swinomish Tribe**
- i. Owners and operators seeking coverage under this permit must submit a copy of the Notice of Intent (NOI) to the DEP at the same time the NOI is submitted to EPA.
 - ii. Owners and operators must also submit to the DEP changes in NOI and/or Notices of Termination at the same time they are submitted to EPA.
 - iii. Owners and operators seeking coverage under this permit must also submit a Stormwater Pollution Prevention Plan to the DEP for review and approval by DEP prior to beginning any discharge activities.
- e. Tulalip Tribes**
- i. Submission of NOI: Copies of the Notice of Intent (NOI), Certification shall be submitted to the Tribe's Natural Resources Department to notify the Tribes of the

pending project and in order for the Tribes to review the projects potential impacts to endangered or threatened species.

- ii.** Submission of SWPPP: A copy of the Stormwater Pollution Plans (SWPPPs) shall be submitted to the Tribe's Natural Resources Department along with the NOI during the 30 day waiting period.
- iii.** Submission of Monitoring Data and Reports: The results of any monitoring required by this permit and reports must be sent to the Tribe's Natural Resources Department,
- iv.** The Tulalip Tribes are federally recognized successors in the interest to the Snohomish, Snoqualmie, Skykomish, and other allied tribes and bands signatory to the Treaty of Point Elliott.
- v.** including a description of the corrective actions required and undertaken to meet effluent limits or benchmarks (as applicable).
- vi.** Authorization to Inspect: The Tribe's Natural Resources Department may conduct an inspection of any facility covered by this permit to ensure compliance with tribal water quality standards. The Department may enforce its certification conditions.
- vii.** Submission of Inspection Reports: Inspection reports must be sent to the Tribe's Natural Resources Department, including a description of the corrective actions required and undertaken to meet effluent limits or benchmarks (as applicable).
- viii.** Permits on-site: A copy of the permit shall be kept on the job site and readily available for reference by the construction supervisor, construction managers and foreman, and Tribal inspectors.
- ix.** Project Management: The applicant shall ensure that project managers, construction managers and foreman, and other responsible parties have read and understand conditions of the permit, this certification, and other relevant documents, to avoid violations or noncompliance with this certification.
- x.** Emergency Spill Notification Requirements: In the event of a spill or the contractor shall immediately take action to stop the violation and correct the problem, and immediately report spill to the Tulalip Tribes Police Department (425) 508-1565. Compliance with this condition does not relieve the applicant from responsibility to maintain continuous compliance with the terms and conditions of this certification or the resulting liability from failure to comply.
- xi.** Discharges to CERCLA Sites: This permit does not authorize direct stormwater discharges to certain sites undergoing remedial cleanup actions pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) unless first approved by the appropriate EPA Regional office. In the case of the Tulalip Landfill site (WAD980639256), the Tulalip Tribes also requests notification by the facility and consultation with EPA prior to discharge. Contaminants at this site may include but are not limited to: dioxins, furans, arsenic, copper, lead, zinc, 4- methyl-phenol, Hex-CB, HPAHs, PCBs, PCE, cadmium, mercury, and LPAHs.
- xii.** Discharge-related Activities that have Potential to Cause an Adverse Effect on Historic Properties: Installation of stormwater controls that involve subsurface disturbances may potentially have an adverse impact on historic properties.

- xiii.** Procedures detailed in the permit shall be completed. Richard Young, of the Tulalip Tribe's Cultural Resources Department shall be contacted prior to initiating discharge-related activities that may have an impact on historic properties. His contact information is (360) 716-2652, ryoung@tulaliptribes-nsn.gov.
 - xiv.** Invalidation: This certification will cease to be valid if the project is constructed and/or operated in a manner not consistent with the project description contained in
 - xv.** the permit. This certification will also cease to be valid and the applicant must reapply with an updated application if information contained in the permit is voided by subsequent submittals.
 - xvi.** Modification: Nothing in this certification waives the Tulalip Tribes of Washington's authority to issue modifications to this certification if additional impacts due to operational changes are identified, or if additional conditions are necessary to protect water quality or further protect the Tribal Communities interest.
 - xvii.** incorporation by reference: This certification does not exempt the applicant from compliance with other statutes and codes administered by the Tribes, county, state and federal agencies.
 - xviii.** Compliance with Tribe's 1996 Water Quality Standards: Each permittee shall be responsible for controlling discharges and achieving compliance with the Tribe's Water Quality Standards.
 - xix.** Compliant with Tulalip Tribes Tidelands Management Policy: Permittee shall be responsible for achieving compliance with applicable sections of the Tulalip Tribe's Tidelands Management Policy. (Tulalip Tribal Code Title 8 Chapter 8.30).
 - xx.** Compliant with Tulalip Tribes Environmental Infractions: Permittee shall be responsible for achieving compliance with applicable sections of the Tulalip Tribe's Environmental Infractions. (Tulalip Tribal Code Title 8 Chapter 8.20).
 - xxi.** Where to Submit information and for further Coordination: All requested documents should be sent to the: Tulalip Tribes Natural Resources Environmental Department c/o Kurt Nelson and Valerie Streeter, 6704 Marine Drive, Tulalip, Washington 98271. For further 401 Certification coordination with the Tulalip Tribes Natural Resources Department, please contact Mr. Kurt Nelson (360) 716-4617 knelson@tulaliptribes-nsn.gov. 6406 Marine Dr., Tulalip WA 98271.
- f. Makah Tribe**
- i.** The permittee shall be responsible for meeting any additional permit requirements imposed by EPA necessary to comply with the Makah Tribe's Water Quality Standards if the discharge point is located within the Makah's U&A treaty reserved areas.
 - ii.** Each permittee shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to Makah Fisheries Management, Water Quality Department at the address listed below at the same time it is submitted to the EPA.

Makah Water Quality
Makah Fisheries Management (MFM)
ray.colby@makah.com

PO Box 115
Neah bay, WA 98357

- iii. All supporting documentation and certifications in the NOI related to coverage under the general permit for Endangered Species Act purposes shall be submitted to the Tribe's Habitat programs for their review.
 - iv. If EPA requires coverage under an individual or alternative permit, the permittee shall submit a copy of the permit to Assistant Fisheries Director, ray.colby@makah.com.
 - v. The permittee shall submit all Stormwater Pollution Prevention plan (SWPP) to MFM for review and approval prior to beginning any activities resulting in a discharge to Makah tribal waters.
 - vi. The permittee shall notify Ray Colby, ray.colby@makah.com (360) 645-3150 prior to conducting inspections at construction sites generating stormwater discharges to tribal waters.
 - vii. The operator shall treat dewatering discharges with controls necessary to minimize discharges of pollutants to surface waters, or ground waters, and from stormwater runoff onsite from excavations, trenches, foundations, or storage areas. To the extent feasible, at all points where dewatering is discharged, comply with the velocity dissipation using check dams, sediment traps, and grouted outlets.
- g. Puyallup Tribe of Indians**
- i. The permittee shall be responsible for meeting any additional permit requirements imposed by EPA necessary to comply with the Puyallup Tribe's antidegradation procedures.
 - ii. Each permittee shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to Char Naylor, Tribal Water Quality Manager at the following e-mail address: (char.naylor@puyalluptribe-nsn.gov) at the same time it is submitted to EPA.
 - iii. All supporting documentation and certifications in the NOI related to coverage under the general permit for Endangered Species Act purposes shall be submitted to Char Naylor, Tribal Water Quality Manager/Assistant Fisheries Director (char.naylor@puyalluptribe-nsn.gov) for review.
 - iv. If EPA requires coverage under an individual or alternative permit, the permittee shall submit a copy of the permit to Char Naylor at the email address listed above.
 - v. The permittee shall submit all stormwater pollution prevention plans to Char Naylor for review and approval prior to beginning any activities resulting in a discharge to Puyallup tribal waters.
 - vi. The permittee shall contact Brandon Reynon (Brandon.reynon@puyalluptribe-nsn.gov), Tribe's Historic Preservation Officer or Jennifer Keating (Jennifer.keating@puyalluptribe-nsn.gov), Tribe's Assistant Historic Preservation Officer regarding historic properties and cultural resources.
 - vii. To minimize the discharge of pollutants to groundwater or surface waters from stormwater that is removed from excavations, trenches, foundations, vaults, or

other storage areas, treat dewatering discharges with controls necessary to minimize discharges of pollutants. Examples of appropriate controls include sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, and filtration systems (e.g., bag or sand filters) that are designed to remove sediment.

To the extent feasible, utilize vegetated, upland areas of the site to infiltrate dewatering water before discharge. At all points where dewatering water is discharged, utilize velocity dissipation controls. Examples of velocity dissipation devices include check dams, sediment traps, riprap, and grouted riprap at outlets.

- viii.** The permittee shall provide and maintain natural buffers to the maximum extent possible (and/or equivalent erosion and sediment controls) when tribal waters are located within 100 feet of the boundaries. If infeasible to provide and maintain an undisturbed 100 foot natural buffer, erosion and sediment controls to achieve the sediment load reduction equivalent to a 100-foot undisturbed natural buffer shall be required.

Appendix C – Copy of NOI and EPA Authorization Email

INSERT COPY OF NOI AND EPA'S AUTHORIZATION EMAIL PROVIDING COVERAGE UNDER THE CGP

(TO FOLLOW WHEN PERMIT IS ACQUIRED)

Appendix D – Copy of Site and Dewatering Inspection Forms

INSERT COPIES OF SITE AND DEWATERING INSPECTION FORMS YOU WILL USE TO PREPARE
INSPECTION REPORTS

(Note: EPA has developed a sample site inspection and dewatering inspection form templates that CGP operators can use. The template is available at
<https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>)

Appendix E – Copy of Corrective Action Log

INSERT COPY OF CORRECTIVE ACTION LOG YOU WILL USE

(Note: EPA has developed a sample corrective action log that CGP operators can use. The form is available at <https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources>)

Appendix F – *Sample* SWPPP Amendment Log

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]
		INSERT DATE	

Appendix G – Sample Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION
STORMWATER POLLUTION PREVENTION PLAN

Project Number: _____

Project Title: _____

Operator(s): _____

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company: _____

Address: _____

Telephone Number: _____

Type of construction service to be provided: _____

Signature: _____

Title: _____

Date: _____

Appendix H – *Sample* Grading and Stabilization Activities Log

Date Grading Activity Initiated	Description of Grading Activity	Description of Stabilization Measure and Location	Date Grading Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated
INSERT DATE			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	INSERT DATE
INSERT DATE			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	INSERT DATE
INSERT DATE			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	INSERT DATE
INSERT DATE			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	INSERT DATE
INSERT DATE			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	INSERT DATE
INSERT DATE			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	INSERT DATE
INSERT DATE			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	INSERT DATE
INSERT DATE			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	INSERT DATE

Appendix J – Sample Delegation of Authority Form

Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the EPA's Construction General Permit (CGP), at the _____ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

_____ (name of person or position)
_____ (company)
_____ (address)
_____ (city, State, zip)
_____ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix G of EPA's CGP, and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix G.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

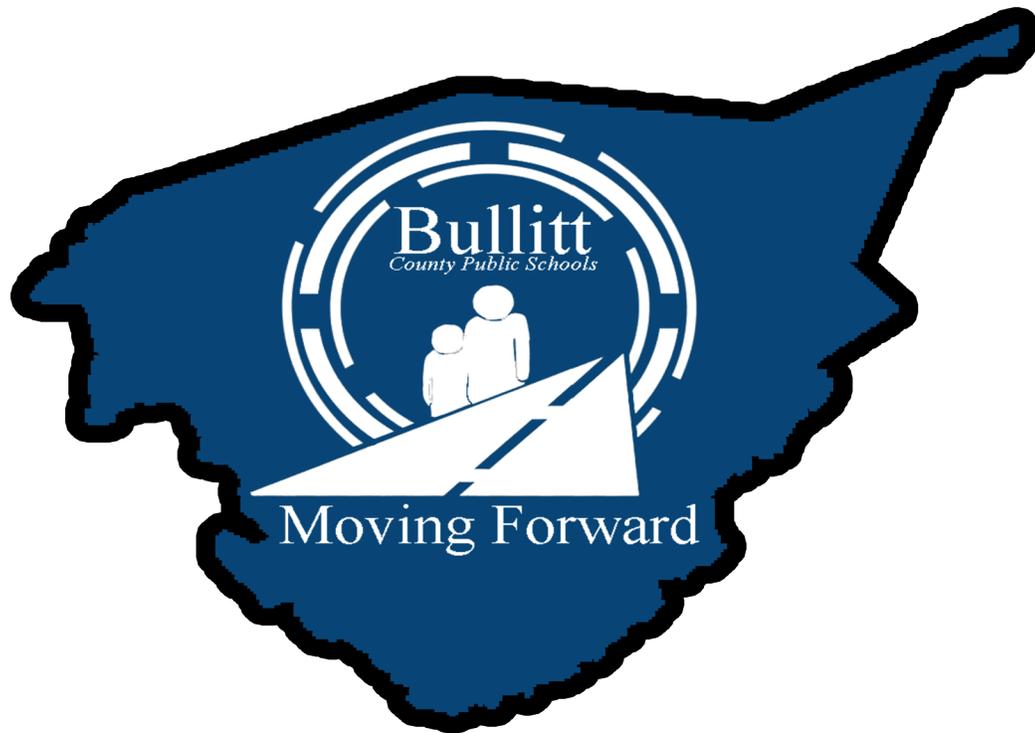
Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____



Bullitt County Public Schools
New Construction and Renovation Design Guidelines

Prepared by Bullitt County Public Schools

Updated: June 24, 2020

OVERVIEW

This document contains design guidelines and specifications for Bullitt County Public Schools for all new construction and renovation projects. These specifications have been developed as a collaborative cross-departmental effort in coordination with the Construction Inspector. In the broadest term, this document links the district staff with the architectural and engineering firms on all projects.

This document details district requirements and preferences ranging from parking lots and landscaping, to the building envelope, to interior finishes and the mechanical, electrical, and plumbing systems. These are minimum standards for the design of the project, and contain some, but not all, of the criteria pertinent to the design of a new building or renovation project. Where technical design criteria is lacking in this document, the architectural and engineering consultants shall follow industry (ASHRAE, NFPA, IECC, etc.) and KDE standards.

Based on the architects' and engineers' professional experience, they are encouraged to recommend in writing for the district's consideration - alternative products, systems, means, methods, etc. that add to the project's value. Under no circumstances will the architects or engineers deviate from the district's minimum design standards without prior consent of the Construction Inspector in writing.

This document is a snapshot of the current district design specifications. The document is continually reviewed, evaluated, and modified as required and as new technologies and products enter the market. The cover page will always indicate the date on which the latest review and revisions occurred. This document is an indispensable tool that will help BCPS staff provide this district with the quality facilities that are desired, required, and deserved for our students.

It is the obligation of the architectural and engineering firms to review this document and submit any questions to the Construction Inspector. During the design process for any project, the architectural and engineering firms will be required to work with the Construction Inspector to arrange design meetings once every two weeks. These design meetings may include district staff from the Facilities, Food Service, and Technology Departments, as well as any other district staff that may need to provide input during the design process.

Each architectural and engineering firm will be presumed to have reviewed this document, and included these items in the design and formal specifications of the project. After this document has been reviewed, a signed copy from the architect shall be submitted back to the BCPS Construction Inspector. This signed document confirms that the architectural firm has reviewed the document and understands that they are agreeing to follow BCPS design guidelines and specifications on the current project.

Acknowledgement

The BCPS Construction Design Guidelines and Specifications document has been a collaboration between the Construction Inspector and several Support Services departments. Special thanks to the following people:

- Part 3 Utilities: George Brock and Andrea Rock
- Part 4 Mechanical Systems: Sonny Arnold, Andrea Rock, and Joe Stottman
- Part 5 Plumbing: Donald Coomes and Rob Graham
- Part 6 Electrical Systems: George Brock, Joey Hodge, and Brad Marcum
- Part 7 Building Envelope and Exterior: Bret Highley, Andrea Rock and Kevin Reece
- Part 8 Interior: Bret Highley, George Brock,
- Part 9 Parking Lots and Landscaping: George Brock Part 10 Technology: Jim Jackson
- Part 11 Kitchens and Kitchen Equipment: Joe Stottman, David Hasty,

Table of Contents

Part 1 Building Design and Approval

Design Meetings and Board Approval

Part 2 Environmental Hazards

Part 3 Utilities

Part 4 Mechanical Systems

Basic Mechanical Requirements

Valves

Gauges and Thermometers

Geothermal or Traditional Boiler/Chiller Heat Pump System: Piping & Accessories

Water Source Heat Pumps

Air Handling Units

Rooftop Units

HVAC Ductwork

Testing, Adjusting, and Balancing

Building Automation System (BAS)

Other General HVAC Guidelines

Part 5 Plumbing

Plumbing Fixtures

Fire Suppression System

Potable Water Piping

Water Heaters & Boilers

Part 6 Electrical Systems

Basic Electrical Materials and Methods

Lighting

Wiring Devices

Standby Power Generator Systems

Transient Voltage Surge Suppressors

Panel Boards

Part 7 Building Envelope and Exterior

Doors

Ceilings

Windows

Roofing

Walls

Concrete

Vapor Barrier

Part 8 Interior

Restrooms

Interior Blocking

Hallways

Classrooms

Flooring

Part 9 Parking Lots and Landscapes

General

Playground Equipment

Part 10 Technology

Public Address and Master Clock Systems

Security System

Access Control

Video Surveillance

Digital Signage

Other Technology

Technology Raceway System

Horizontal Cabling

Submittals

Products

Faceplates

UTP Installation

Fiber Optic

Part 11 Kitchens and Kitchen Equipment

BCPS Acknowledgement Form

Bullitt County Public Schools: Construction Design Guidelines and Specifications

Part 1 Building Design and Approval

Design meetings and Board approval

- Once an architectural firm has been awarded a contract by Bullitt County Public Schools, design meetings will be arranged with the district's Facilities, Technology and Food Service departments and their key technicians and staff. These departments will be involved with the construction design process, and their input should be seriously considered in any design
- Once the project plans are finalized by the architects and engineers, the final plans will be submitted to the Bullitt County Public Schools Construction Inspector two (2) weeks before they are presented to the Board of Education for approval. Any issues that are discovered with the plans and/or changes that need to be made will need to be addressed before the plans are submitted to the Board for approval
- Use of any allowance money in all construction projects must be approved in writing and in advance by the BCPS Construction Inspector. The Construction Inspector will document and track all allowance expenditures. The Construction Inspector will maintain documentation on allowance expenditures, and periodically report on the various allowance amounts included in the contract and the amount remaining in each allowance
- As-built drawings and documents shall be submitted to owner within 180 days of acceptance of the building
- After being awarded the construction project, the General Contractor and his Sub Contractors will provide a 9-panel drug screen and criminal background check to BCPS for each worker. Once BCPS has both documents, then the worker will be issued a Photo ID badge, which MUST be worn at all times on the job site
- No tobacco, alcohol, or vapor products are allowed on school property. Anyone using these products will be removed from the site and not be allowed to return
- Firearms are prohibited on school grounds
- After being awarded the construction contract, the general contractor must submit a resume for both the project manager and site superintendent. Also, if requested, any subcontractor may be asked to submit resumes for their team leaders. BCPS has the right to reject any contractor leadership that does not meet our approval
- BCPS reserves the right to remove project leadership if BCPS standards are not followed
- All contractors are required to attend the Pre-construction meeting
- A minimum of 15 construction signs must be placed around the project site and maintained for the duration of the project. The signage must say:
 - BCPS badges are required
 - No Tobacco or Vapor products allowed on site
 - No weapons or firearms allowed on site
- All equipment that is demoed from the site is the property of BCPS. If BCPS does not want the equipment, then the general contractor must remove from the job site

- BCPS reserves the right to hold 3% of the retainage until the final punch list for the project has been completed

Part 2 Environmental Hazards

- Bullitt County Public Schools Facilities Department has the sole responsibility to document and identify any harmful conditions concerning any environmental hazards. The Facilities Department possesses updated records for all buildings owned by BCPS. The Director of Facilities or the Maintenance Supervisor shall provide these records to the Construction Inspector, architect, engineers, and any general contractor before a project begins
- The Architect will be responsible to inquire with the Facilities Department about any environmental hazards (past or present) at the project site.
- The architect is responsible for writing project specs to include all abatements, removal, and remediation work
- If an environmental hazard is discovered, a third-party company will be hired directly by Bullitt County Public Schools Facilities Department to monitor the air quality during the abatement or remediation process

Part 3 Utilities

- The General Contractor is responsible to coordinate with Construction Inspector and BCPS Facilities Department to make sure that all existing utility lines are marked by BUD and a licensed utility inspection service
- Any overhead OR underground utility lines or pipes that are damaged during construction are to be repaired by the General Contractor. The General Contractor is also responsible for any third-party damages (i.e. subcontractors)
- The General Contractor is responsible for requesting temporary electrical service and meter to serve any construction trailers, construction machinery, construction lighting, etc. The General Contractor is responsible for the electric bill for these services.
- For new construction, the General Contractor is responsible for the electric and natural gas (if applicable) for the new building until BCPS receives the certificate of occupancy for the building
- For new construction, the General Contractor is responsible for the water and sewer charges for the new building until BCPS receives the certificate of occupancy for the building
- BCPS has an energy management program. The General Contractor and all subcontractors are expected to be as efficient as possible when using the district's electrical service (i.e. turning off lights at the end of day or when no one is working in an area)
- Any outdoor cable relating to telephone, cable, fiber optic cable, etc. should be coordinated through the BCPS Technology Department

Part 4 Mechanical Systems

Basic Mechanical Requirements

- Minimum one year warranty or manufacturer's standard, whichever is greater
- Five year warranty on all compressors
- Two year warranty on Building Automation System (BAS)
- All warranty end dates clearly documented
- All closeout documentation (O&M manuals, record drawings, as built, warranty documents, etc.) shall be provided in hardcopy and electronically
- Trainings shall be videoed, and all training videos shall be submitted with the closeout documentation
- Trane controls are the district standard for HVAC systems. If necessary, Trane controls will be submitted as a preferred alternate
- No additional/auxiliary mechanical equipment shall be part of the specifications or purchased as part of the mechanical equipment package

Valves

- Valves 2 ½ "or smaller shall be ball valves
- Valves 3" or more shall be butterfly valves
- Provide sufficient valves throughout the building to isolate systems for drain down and repair

Gauges and Thermometers

- No mercury filled thermometers or thermostats shall be used

Geothermal or Traditional Boiler/Chiller Heat Pump System: Piping & Accessories

- All geothermal fields are preferred to have a 10 year warranty
- Avoid the use of iron piping; all hydronic piping should be HDPE
- Include loop/side stream filter on all building HVAC loops - geothermal or traditional boiler/chiller/cooling tower loops
- Contract shall provide closed loop water treatment for a minimum of 2 years
- Centralized pumping – preferred are Bell & Gossett pumps; no Armstrong pumps
- Variable Frequency Drives (VFDs) on any pumps or large equipment (i.e. cooling towers)
 - **See Building Automation section for additional information on VFDs**
- Geothermal Vaults should be gravity draining. If they require a sump pumps – the preference is to use Zoeller pumps
 - **Confirm that electricity has been run to the vault to make the pump operational**
- A five-year warranty shall be provided on the water tightness/seal on the geothermal vault(s)
- Make-up water on any geothermal loop; make up water shall have a meter and have a point tied back into the building automation system (BAS) for alarming purposes
- Cooling towers – no Dolphin systems

- Flush hookups shall be provided in the main mechanical room of the building and the geothermal field (in case system flushing by BCPS is needed)
- Geothermal Vaults
 - External shell to be constructed of one (1) inch thick HDPE with a cell classification of 345444 with a UV stabilizer of “C”
 - Purge port provided at supply/return header
 - Six (6) inch main (typical), supply below and return above
 - Butterfly valves
 - Circuits with supply below and return above
 - Access pad that is 10 feet by 5 feet 2 inches
 - Two access doors, with access covers; 30” minimum opening
 - 18 inch wide ladders to access vault

Water-Source Heat Pumps

- Heat pumps preferred to be high efficiency, 2-stage
- Provide all heat pumps with a uniform, **manufacturer-built filter rack** consisting only of MERV 8, 24X24X2 filters where possible. Filter section shall have a hinged door with gasket
- Units shall have a valve and hose connected to condensate drain in order to flush strainers
- One shared heat pump for every two classrooms is an acceptable design for efficiency and reducing mechanical equipment costs. Each room shall be provided with a room temperature sensor (thermostat) tied back to the BAS, averaging the two space temperatures
- NO HVAC UNITS SHALL BE INSTALLED ABOVE CEILINGS
- A floor mounted mop service sink provided on any mechanical mezzanines

Air Handling Units

- Dedicated outdoor air unit shall condition outdoor air before being distributed to the building. Outdoor air shall be supplied directly to the spaces at room neutral temperature
- Demand controlled ventilation

Rooftop Units

- Rooftop units preferred to be high efficiency
- Natural gas heat on any RTUs (when available) preferred over electric heat

HVAC Ductwork

- All return air shall be ducted
- All ductwork shall be externally insulated
- Provide access door in return ductwork for cleaning coils

Testing, Adjusting & Balancing

- Testing, Adjusting, & Balancing (TAB) Contractor shall contract directly with the Bullitt County Public Schools
- General Contractor and Architect shall submit shop drawings to TAB Contractor for coordination with the Mechanical, Controls, and Geothermal (if applicable) contractors
- TAB contractor shall be responsible for testing geothermal/water loops and all internal HVAC equipment

Building Automation System (BAS)

- Acceptable manufacturer is Trane (May have to be listed as preferred alternate)
- The BAS must seamlessly tie into the BCPS Tracer ES system
- Alternate controls, if selected, must be tied into the existing Tracer Summit front end
- Points shall include, but are not limited to:
 - Fan Status (heat pumps, energy recovery units, kitchen makeup air units and exhaust fans)
 - Supply air temperatures
 - Room temperatures
 - Leaving water temperature
 - Relative humidity (Coordinate with OWNER on locations for RH sensors)
 - Carbon Dioxide
 - Kitchen Refrigerator and Freezer Temperatures – and they shall be monitored through the building automation system (BAS)
 - Circulating pump suction pressure
 - Make up water for geothermal loops (gpm)
- Trends shall be set up for all points listed above
- Energy recovery unit(s) shall have a separate schedule for operation
- Classrooms shall be divided into zones with separate schedules for each zone Coordinate zoning with the district's Energy Manager
- Classrooms shall have adjustable thermostats with limits set through the BAS
- VFDs and control valves shall be furnished and installed by Controls Contractor
- Control dampers shall be furnished and installed by Controls Contractor
- **Electric and natural gas consumption shall be monitored through the BAS and tied into the district's Eco Rate program**
- **Install Ethernet drop at head end equipment for connection to district WAN**

OTHER GENERAL HVAC DESIGN GUIDELINES

- MDF/IDF Rooms are preferred to have a stand-alone air conditioning unit, monitored through the BAS. These HVAC units shall preferably be mini-split units or other solution that is not tied into the main building loop (in cases of geothermal or standard boiler/chiller loops)
- Food Storage Rooms are preferred to have a stand-alone HVAC unit (monitored through BAS) in order to keep the room below 70 degrees year round
- Ensure that manufacturer's recommended clearance or 30" (whichever is greater) is maintained around all HVAC units and units are easily accessible for maintenance

Part 5 Plumbing

Plumbing Fixtures

- Acceptable manufacturer is Delta, Zurn, T&S, or Central
- Delta faucets – Delta 86T1153 – preferred for restrooms
- Urinals shall have an integral strainer
- Restroom sinks are preferred to be white trough porcelain, with double faucets
- No sensor-controlled toilets or urinals
- Preferred urinal manufacturer is American Standard; no Briggs urinals
- Floor mounted water closets (American Standard)
- Each restroom shall have a floor drain, a hose bib, and cleanout accessibility
- Preferred manufacturers are American Standard, Royal Sloan, or Zurn for flush valves in restrooms
- Solid interceptors shall be Zurn
- Cleanouts and floor drains shall be Zurn
- Preferred manufacturer for mop sinks is Mustee
- Preferred manufacturer for RPZ backflow preventers is Watts
- Preferred manufacturer for mixing valves is Bradley
- Handles on flush valves. Consider water conservation features
- Bradley (or approved equal) wash stations shall be used in restrooms
- Water fountains should be stainless steel, not painted; Elkay is preferred
- Classroom sinks shall have shutoff valves for both hot and cold water
- Shutoffs shall be provided at every restroom main
- Preferred manufacturer is Sioux Chief for hammer arresters, installed where applicable; preference to have installed in restroom risers
- Provide a sufficient amount of mop sinks throughout the building
- Preferred manufacturer for pumps is Bell & Gossett
- Ball valves
- Manual toilets and faucets (history of expensive and unreliable sensors on bathroom fixtures)
- Trap primers are required for all floor drains
- Water softeners. Preferred brand is Kinetico
- Provide isolation valves to be able to shut off/isolate both hot and cold water to the kitchen, in case of repair or needed maintenance

Fire Suppression System

- Provide sufficient valves throughout the building to isolate systems for drain down and repair
- Flex heads on sprinklers
- All alarms shall be addressable type
- A minimum one-year monitoring service shall be included in the bid documents
- Fire alarm wiring shall be in RED conduit; no flex is acceptable for fire alarm wiring

Potable Water Piping

- Provide isolation valves for each restroom group
- All systems must drain completely
- Provide backflow preventers
 - Contractor to perform first year inspection and provide all necessary and required information to Louisville Water Company, Mt. Washington Water & Sewer, or the city of Lebanon Junction
- Piping shall be PEX pipe and fittings
- Schedule 40 Sewer Pipes; mandatory cleanouts every 100' (per code)

Water Heaters & Boilers

- Acceptable manufacturers are Aerco, Lochinvar, AO Smith, or approved equal
- Lochinvar is the preferred brand for water heaters
- Provide energy controls on water heaters. A temperature sensor for all DHW shall be provided on each water heater, which will tie into the building automation system (BAS)
- Water heaters and boilers shall be natural gas (when available). Explore possible tankless water heaters for efficiency
- Water heaters shall be glass lined or stainless, when using conventional water heaters. Tankless/on-demand water heaters are preferred when possible.

Part 6 Electrical Systems

Basic Electrical Materials and Methods

- All equipment and systems shall be covered by a minimum one-year warranty
- Electric meters shall have a pulse output to the building automation system (BAS) for monitoring of electric demand and consumption, and natural gas consumption (if applicable)
- All closeout documentation (O&M Manuals, record drawings, as built, etc.) shall be provided in hardcopy and electronically
- Trainings shall be videotaped, and training videos shall be submitted with close out documents
- Replacement of ALL outlet and switches, leaving no existing outlets or switches in place (RENOVATIONS)
- Installation of outlets for projectors, smartboards, and TVs in the classroom or any other location requiring an outlet for technology equipment
- Acceptable hand dryer manufacturers are Dayton or World push-button hand dryers, with a 25 second time limit
- Switchgear – preference for Siemens, Square D or Eaton
- Electric Panels – must match switchgear manufacturer
- Hallway lights should have a Leviton Broker Fork key
- use of MC cable where concealed in walls/above ceilings in spaces. Transitions to EMT in the corridors for homeruns. EMT would be used where exposed.
- Phase protection shall be provided on all new switchgear. If phase protection is not present on existing switchgear (and switchgear is not being replaced), then phase protection shall be installed

- Power studies shall be provided by a professional engineer employed by equipment manufacturer providing the electrical distribution equipment. Studies shall include a coordination study (required where a legally required emergency generator system is provided), fault current study and arc flash study. Arc flash labeling for each equipment shall indicate at a minimum, arc flash hazard warning, the incident energy at that location, the arc flash boundary, the level of PPE required, safe approach distances, safe working distances, and any other information recommended or required per NFPA 70E, OSHA and the NEC.
- All J-Box covers shall be marked with circuit numbers
- 3/4" conduit shall contain no more than three (3) circuits which is six (6) current carrying conductors consisting of three (3) phase and (3) neutral (grounded) conductors and (1) grounding. Minimum conduit size 3/4" and minimum box size depth 2 1/8" where new construction.
- All technology and electric conduit that is designed to be below the floor slab must be encased in a 6" to 12" concrete trench
- Pathways for Ethernet cabling must be kept free from other obstructions that would limit access to cabling once all above ceiling installations are complete
- Minimum of 6" of clearance from tray to ceiling is required
- DO NOT PAINT any data cabling
- Color code Device Boxes and Conduit as follows:
 - o Low Voltage (120) – Standard EMT Color
 - o Communication – Blue
 - o High Voltage (480) – Orange
 - o 277/480 Emergency – Green
 - o 120/208 Emergency – Yellow
- Fire alarm conduit must be red and boxes and must be labeled.
- All devices shall be labeled with clear adhesive labels on panel and circuit served from.
- Breakers shall be minimum of 20A.
- Wire shall be minimum of 12AWG, THHN/THWN.
- Load center shall not be acceptable. Panelboards shall utilize bolt-on breakers.
- 1200A and larger devices shall be provided with an arc flash reduction maintenance switch per the national electric CODE.
- Coordinate storm shelter requirements and backup power needs with architectural and ventilation design. Backup lighting is required for 1fc for 2-hrs. Ventilation is required. Where mechanical ventilation is provided, backup power for 2-hrs will be needed and must be protected within the storm shelter.
- No conduit shall be installed underground unless required for the application (floor boxes, islands, etc,) or specifically indicated as such in construction documents. No conduit shall be installed within concrete slabs. Where required, minimum bury shall be 24".

Lighting

- All outdoor lighting shall be LED; outdoor lighting should be controlled from a building automation system controller (provided by Controls Contractor) utilizing a dry contact output from the controller to control multiple 30A, mechanically held lighting contactors. A hand-off-auto switch should be provided to allow for manual override. Contactors should be Asco 918 or Square D.
- All indoor lighting shall be LED
- Local (non-centralized/non-networked), standalone lighting controls for each space meeting vacancy, occupancy and daylighting requirements of current adopted IECC/ASHRAE energy codes. Switch-plate style controls with integral occupancy/vacancy are also acceptable where

coverage is adequate.

- Standalone daylight dimming systems shall be provided where required by current adopted IECC/ASHRAE energy codes. Where provided, systems shall integrate with room controls already being provided.
- Avoid placing fixtures where it would be difficult to change the light bulbs or light fixtures
- No regular key switches for any lighting in the building; fork keys are acceptable
- CREE Brand light fixture are NOT ALLOWED.
- Spaces with code required multi-level lighting controls shall utilize dimming functionality with four preset lighting scenes at 25%, 50%, 75%, 100% and off. Small spaces shall have the option to utilize integral raise/lower/occupancy/vacancy switch plate controls. Multi level control switches shall be labeled/engraved with operation.
- Corridor and public space lighting shall utilize occupancy sensors with fork key manual control three- and four-way stations or manual switches shall be located in mechanical rooms. Plastic switch plate covers are not allowed.
- Ganged restroom lighting shall utilize occupancy sensors with fork key manual control at exterior of ganged restroom.
- Classrooms without exterior windows shall be provided with a minimum of (1) emergency light.
- Industrial strip fixtures shall have frosted lenses and wire guards.
- Restroom with tall vertical partition or wall systems shall be provided with linear wall mounted, vandal resistant light fixtures over the stalls.
- Adequate lighting shall be provided for the dumpster and kitchen staff parking location for morning kitchen activities. Confirm requirements with building layout and BCPS project manager.
- Three manufacturer spec is required for KDE. Cooper/Eaton, Lithonia/Acuity and Phillips are examples.

Wiring Devices

- Provide numerous maintenance receptacles around exterior of buildings
- Use panel circuit breakers in lieu of GFI outlets.
- Surge protection at all panels and branch circuits
- All devices shall be 20 amp minimum
- Device plates shall be unbreakable nylon
- Workrooms shall have sufficient amount of receptacles and workable space
- All mechanical rooms shall have sufficient space around switchgear and panels, and yellow lines marking the space according to code
- Devices shall be specification grade.

Legally Required and Optional Standby Emergency Power Systems

- Acceptable manufacturers are Cummins, Caterpillar and Kohler
- Generators are preferred to be natural gas. If natural gas is not available, then generators shall be diesel. No propane generators will be accepted
- Legally required standby systems shall be provided with means for connecting and utilizing a temporary power source while the permanent system is being serviced per NEC.
- Walk-in Coolers/Freezers, MDF/IDF rooms, gymnasium (and associated HVAC), and mechanical room shall be included on the generator service. Coordinate with Bullitt County Public Schools for complete list of items and equipment to include on generator

Surge Protective Devices

- Main switchgear must have SPD with external maintenance disconnect/operator. -Branch circuit panelboards for all low voltage receptacles and LED lighting shall have SPD protection. - Manufacturer of switchgear/switchboard and all panelboards shall be utilized to provide the SPD protection package.

Panel boards

- All panel board schedules shall be completely typed out
- Acceptable manufacturers are Siemens ,Square D or Eaton
- All panel covers shall be hinged

Additional Receptacles

- Receptacle located near loading area of the kitchen, outside the building. Receptacle shall be 30 amp 125/250 V (for district's freezer trailer, see owner for questions)
Coordinate with owner for specific location
- Receptacle located near parking area for the mobile science lab. Receptacle shall be 50 amp 125/250 V. **Coordinate with owner for specific location**

Part 7 Building Envelope and Exterior

Any existing structures that are required to be relocated for the construction or renovation process must be part of the contract.

Doors

- No Piano Hinges; preference for 3 pin hinges
- No vertical locks
- No closers on classroom doors
- Primus keying is the district standard, and **Il cores shall be stamped** per owner's instructions
- Door jambs will have a double 2x fire treated studs from floor to ceiling
- The head of the frame shall also have 2- 2x studs
- Welded metal frames on all doors, and wood doors on classrooms and office areas. Metal doors at mechanical rooms, as well as all exterior doors
- Mag locks are not to be used to hold doors "closed"
- Electric crash bars shall be used on exterior doors as specified by the district
- Pathways to door jamb shall have conduit stubbed above ceiling for door jambs, to provide access to electronic crash bars, hinges, etc.

- Metal underdeck, leaving no spaces for birds' nests

Part 8 Interior

Restrooms

- No wall tile in bathrooms. Painted block wall will be sufficient for restroom design
- Stall walls must be constructed with 6" CMC with 8" minimum and 12" maximum clearance from the floor
- Stall doors must be hollow metal with locks. They also must be 8" from the floor
- Floor shall be ceramic or porcelain tile with dark grout. The district prefers a medium to dark gray floor tile, with a dark gray or black grout. Or if color scheme dictates, a dark brown tile with dark brown grout. The baseboard shall be a less porous material, like a ceramic tile – to aid in cleaning and disinfecting the area.
- No VCT in restrooms
- Maximum restroom floor tile (ceramic) size is 6" x 6"; larger tiles shall not be accepted
- Toilet tissue holders, soap dispenser, towel dispensers are part of the contract and submittals must be submitted to owner for approval
- Paper towel dispensers (if used) shall be 11.5" X 9". Hand dryers are typically preferred instead of paper towel dispensers
- Acceptable hand dryer manufacturers are Dayton or World push-button hand dryers, with a 25 second time limit

Interior Blocking

- All blocking and backing must be fire treated lumber

Hallways

- Provide tack strips in hallways for student work
- Heavy-duty corridor lockers. Subject to compliance with requirements, provide Republic's Heavy Duty Corridor Locker or comparable product
 - Arrangement of lockers: 12 inches by 12 inches by 60 inches, double-tier
 - Door style: vented panel
 - Hinges: welded to door and attached to door frame with no fewer than two factory installed rivets per hinge that are completely concealed and tamper resistant when door is closed; fabricated to swing 180 degrees
 - Locks: attached combination

Classrooms

- Block provided for pencil sharpener, 40" from floor
- Provide tack strips in the front of the classrooms
- Provide tack strips in hallways
- Consult with BCPS Construction Inspector for the mounting heights of all dry erase boards, marker boards, white boards, tack strips, etc.
- Casework - Elementary Schools

- Preferred cubbies unit T8440-15, double tier, 30 total. Dimensions are 15”X52”X15”
- Each cubbie unit shall also house a 31”X45”X15” storage unit on top, with lockable doors and adjustable shelves for additional teacher storage space
- Preferred wardrobe cabinet unit T2592 for each classroom. Dimensions are 36”X84”X24”. The cabinet shall have lockable doors and adjustable shelves

Flooring

- At new and existing concrete floor slabs, floor covering contractor shall conduct a minimum of three (3) pull up tests, within seven (7) days of installation, per 10,000 ft² of floor covering(s) at field designated areas - randomly selected by the BCPS or project architect. Pull up test criteria will be defined by floor covering manufacturer to confirm manufacturer installation and warranty criteria. Floor covering installations that fail the random pull up test(s) will be subject to additional test(s) to the satisfaction of BCPS. **Materials that fail multiple tests will be subject to complete removal and replacement. Additional testing may be required subject to the architect and BCPS discretion**
- No calcium tests will be allowed
- Hand roll all new floors with a 90 lb. hand roller
- Contractors are responsible for cleaning all floor products according to manufacturer’s written recommendations. Any tile flooring like VCT shall then be sealed with two (2) coats of sealer, stripped (if necessary), and coated with a minimum of three (3) coats of wax
- Existing slab (renovations) will require a trowelable leveling compound, with 100% coverage

Part 9 Parking Lots and Landscaping

- No islands, raised curbs, etc. in the parking lots to interfere with snow removal or creation of additional grass to cut
- Consider low concrete curbing (gutter curb) for durability
- Parking lot striping must be approved by the maintenance department
- Minimal shrubbery: prefer trees (ground cover-lava rock, mulch, etc.)
- Provide allowance if school signage or message board to be relocated at existing school
- Any areas on the school property that are disturbed during the construction process must be returned to new condition. **No rock or construction debris will be accepted in the soil**
- Any undisturbed areas must be repaired with no less than 6” of manufactured topsoil before any sod or seeding and straw is put in place
- All grass areas directly in contact with the school, or in medians, shall be finished with sod. For additional direction, please confer with the architect and Construction Inspector

Playground Equipment

- All new play structures shall be installed as part of the contract

- For any renovation work, ALL playground equipment will be relocated by the General Contractor as part of the construction contract. Contractor shall also provide storage of all playground equipment if necessary
- Provide French drainage out of all playground areas
- Canopy designs must discourage birds nesting

Enclosures

- Transformers shall be enclosed with fencing or a brick enclosure
- Dumpsters locations shall have a pad, and also have required fencing or enclosure based on local city and health department codes

Part 10 Technology

Any amendments to items listed below shall be approved by the BCPS Technology Department

Public Address and Master Clock Systems

- Coordinate with BCPS staff
- Prefer that no clocks are installed in classrooms and hallways. Clocks are not required by KDE or district standards
- If clocks are installed in hallways, they shall be hardwired
- School wide PA system shall be installed independent of the phone system. Each room shall operate on a separate dedicated circuit.
- Emergency alarms (fire, tornado, etc.) should be sounded through the PA system
- Must connect to any existing analog Intercom systems and provide a path for a full network critical communication system
- Centralized, web based, credential protected (Microsoft Active Directory Interface) bell schedule that is flexible and easily adjusted from anywhere in the district
- BCPS Technology Department will provide specific pre-recorded instructions in the event of an emergency
- Provide an efficient way to automatically communicate the notification of an emergency
- Have the ability to provide pre-recorded instructions before and during an emergency
- Ability to log activity in the system, for awareness and evaluation after a crisis or a drill
- Provide technology offering Situational Awareness during an emergency with a check-in feature for each classroom
- Need to leverage existing data network and School Security Plan
- Budget considerations – Affordable, NO recurring charges, Single District Software Package

- If new school wide paging system (speakers and controls) is not installed, new installation shall incorporate IP Technology to the classroom and system must integrate with any existing speakers and controls that shall remain
- Training must be provided to end users (principals, key office and clerical personnel) and shall be videotaped for future trainings and reference
- Provide a **five-year Equipment Warranty** as specified by the manufacturer and one year for labor from date of completion
- Rauland - is the preferred paging manufacturer. May have to be specified as a preferred alternate in bid documents
- All technology and electric conduit that is designed to be below the floor slab must be encased in a 6" to 12" concrete trench

Security System

- Fire Alarm system shall be Edwards, Simplex or Honeywell and be compatible and tied into BCPS's central Fireworks Monitoring System. Security system shall be GE Interlogix, Bosch or Tyco and monitored by the local access control system and fire alarm system.
- System shall include standard door contacts and motion detectors
- Contractor must coordinate with BCPS for security system and access control design and installation
- Pathways and conduits must be provided in door frames and single gang boxes must be located at the exterior for access control devices
- Verify that addressing is correct
- Integrate security system with the district Access Control System with:
 - Armed Status output
 - Arm/Disarm input
 - Panic button interface

Access Control

- The power supply for owner supplied access control systems shall be mounted on the wall, just above the ceiling tile, above the doorway and controlled by an electrical switch. Coordinate with BCPS technology staff on power supply specifications and locations
- Conduit shall be routed down both sides of the door frame to the hinges with no obstructions inside of the conduit and install 18/2 low voltage cable inside. Remember: Take precautions to ensure the conduit is free of concrete or other debris and does not block the pathway
- Each leaf in a bank of doors shall have electric crash bars with conduit/pathways as stated above
- Doors will need 18/2 low voltage cable installed and connected from the crash bars to the hinges, and from the hinges to the power supply above ceiling
- (2) 1 1/2" conduits shall be installed from the reception desk and stubbed out above the ceiling
- Use only solid conduit and no flexible conduit

- Any empty conduits shall have a pull string installed, with no obstructions for pulling cable
- Install single gang boxes for owner supplied Aiphone speakers and electronic card readers
- Powered crash bars are preferred over mechanical strikes

Video Surveillance

- Contractor shall verify final rough-in locations with BCPS Technology Staff prior to installation
- Install single gang boxes, (with conduit stubbed out inside) flush with building exterior for outside security cameras. Coordinate with BCPS technology department for exact location and height, but in no circumstances shall it be located more than 12' above finished floor
- Data cables shall have Panduit style mini-com connectors (see Horizontal Cabling specifications) and terminated at conduit stub out location
- Put single gang box at least 2 feet away from downspouts or any other visual obstructions
- Interior security cameras shall have biscuit box with Panduit mini-com connector above ceiling where the camera will be located. (see Horizontal Cabling specifications) Place identifier on tile grid so the drop can be easily located at a future time

Digital Signage

- Power and data shall be installed together and located at 7' (field verify) above finished floor in corridors, and commons areas (reference Horizontal Cabling specifications)

Large Scale Displays

- Rear projection screens shall be installed in stage areas, where a projector can be mounted behind the screen
- Screens shall have a dual projection surface, where a projector can project on the front or the rear of the screen
- The screen shall not have any black header
- Screens shall have electronic controls (field verify) where the screen can be raised or lowered
- Boxes should be installed to prevent unauthorized access
- A/V controls should be located in areas as specified by BCPS Technology Department
- Electric for projectors should be installed at projector height
- Projector screens shall be properly sized for the area in which they will be used

Other Technology Notes:

- All TV, computer outlets, copiers, above ceiling outlets for technology, and projector outlets shall have TVSS protection
- Backer Board shall be installed on all walls of MDF/IDF locations. Backer boards shall

encompass the entire room

- Security, intercom/paging, access control and fire system head ends shall be installed in MDF
- Wiring closet size must meet KETS standards. (See 702 KAR 4:170 Facility Programming and Construction Criteria Planning Guide, pg. 57 c.3 Technology). MDF shall include common grounding bar
- Cable tray shall be routed to avoid ductwork and shall provide a minimum of 10" of clearance between the top of the tray and any other obstacles above
- Specify on ceiling grids where wireless drops are located – putting a drop number on the grid

- For large scale displays, verify with the owner the projector number, so the projector throw distance can be calculated for electrical and AV connections

Technology Raceway System

- Coordinate all data jack locations with the BCPS Technology Director and Technology staff
- All conduits shall be 1" minimum
- Preferred cable tray manufacturer is WBT, LLC. Performance Cable Tray
- Nylon bushings shall be used on all conduits that are stubbed out for data and telecommunications cable
- Velcro straps shall be used instead of nylon cable ties
- Install cable tray for runs with six or more drops
- J-Hooks should be installed every three feet or less for drops with five cables or less
- Use 4" bridle ring wire harness where J-Hooks can't be installed
- Provide common grounding for video/audio components
- Provisions shall be provided for wireless drops throughout the school
- Floor boxes and the conduit running to them must be encased in 6" of concrete

Horizontal Cabling

- Horizontal cabling is the portion of the cabling system that extends from the work area to the MDF/IDF. The horizontal cabling shall be configured in a star topology. The horizontal cabling includes the horizontal cables, the mechanically terminated jacks/inserts and the faceplates that the jacks/inserts snap into, in the work area
 - Horizontal Data cabling:
 - Category 6/6A UTP Cable from TR to Workstation
 - Category 6/6A Jacks
 - Category 6/6A Patch Cables
 - Faceplates
 - Installation and Termination Methods
 - Related Sections include the following:
 - 25150 Backbone Cabling Requirements

- All cable shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the Contract Documents shall be subject to the control and approval of BCPS Technology Department and BCPS Facilities Department. Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based on the acceptable manufacturers listed. Where "approved equal" is stated, equipment shall be equivalent in every way to that of the equipment specified, and subject to approval by BCPS Technology Department and BCPS Facility Management. Strictly adhere to all Category 6/6A installation practices when installing UTP data cabling. Installation may be subject to inspection by a certified technician, hired by BCPS, which will evaluate all work to at

regular intervals during installation to ensure installation and materials are installed properly and in accordance with the specifications in this document

- Materials and work specified herein shall comply with the applicable requirements of:
 - Panduit Certification Plus certified system requirements
 - ANSI/TIA/EIA - 568-C.1 Commercial Building Telecommunications Cabling Standard
 - ANSI/TIA/EIA - 569-C Commercial Building Standard for Telecommunications Pathway and Spaces
 - EIA/TIA-606-B Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
 - EIA/TIA-607-C Commercial Building Grounding and Bonding requirements for Telecommunications
 - NEMA - 250
 - Federal Communications Commission 47 CFR 68
 - BICSI Telecommunications Distribution Methods Manual (13th edition)
 - BICSI Customer Owned Outside Plant Design Manual (5th edition)
 - BICSI Telecommunications Cabling Installation Manual (2nd edition)
 - ANSI/NECA/BICSI 568-2006 Standard for Installing Commercial Building Telecommunications Cabling
 - ADA - Americans with Disabilities Act
 - NFPA 70 - 2011, including:
 - NEC - Article 770
 - NEC - Article 800
 - Underwriters Laboratory

SUBMITTALS

- Manufacturer's catalog sheets, specifications, and installation instructions for all cable, Category 6/6A inserts, faceplates, and jacks
- If providing pre-standards manufacturer system solution, submit installer/contractor certification documentation and channel certification information and requirements from manufacturer

PRODUCTS

- Cable Colors
 - Ethernet – Yellow
 - Paging – Green
 - Security – White
 - Access Control – Gray
 - Fire System – Red
 - HVAC – Purple

- Do NOT paint low voltage cable

- All trades must avoid paint overspray on all low voltage cable – especially Ethernet cable

- The color coding of pairs shall be:

Pair 1	W-BL; BL
Pair 2	W-O; O
Pair 3	W-G; G
Pair 4	W-BR; BR

- **Riser Category 6A Design Make:**
 - Panduit-TX6A 10Gig UTP (CMR Riser-PVC)
 - Part # PUR6AM04YL-UG (Yellow)
 - General GenSPEED 10,000 Category 6A Cable
 - Part # 7131822 (Yellow)
 - Hitachi (CMR Riser)
 - Part # 3022-8-YL3 – Supra 10G 6A (Yellow)

- **Riser Category 6 Design Make:**
 - Panduit-TX 6000 UTP (CMR Riser-PVC)
 - Part # PUR6004YL-UY (Yellow)
 - General GenSPEED 6000E series
 - Part # 7133900-PULL PAC (Yellow)
 - Hitachi (CMR Riser)
 - Part # 30024-8YL2

- **Plenum Category 6A Design Make:**
 - Panduit- TX6A 10Gig UTP (CMP Plenum-PVC Alloy)
 - Part # PUP6AM04YL-UG (Yellow)
 - General GenSPEED 10,000 Category 6A Cable
 - Part # 7131822 (Yellow)
 - Hitachi CMP
 - 30218-8-YL3 Supra 10G 6A (Yellow)

- **Plenum Category 6 Design Make:**
 - Panduit- TX6000 UTP (CMP Plenum-PVC Alloy)
 - Part # PUP6004YL-UY (Yellow)
 - General GenSPEED 6000E series
 - Part # 7131902 PULL PAC (Yellow)
 - Hitachi CMP
 - Part #30025-8YL2
- **CATEGORY 6 JACKS/PATCH PANELS FOR DATA NETWORK CABLING**
 - Physical Characteristics
 - Jacks shall meet Panduit Certification Plus TX System Warranty requirements
 - Shall be tested in accordance with ANSI/EIA/TIA-568-B.2-1 for Category 6 and ANSI/TIA-568-C.2 for Category 6A
 - Shall be modular RJ45 jacks that snap into user configurable faceplates meeting durability requirements specified in IEC 603-7. Provide impact resistant faceplates nylon with label and adhere to BCPS Technology standards as described in section 3.2, subsections A & B
 - Shall have 8 position, 8 conductor universal modular jack.
 - Termination cap is color coded for T568A and T568B wiring schemes
 - Exceeds all ANSI/EIA/TIA-568-C.2 Category 6A connector requirements including Powersum, ACR, ELFEXT and Return Loss.
 - Can be clearly identified with labels

 - Shall be designed to retain conductor pair twists through a forward motion termination
 - Designed employing a forward termination method that places no localized stress on critical internal components

 - Design Make
 - Panduit Mini-Com TX6A 10Gig UTP Modular Jack: CJ6X88TGYL.
 - Panduit Patch Panels: CPP48FMWBLY
 - Panduit GIGA-CHANNEL™ MINI-JACK TX-6™ Modular Jack
 - 100 OHM UTP PATCH CABLES for data network cabling

- Physical Characteristics
 - Patch Cable shall meet Panduit Certification Plus certified system requirements
 - Shall have stranded conductors and meet Category 6 performance criteria as defined by TIA 568-B.2-1 or Category 6A performance criteria as defined by TIA 568-C.2
 - Shall be ETL tested and approved for Category 6A component compliance
 - Shall exceed FCC part 68 Subpart F requirements
 - Lengths required will range from 4' to 20' as specified by customer
 - Jacket color shall be yellow

- Design Make: Panduit
 - UTPSP series Cat 6 Device and Rack
 - UTP28SP5YL (small diameter) Rack
 - UTP6A series (24 AWG) *Device End
 - UTP28X series (28 AWG/small diameter) *Racks

FACEPLATES

- Faceplates installed in office and classrooms shall be high impact thermoplastic flush mounted design
- Horizontal and Single gang faceplates shall be 0.22" x 2.75" x 4.5"
- Faceplates accept Mini-Com copper and fiber modules, designed to snap in and out
- Shall have label with cover to protect labeling and provide easy identification
- Design Make:
 - Panduit
 - Vertical faceplates CFPL series
 - Horizontal faceplates CFPH series
 - Blank module inserts: CMB series

UTP INSTALLATION

- UTP CABLE
 - All cabling shall be installed to meet Panduit Certification Plus certified system channel performance requirements. All wiring concealed in walls or soffits shall be installed in metal conduits.
 - All exposed wiring shall be installed in surface raceway.
 - All wiring above ceilings shall be installed in cable tray or open top cable hangers such as J-hooks.
 - Cable above accessible ceilings shall be supported 2' on center from cable support attached to building structure. When using J-hooks, the cable will be bundled every two feet. The cable will be secured with a hook and loop fastener at every J-hook.

There will be a maximum 1 inch of sag between J-hooks. The cable will be bundled tight and neat.

- Do not untwist cable pairs more than 0.5 in. when terminating.
- The Contractor shall be responsible for replacing all cables that do not pass Category 6/6A requirements.
- Maximum length of any horizontal cable shall be 290 feet. Work area outlets should be located so that the permanent link is not longer than 290 feet.
- Cable shall have no physical defects such as cuts, tears or bulges in the outer jacket. Cables with defects shall be replaced.

- Leave sufficient cable for 90° sweeps at all vertical drops.
- Follow specifications below for service loops. Neatly dress in excess cable but do not coil.
- Maintain the following clearances from EMI sources.
 - Power cable - 6"
 - Fluorescent Lights - 12"
 - Transformers - 36"

- Do not install security or other non-ethernet cable in common cable hangers
- Do not install Category 6/6A cable with tie wraps, lay cable in tray or cable support as to permit limited continuous contact between any 2 Category 6A cables running parallel to one another. The purpose of this is to limit the potential of interference and performance degradation
- Do not install Category 6/6A cable with more than 110N (25 lbs) pull force, as specified in EIA/TIA and BICSI practices. Utilize appropriate cable lubricant in sufficient quantity to reduce pulling friction to acceptable levels on: long pulls inside conduit, pulls of multiple cables into a single small bore conduit, on conduit runs greater than 100 lineal feet with bends of opposing directions, and in conduit runs that exceed 180 degrees of accumulated bends. Use of tensile rated cords (i.e. fishing line) should be used for difficult or questionable pulls - to judge to go/no-go condition of the conduit and pulling setup
 - Cables jackets that are chafed or burned exposing internal conductor insulation or have any bare copper ("shiners") shall be replaced
 - Fire stop all openings where cable is installed through a fire barrier

- Inserts and Faceplates
 - All cables shall be terminated with "YELLOW" high density modular jacks that snap into an "electric ivory" faceplate mounted on a wall outlet box, surface raceways or power pole
 - Outlet boxes shall be secured to building with mechanical fasteners. Adhesive fasteners are not allowed

- All extra openings to be filled with blank inserts (electric ivory for faceplates and black inserts for patch panel inserts)
 - Terminate cable per EIA/TIA **T568B** standard pin assignments
 - Locate so that combined length of cables and cords from panel to phone or computer does not exceed 3m
- Labeling (Example of a Label 121aD1M)
- 121 room number
 - The “a” is the faceplate identifier. Label these drops based on the closest room number. This letter should be lower case.
 - t = Teacher faceplate
 - pa = Public Address System
 - s = Security cameras
 - w = Access Points
 - a b c shall be used for all other faceplates in the room
 - The “D1” is the drop designator and number, “V” for voice, “D” for data. The letter should be uppercase
 - The “M” is the distribution frame locator, “M” for MDF, “A” for IDF A, “B” for IDF B and so on. The letter should be uppercase. The MDF is the distribution frame where all fiber optic connections are terminated from other distribution frames. This is also where all multi-pair cables, 25 pair and up, from other distribution frames will terminate
 - Place a label above the upper termination and below the lower termination on each and every drop on the faceplate. Place a permanent label one inch behind the termination on both ends of the cable. Also put a label above each and every drop on patch panels in the distribution frames. There should be a total of 4 labels per cable
- Termination
- Cables will be terminated at the patch panels to reflect a sequential labeling scheme. All cables from a specific room will be bundled next to each other. The teacher drops from the teacher faceplates will be terminated first on the patch panel, then the other drops in the room terminated after that by faceplate, then drop number. Ex: 202tD1A, 202aD1A, 202aD2A, 202bD1A
 - Place PA, security camera and access point drops on a separate patch panel and grouped by faceplate identifier, followed by room or location number. Ex: 202paD1A, 202paD2A, 202sD1A, 202sD2A, 202wD1A, 202wD2A. Consult with BCPS Technology Department for clarification before labeling

- Cables will be terminated at the faceplate with the data drops starting at the top/left
- RACK INSTALLATION
 - Rack Layout
- Use 45u free-standing rack with full height vertical wire management on both sides. The front and rear of the vertical management shall have at least a width of 6 inches, and a depth of 6 inches. If two free-standing racks are placed beside each other, then only one vertical management system shall be placed between the two. The vertical management shall be mounted to both racks
 - For the data termination, place the fiber patch panel on the top RMU, if the fiber patch panel is 2u, then there should be no spaces left after the fiber patch panel. If the fiber patch panel is 1u, then leave 1u open under the fiber patch panel. Starting on the third RMU from the top, install a 48 port patch panel, 2u horizontal wire management, leaving 2u open for network equipment. Continue this same scheme of installing a 48 port patch panel, 2u wire management, and leaving 2u rack space until all the patch panels are installed
 - For telephone termination, the 48 port patch panel with all the voice drops will be installed below the last 2u opening from the data drops. After the first telephone 48 port patch panel is installed, install 2u horizontal wire management. Leave no open space and continue with the next 48 port patch panel. After all the telephone cables are terminated on the last patch panel, place wire management, then a 48 port patch panel connected to a 50pair cable. The other end of the 50 pair cable will be terminated on the backer board with “split 66” style 25 pair 66 blocks. 66 blocks will be mounted on stand-offs, and will be mounted on the backer board. Leave at least 12u at the bottom of the rack for other networking equipment

Fiber Optic

- All installed fiber optic cabling will be multimode and have a 50 micron core OM3 GLASS, and a 125 micron cladding. Fiber optic cable will be rated for 10GB minimum. All fiber optic terminations will be SC. Fiber Optic cable shall be armored or in inner duct
- Coordinate with BCPS technology staff for any moves that are needed with fiber located on the exterior of the building
- Conduits shall be installed underground from the service pole to the MDF for outside

fiber optic cable, phone and cable TV

Part 11 Kitchens and Kitchen Equipment

- All kitchen and cafeteria equipment must be approved by the BCPS Food Service Director and the Facilities Department
- Kitchen walk-in freezers and coolers shall not be connected to the building's geothermal or water loop system
- No equipment plugs above ceiling. All outlets and shut-offs must be accessible for fire and safety
- C Vap/Winston Industries equipment will not be allowed in any BCPS project
- When billing for kitchen equipment, 30% of the total invoice will be held until the kitchen equipment has been used a minimum of 60 days and inspected and approved by the Facilities Department
- Mop sinks shall be installed in both the kitchens and locker rooms
- The 1 year warranty on all kitchen equipment will start after the first day of the new full school year
- Maximum Kitchen floor tile (quarry tile) size is 6" x 6"; larger tiles shall not be accepted
- Videotaped training on all kitchen equipment; with 2 copies of the training video turned over to BCPS
- Cafeteria must include an accessible water/drinking fountain
- Food storage room must have a lockable, solid door so that the room can be sealed off from the rest of the kitchen
- Provide isolation valves to be able to shut off/isolate both hot and cold water to the kitchen, in case of repair or needed maintenance

Bullitt County Public Schools
New Construction and Renovation Specifications
Acknowledgement Form

NAME: _____

ARCHITECTURAL FIRM: _____

PHONE: _____

ADDRESS: _____

ARCHITECT'S NAME (Printed): _____

ARCHITECT'S SIGNATURE: _____

DATE: _____

NAME: _____

GENERAL CONTRACTOR: _____

PHONE: _____

ADDRESS: _____

CONTRACTOR (Printed): _____

CONTRACTOR : _____

DATE: _____



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)

Bullitt County Public Schools
1040 Highway 44 East
Shepherdsville, Kentucky

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

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

Bernheim Middle School Renovation
700 Audubon Drive
Shepherdsville, Kentucky

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

Studio Kremer Architects, Inc.
1231 S Shelby Street
Louisville, Kentucky

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.

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)	\$

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.)

Init.

- .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.)

§ 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
---------	-------	------	-------

§ 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.

AIA Document A101–2007. Copyright © 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, 1977, 1987, 1991, 1997 and 2007 by The American Institute of Architects. All rights reserved. Kentucky Department of Education Version of AIA Document A101–2007. Copyright © 2014 by The American Institute of Architects. All rights reserved. **WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law.** This document was created on _____ under license number _____, and is not for resale. This document is licensed by The American Institute of Architects for one-time use only, and may not be reproduced prior to its completion.

TERMS OF THE AGREEMENT BETWEEN OWNER AND CONTRACTOR (00 60 00)

(AIA A101-2007, KDE Version):

The following supplements modify, change, delete from or add to the “Standard Form Agreement Between Owner and Contractor”. Where any Article of the Agreement Between Owner and Contractor is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these Supplementary Instructions, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

Add the following:

ARTICLE 3 - DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

Paragraph 3.1, add after the first paragraph:

The Date of Commencement of the Work shall be the date of the “Notice to Proceed” issued by the Owner.

Paragraph 3.3, replace the first sentence with the following:

The Contractor shall achieve Substantial Completion of the Work as follows:

- .1 **1 June 2022.** Punch inspection establishing Substantial Completion is performed and achievement of Substantial Completion agreed by Owner and Architect. Facility has Certificate of Occupancy and is suitable for school district to move in furnishings and equipment and occupy.

Paragraph 3.3, insert the following in the second paragraph:

Liquidated Damages: (\$1,000.00 per calendar day)

Paragraph 3.3, insert the following:

- .1 Refer to Division 01 Sections “Summary of Work” and “Contract Closeout” for description of penalties that will be applied (\$1,000.00 per calendar day) for work not completed within time frames described.

ARTICLE 5 - PAYMENTS

Paragraph 5.1.3, add the following in parenthesis:

Provided that an Application for Payment is received by the Architect not later than the (First) day of the month, the Owner shall make payment of the certified amount to the Contractor not later than the (Fifteenth) day of the (Same) 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 (Forty-Five) days after the Architect received the Application for Payment.

Paragraph 5.1.4, insert the following:

- .1 Each portion of the Work as listed in Schedule of Values must be broken down into material and labor. Complete markup including overhead and profit shall be included in labor cost. Material amounts as listed in Schedule of Values shall be listed as accurately as possible.

- .2 Owner will not pay any material amount in excess of material amount listed on Schedule of Values, except for Change Orders made to the Contract that increases materials amounts.

Paragraph 5.1.6, insert the following:

- .1... less retainage of ten percent (10%)
- .2 ...less retainage of ten percent (10%)

Paragraph 5.1.8, replace with the following:

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

The Owner shall retain ten percent (10%) from each Application for Payment until installed Work reaches fifty Percent (50%) completion. Then, provided the Work is on schedule and satisfactory, 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. No part of the five percent (5%) retainage shall be paid until the last Punch List is completed and no other work is required.

ARTICLE 6 - DISPUTE RESOLUTION

Paragraph 6.2, refer to the following section:

- 6.2 [X] Litigation in a court of competent jurisdiction in Bullitt Co., Kentucky.

ARTICLE 8 - MISCELLANEOUS PROVISIONS

Paragraph 8.3, replace with the following:

The Owner's representative:

Tony Roth, Director of Facilities
Bullitt County Public Schools
1040 Highway 44 East
Shepherdsville, KY 40165
(502) 921-3659

ARTICLE 9 - ENUMERATION OF CONTRACT DOCUMENTS

Paragraph 9.1.3, insert the following:

The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
1.	Section 00 70 00 Supplementary Conditions to Owner- Contractor Agreement	May 3, 2023	12

Paragraph 9.1.7.2, add the following:

- .2 D. Invitation to Bid
- E. Supplemental Instructions to Bidders (00 20 00).

END OF SECTION 00 60 00

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)

Bernheim Middle School Renovation
700 Audubon Drive
Shepherdsville, Kentucky

THE OWNER:

(Name, legal status and address)

Bullitt County Public Schools
1040 Highway 44 East
Shepherdsville, Kentucky

THE ARCHITECT:

(Name, legal status and address)

Studio Kremer Architects, Inc.
1231 S Shelby Street
Louisville, Kentucky

TABLE OF ARTICLES

1	GENERAL PROVISIONS
2	OWNER
3	CONTRACTOR
4	ARCHITECT
5	SUBCONTRACTORS
6	CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7	CHANGES IN THE WORK
8	TIME
9	PAYMENTS AND COMPLETION
10	PROTECTION OF PERSONS AND PROPERTY
11	INSURANCE AND BONDS
12	UNCOVERING AND CORRECTION OF WORK
13	MISCELLANEOUS PROVISIONS
14	TERMINATION OR SUSPENSION OF THE CONTRACT
15	CLAIMS AND DISPUTES



This version of AIA Document A201–2007 is modified by the Kentucky Department of Education. Publication of this version of AIA Document A201 does not imply the American Institute of Architects' endorsement of any modification by the Kentucky Department of Education. A comparative version of AIA Document A201–2007 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.

INDEX

(Topics and numbers in bold are section headings.)

Acceptance of Nonconforming Work

9.6.6, 9.9.3, **12.3**

Acceptance of Work

9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, 12.3

Access to Work

3.16, 6.2.1, 12.1

Accident Prevention

10

Acts and Omissions

3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5,

10.2.8, 13.4.2, 13.7, 14.1, 15.2

Addenda

1.1.1, 3.11.1

Additional Costs, Claims for

3.7.4, 3.7.5, 6.1.1, 7.3.7.5, 10.3, 15.1.4

Additional Inspections and Testing

9.4.2, 9.8.3, 12.2.1, **13.5**

Additional Insured

11.1.4

Additional Time, Claims for

3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, **15.1.5**

Administration of the Contract

3.1.3, **4.2**, 9.4, 9.5

Advertisement or Invitation to Bid

1.1.1

Aesthetic Effect

4.2.13

Allowances

3.8, 7.3.8

All-risk Insurance

11.3.1, 11.3.1.1

Applications for Payment

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5.1, 9.6.3, 9.7, 9.10,

11.1.3

Approvals

2.1.1, 2.2.2, 2.4, 3.1.3, 3.10.2, 3.12.8, 3.12.9, 3.12.10,

4.2.7, 9.3.2, 13.5.1

Arbitration

8.3.1, 11.3.10, 13.1.1, 15.3.2, **15.4**

ARCHITECT

4

Architect, Definition of

4.1.1

Architect, Extent of Authority

2.4.1, 3.12.7, 4.1, 4.2, 5.2, 6.3, 7.1.2, 7.3.7, 7.4, 9.2,

9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1,

13.5.1, 13.5.2, 14.2.2, 14.2.4, 15.1.3, 15.2.1

Architect, Limitations of Authority and Responsibility

2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2,

4.2.3, 4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4,

9.4.2, 9.5.3, 9.6.4, 15.1.3, 15.2

Architect's Additional Services and Expenses

2.4.1, 11.3.1.1, 12.2.1, 13.5.2, 13.5.3, 14.2.4

Architect's Administration of the Contract

3.1.3, 4.2, 3.7.4, 15.2, 9.4.1, 9.5

Architect's Approvals

2.4.1, 3.1.3, 3.5, 3.10.2, 4.2.7

Architect's Authority to Reject Work

3.5, 4.2.6, 12.1.2, 12.2.1

Architect's Copyright

1.1.7, 1.5

Architect's Decisions

3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3,

7.3.7, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1,

13.5.2, 15.2, 15.3

Architect's Inspections

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.5

Architect's Instructions

3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.5.2

Architect's Interpretations

4.2.11, 4.2.12

Architect's Project Representative

4.2.10

Architect's Relationship with Contractor

1.1.2, 1.5, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5,

3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16, 3.18,

4.1.2, 4.1.3, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5,

9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3.7, 12, 13.4.2, 13.5,

15.2

Architect's Relationship with Subcontractors

1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3.7

Architect's Representations

9.4.2, 9.5.1, 9.10.1

Architect's Site Visits

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.5

Asbestos

10.3.1

Attorneys' Fees

3.18.1, 9.10.2, 10.3.3

Award of Separate Contracts

6.1.1, 6.1.2

Award of Subcontracts and Other Contracts for

Portions of the Work

5.2

Basic Definitions

1.1

Bidding Requirements

1.1.1, 5.2.1, 11.4.1

Binding Dispute Resolution

9.7, 11.3.9, 11.3.10, 13.1.1, 15.2.5, 15.2.6.1, 15.3.1,

15.3.2, 15.4.1

Boiler and Machinery Insurance

11.3.2

Bonds, Lien

7.3.7.4, 9.10.2, 9.10.3

Bonds, Performance, and Payment

7.3.7.4, 9.6.7, 9.10.3, 11.3.9, **11.4**

Building Permit

3.7.1

Capitalization

1.3

Certificate of Substantial Completion

9.8.3, 9.8.4, 9.8.5

Certificates for Payment

4.2.1, 4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7,

9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.3

Certificates of Inspection, Testing or Approval

13.5.4

Certificates of Insurance

9.10.2, 11.1.3

Change Orders

1.1.1, 2.4.1, 3.4.2, 3.7.4, 3.8.2.3, 3.11.1, 3.12.8, 4.2.8,

5.2.3, 7.1.2, 7.1.3, 7.2, 7.3.2, 7.3.6, 7.3.9, 7.3.10,

8.3.1, 9.3.1.1, 9.10.3, 10.3.2, 11.3.1.2, 11.3.4, 11.3.9,

12.1.2, 15.1.3

Change Orders, Definition of

7.2.1

CHANGES IN THE WORK

2.2.1, 3.11, 4.2.8, 7, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1,

11.3.9

Claims, Definition of

15.1.1

CLAIMS AND DISPUTES

3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, 15, 15.4

Claims and Timely Assertion of Claims

15.4.1

Claims for Additional Cost

3.2.4, 3.7.4, 6.1.1, 7.3.9, 10.3.2, 15.1.4

Claims for Additional Time

3.2.4, 3.7.46.1.1, 8.3.2, 10.3.2, 15.1.5

Concealed or Unknown Conditions, Claims for

3.7.4

Claims for Damages

3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.1.1,

11.3.5, 11.3.7, 14.1.3, 14.2.4, 15.1.6

Claims Subject to Arbitration

15.3.1, 15.4.1

Cleaning Up

3.15, 6.3

Commencement of the Work, Conditions Relating to

2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3,

6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.3.1, 11.3.6, 11.4.1,

15.1.4

Commencement of the Work, Definition of

8.1.2

Communications Facilitating Contract

Administration

3.9.1, 4.2.4

Completion, Conditions Relating to

3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1,

9.10, 12.2, 13.7, 14.1.2

COMPLETION, PAYMENTS AND

9

Completion, Substantial

4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3,

12.2, 13.7

Compliance with Laws

1.6.1, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4,

10.2.2, 11.1, 11.3, 13.1, 13.4, 13.5.1, 13.5.2, 13.6,

14.1.1, 14.2.1.3, 15.2.8, 15.4.2, 15.4.3

Concealed or Unknown Conditions

3.7.4, 4.2.8, 8.3.1, 10.3

Conditions of the Contract

1.1.1, 6.1.1, 6.1.4

Consent, Written

3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.8.5, 9.9.1,

9.10.2, 9.10.3, 11.3.1, 13.2, 13.4.2, 15.4.4.2

Consolidation or Joinder

15.4.4

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

1.1.4, 6

Construction Change Directive, Definition of

7.3.1

Construction Change Directives

1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3, 7.3,

9.3.1.1

Construction Schedules, Contractor's

3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2

Contingent Assignment of Subcontracts

5.4, 14.2.2.2

Continuing Contract Performance

15.1.3

Contract, Definition of

1.1.2

CONTRACT, TERMINATION OR SUSPENSION OF THE

5.4.1.1, 11.3.9, 14

Contract Administration

3.1.3, 4, 9.4, 9.5

Contract Award and Execution, Conditions Relating to

3.7.1, 3.10, 5.2, 6.1, 11.1.3, 11.3.6, 11.4.1

Contract Documents, Copies Furnished and Use of

1.5.2, 2.2.5, 5.3

Contract Documents, Definition of

1.1.1

Contract Sum

3.7.4, 3.8, 5.2.3, 7.2, 7.3, 7.4, 9.1, 9.4.2, 9.5.1.4,

9.6.7, 9.7, 10.3.2, 11.3.1, 14.2.4, 14.3.2, 15.1.4,

15.2.5

Contract Sum, Definition of

9.1

Contract Time

3.7.4, 3.7.5, 3.10.2, 5.2.3, 7.2.1.3, 7.3.1, 7.3.5, 7.4,

8.1.1, 8.2.1, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 14.3.2,

15.1.5.1, 15.2.5

Contract Time, Definition of

8.1.1

CONTRACTOR

3

Contractor, Definition of

3.1, 6.1.2

Contractor's Construction Schedules

3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2

Contractor's Employees

3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3, 11.1.1, 11.3.7, 14.1, 14.2.1.1

Contractor's Liability Insurance

11.1

Contractor's Relationship with Separate Contractors and Owner's Forces

3.12.5, 3.14.2, 4.2.4, 6, 11.3.7, 12.1.2, 12.2.4

Contractor's Relationship with Subcontractors

1.2.2, 3.3.2, 3.18.1, 3.18.2, 5, 9.6.2, 9.6.7, 9.10.2, 11.3.1.2, 11.3.7, 11.3.8

Contractor's Relationship with the Architect

1.1.2, 1.5, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.1.3, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3.7, 12, 13.5, 15.1.2, 15.2.1

Contractor's Representations

3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2

Contractor's Responsibility for Those Performing the Work

3.3.2, 3.18, 5.3.1, 6.1.3, 6.2, 9.5.1, 10.2.8

Contractor's Review of Contract Documents

3.2

Contractor's Right to Stop the Work

9.7

Contractor's Right to Terminate the Contract

14.1, 15.1.6

Contractor's Submittals

3.10, 3.11, 3.12.4, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2, 9.8.3, 9.9.1, 9.10.2, 9.10.3, 11.1.3, 11.4.2

Contractor's Superintendent

3.9, 10.2.6

Contractor's Supervision and Construction Procedures

1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.5, 7.3.7, 8.2, 10, 12, 14, 15.1.3

Contractual Liability Insurance

11.1.1.8, 11.2

Coordination and Correlation

1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1

Copies Furnished of Drawings and Specifications

1.5, 2.2.5, 3.11

Copyrights

1.5, 3.17

Correction of Work

2.3, 2.4, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, 12.2

Correlation and Intent of the Contract Documents

1.2

Cost, Definition of

7.3.7

Costs

2.4.1, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.7, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6, 11.3, 12.1.2, 12.2.1, 12.2.4, 13.5, 14

Cutting and Patching

3.14, 6.2.5

Damage to Construction of Owner or Separate Contractors

3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 11.1.1, 11.3, 12.2.4

Damage to the Work

3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4.1, 11.3.1, 12.2.4

Damages, Claims for

3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.1.1, 11.3.5, 11.3.7, 14.1.3, 14.2.4, 15.1.6

Damages for Delay

6.1.1, 8.3.3, 9.5.1.6, 9.7, 10.3.2

Date of Commencement of the Work, Definition of

8.1.2

Date of Substantial Completion, Definition of

8.1.3

Day, Definition of

8.1.4

Decisions of the Architect

3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 15.2, 6.3, 7.3.7, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.5.2, 14.2.2, 14.2.4, 15.1, 15.2

Decisions to Withhold Certification

9.4.1, 9.5, 9.7, 14.1.1.3

Defective or Nonconforming Work, Acceptance, Rejection and Correction of

2.3.1, 2.4.1, 3.5, 4.2.6, 6.2.5, 9.5.1, 9.5.2, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1

Definitions

1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 15.1.1, 5.1, 6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1

Delays and Extensions of Time

3.2, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, 8.3, 9.5.1, 9.7, 10.3.2, 10.4.1, 14.3.2, 15.1.5, 15.2.5

Disputes

6.3, 7.3.9, 15.1, 15.2

Documents and Samples at the Site

3.11

Drawings, Definition of

1.1.5

Drawings and Specifications, Use and Ownership of

3.11

Effective Date of Insurance

8.2.2, 11.1.2

Emergencies

10.4, 14.1.1.2, 15.1.4

Employees, Contractor's

3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3.3, 11.1.1, 11.3.7, 14.1, 14.2.1.1

Equipment, Labor, Materials or
1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13.1, 3.15.1,
4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3,
9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2
Execution and Progress of the Work
1.1.3, 1.2.1, 1.2.2, 2.2.3, 2.2.5, 3.1, 3.3.1, 3.4.1, 3.7.1,
3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.5, 8.2, 9.5.1,
9.9.1, 10.2, 10.3, 12.2, 14.2, 14.3.1, 15.1.3
Extensions of Time
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2,
10.4.1, 14.3, 15.1.5, 15.2.5
Failure of Payment
9.5.1.3, 9.7, 9.10.2, 13.6, 14.1.1.3, 14.2.1.2
Faulty Work
(See Defective or Nonconforming Work)
Final Completion and Final Payment
4.2.1, 4.2.9, 9.8.2, 9.10, 11.1.2, 11.1.3, 11.3.1, 11.3.5,
12.3.1, 14.2.4, 14.4.3
Financial Arrangements, Owner's
2.2.1, 13.2.2, 14.1.1.4
Fire and Extended Coverage Insurance
11.3.1.1
GENERAL PROVISIONS
1
Governing Law
13.1
Guarantees (See Warranty)
Hazardous Materials
10.2.4, 10.3
Identification of Subcontractors and Suppliers
5.2.1
Indemnification
3.17, 3.18, 9.10.2, 10.3.3, 10.3.5, 10.3.6, 11.3.1.2,
11.3.7
Information and Services Required of the Owner
2.1.2, 2.2, 3.2.2, 3.12.4, 3.12.10, 6.1.3, 6.1.4, 6.2.5,
9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 11.4, 13.5.1,
13.5.2, 14.1.1.4, 14.1.4, 15.1.3
Initial Decision
15.2
Initial Decision Maker, Definition of
1.1.8
Initial Decision Maker, Decisions
14.2.2, 14.2.4, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5
Initial Decision Maker, Extent of Authority
14.2.2, 14.2.4, 15.1.3, 15.2.1, 15.2.2, 15.2.3, 15.2.4,
15.2.5
Injury or Damage to Person or Property
10.2.8, 10.4.1
Inspections
3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3,
9.9.2, 9.10.1, 12.2.1, 13.5
Instructions to Bidders
1.1.1
Instructions to the Contractor
3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.5.2

Instruments of Service, Definition of
1.1.7
Insurance
3.18.1, 6.1.1, 7.3.7, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 11
Insurance, Boiler and Machinery
11.3.2
Insurance, Contractor's Liability
11.1
Insurance, Effective Date of
8.2.2, 11.1.2
Insurance, Loss of Use
11.3.3
Insurance, Owner's Liability
11.2
Insurance, Property
10.2.5, 11.3
Insurance, Stored Materials
9.3.2
INSURANCE AND BONDS
11
Insurance Companies, Consent to Partial Occupancy
9.9.1,
Intent of the Contract Documents
1.2.1, 4.2.7, 4.2.12, 4.2.13, 7.4
Interest
13.6
Interpretation
1.2.3, 1.4, 4.1.1, 5.1, 6.1.2, 15.1.1
Interpretations, Written
4.2.11, 4.2.12, 15.1.4
Judgment on Final Award
15.4.2
Labor and Materials, Equipment
1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,
4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3,
9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2
Labor Disputes
8.3.1
Laws and Regulations
1.5, 3.2.3, 3.6, 3.7, 3.12.10, 3.13.1, 4.1.1, 9.6.4, 9.9.1,
10.2.2, 11.1.1, 11.3, 13.1.1, 13.4, 13.5.1, 13.5.2,
13.6.1, 14, 15.2.8, 15.4
Liens
2.1.2, 9.3.3, 9.10.2, 9.10.4, 15.2.8
Limitations, Statutes of
12.2.5, 13.7, 15.4.1.1
Limitations of Liability
2.3.1, 3.2.2, 3.5, 3.12.10, 3.17, 3.18.1, 4.2.6, 4.2.7,
4.2.12, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 10.2.5, 10.3.3,
11.1.2, 11.2, 11.3.7, 12.2.5, 13.4.2
Limitations of Time
2.1.2, 2.2, 2.4, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7,
5.2, 5.3.1, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3,
9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 11.1.3, 11.3.1.5,
11.3.6, 11.3.10, 12.2, 13.5, 13.7, 14, 15

Loss of Use Insurance

11.3.3

Material Suppliers

1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.6, 9.10.5

Materials, Hazardous

10.2.4, 10.3

Materials, Labor, Equipment and

1.1.3, 1.1.6, 1.5.1, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, 3.13.1, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2

Means, Methods, Techniques, Sequences and Procedures of Construction

3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2

Mechanic's Lien

2.1.2, 15.2.8

Mediation

8.3.1, 10.3.5, 10.3.6, 15.2.1, 15.2.5, 15.2.6, 15.3, 15.4.1

Minor Changes in the Work

1.1.1, 3.12.8, 4.2.8, 7.1, 7.4

MISCELLANEOUS PROVISIONS

13

Modifications, Definition of

1.1.1

Modifications to the Contract

1.1.1, 1.1.2, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7, 10.3.2, 11.3.1

Mutual Responsibility

6.2

Nonconforming Work, Acceptance of

9.6.6, 9.9.3, 12.3

Nonconforming Work, Rejection and Correction of

2.3.1, 2.4.1, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4, 12.2.1

Notice

2.2.1, 2.3.1, 2.4.1, 3.2.4, 3.3.1, 3.7.2, 3.12.9, 5.2.1, 9.7, 9.10, 10.2.2, 11.1.3, 12.2.2.1, 13.3, 13.5.1, 13.5.2, 14.1, 14.2, 15.2.8, 15.4.1

Notice, Written

2.3.1, 2.4.1, 3.3.1, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 9.7, 9.10, 10.2.2, 10.3, 11.1.3, 11.3.6, 12.2.2.1, 13.3, 14, 15.2.8, 15.4.1

Notice of Claims

3.7.4, 10.2.8, 15.1.2, 15.4

Notice of Testing and Inspections

13.5.1, 13.5.2

Observations, Contractor's

3.2, 3.7.4

Occupancy

2.2.2, 9.6.6, 9.8, 11.3.1.5

Orders, Written

1.1.1, 2.3, 3.9.2, 7, 8.2.2, 11.3.9, 12.1, 12.2.2.1, 13.5.2, 14.3.1

OWNER

2

Owner, Definition of

2.1.1

Owner, Information and Services Required of the

2.1.2, 2.2, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 11.3, 13.5.1, 13.5.2, 14.1.1.4, 14.1.4, 15.1.3

Owner's Authority

1.5, 2.1.1, 2.3.1, 2.4.1, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2, 4.1.3, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1, 7.3.1, 8.2.2, 8.3.1, 9.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2, 10.3.2, 11.1.3, 11.3.3, 11.3.10, 12.2.2, 12.3.1, 13.2.2, 14.3, 14.4, 15.2.7

Owner's Financial Capability

2.2.1, 13.2.2, 14.1.1.4

Owner's Liability Insurance

11.2

Owner's Relationship with Subcontractors

1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2

Owner's Right to Carry Out the Work

2.4, 14.2.2

Owner's Right to Clean Up

6.3

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

6.1

Owner's Right to Stop the Work

2.3

Owner's Right to Suspend the Work

14.3

Owner's Right to Terminate the Contract

14.2

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

1.1.1, 1.1.6, 1.1.7, 1.5, 2.2.5, 3.2.2, 3.11.1, 3.17, 4.2.12, 5.3.1

Partial Occupancy or Use

9.6.6, 9.9, 11.3.1.5

Patching, Cutting and

3.14, 6.2.5

Patents

3.17

Payment, Applications for

4.2.5, 7.3.9, 9.2, 9.3, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1, 14.2.3, 14.2.4, 14.4.3

Payment, Certificates for

4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 13.7, 14.1.1.3, 14.2.4

Payment, Failure of

9.5.1.3, 9.7, 9.10.2, 13.6, 14.1.1.3, 14.2.1.2

Payment, Final

4.2.1, 4.2.9, 9.8.2, 9.10, 11.1.2, 11.1.3, 11.4.1, 12.3.1, 13.7, 14.2.4, 14.4.3

Payment Bond, Performance Bond and

7.3.7.4, 9.6.7, 9.10.3, 11.4

Payments, Progress

9.3, 9.6, 9.8.5, 9.10.3, 13.6, 14.2.3, 15.1.3

PAYMENTS AND COMPLETION

9

Payments to Subcontractors

5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2

PCB

10.3.1

Performance Bond and Payment Bond

7.3.7.4, 9.6.7, 9.10.3, 11.4

Permits, Fees, Notices and Compliance with Laws

2.2.2, 3.7, 3.13, 7.3.7.4, 10.2.2

PERSONS AND PROPERTY, PROTECTION OF

10

Polychlorinated Biphenyl

10.3.1

Product Data, Definition of

3.12.2

Product Data and Samples, Shop Drawings

3.11, 3.12, 4.2.7

Progress and Completion

4.2.2, 8.2, 9.8, 9.9.1, 14.1.4, 15.1.3

Progress Payments

9.3, 9.6, 9.8.5, 9.10.3, 13.6, 14.2.3, 15.1.3

Project, Definition of

1.1.4

Project Representatives

4.2.10

Property Insurance

10.2.5, 11.3

PROTECTION OF PERSONS AND PROPERTY

10

Regulations and Laws

1.5, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4, 9.9.1, 10.2.2, 11.1, 11.4, 13.1, 13.4, 13.5.1, 13.5.2, 13.6, 14, 15.2.8, 15.4

Rejection of Work

3.5, 4.2.6, 12.2.1

Releases and Waivers of Liens

9.10.2

Representations

3.2.1, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.8.2, 9.10.1

Representatives

2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.1, 4.2.2, 4.2.10, 5.1.1, 5.1.2, 13.2.1

Responsibility for Those Performing the Work

3.3.2, 3.18, 4.2.3, 5.3.1, 6.1.3, 6.2, 6.3, 9.5.1, 10

Retainage

9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3

Review of Contract Documents and Field

Conditions by Contractor

3.2, 3.12.7, 6.1.3

Review of Contractor's Submittals by Owner and

Architect

3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2

Review of Shop Drawings, Product Data and

Samples by Contractor

3.12

Rights and Remedies

1.1.2, 2.3, 2.4, 3.5, 3.7.4, 3.15.2, 4.2.6, 5.3, 5.4, 6.1, 6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.2, 12.2.4, 13.4, 14, 15.4

Royalties, Patents and Copyrights

3.17

Rules and Notices for Arbitration

15.4.1

Safety of Persons and Property

10.2, 10.4

Safety Precautions and Programs

3.3.1, 4.2.2, 4.2.7, 5.3.1, 10.1, 10.2, 10.4

Samples, Definition of

3.12.3

Samples, Shop Drawings, Product Data and

3.11, 3.12, 4.2.7

Samples at the Site, Documents and

3.11

Schedule of Values

9.2, 9.3.1

Schedules, Construction

3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2

Separate Contracts and Contractors

1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 6, 8.3.1, 12.1.2

Shop Drawings, Definition of

3.12.1

Shop Drawings, Product Data and Samples

3.11, 3.12, 4.2.7

Site, Use of

3.13, 6.1.1, 6.2.1

Site Inspections

3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.4.2, 9.10.1, 13.5

Site Visits, Architect's

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.5

Special Inspections and Testing

4.2.6, 12.2.1, 13.5

Specifications, Definition of

1.1.6

Specifications

1.1.1, 1.1.6, 1.2.2, 1.5, 3.11, 3.12.10, 3.17, 4.2.14

Statute of Limitations

13.7, 15.4.1.1

Stopping the Work

2.3, 9.7, 10.3, 14.1

Stored Materials

6.2.1, 9.3.2, 10.2.1.2, 10.2.4

Subcontractor, Definition of

5.1.1

SUBCONTRACTORS

5

Subcontractors, Work by

1.2.2, 3.3.2, 3.12.1, 4.2.3, 5.2.3, 5.3, 5.4, 9.3.1.2, 9.6.7

Init.

Subcontractual Relations
5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1
 Submittals
 3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.7, 9.2, 9.3,
 9.8, 9.9.1, 9.10.2, 9.10.3, 11.1.3
 Submittal Schedule
 3.10.2, 3.12.5, 4.2.7
Subrogation, Waivers of
 6.1.1, **11.3.7**
Substantial Completion
 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, **9.8**, 9.9.1, 9.10.3,
 12.2, 13.7
Substantial Completion, Definition of
9.8.1
 Substitution of Subcontractors
 5.2.3, 5.2.4
 Substitution of Architect
 4.1.3
 Substitutions of Materials
 3.4.2, 3.5, 7.3.8
Sub-subcontractor, Definition of
5.1.2
 Subsurface Conditions
 3.7.4
Successors and Assigns
13.2
Superintendent
3.9, 10.2.6
Supervision and Construction Procedures
 1.2.2, **3.3**, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4,
 7.1.3, 7.3.7, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.3
 Surety
 5.4.1.2, 9.8.5, 9.10.2, 9.10.3, 14.2.2, 15.2.7
 Surety, Consent of
 9.10.2, 9.10.3
 Surveys
 2.2.3
Suspension by the Owner for Convenience
14.3
 Suspension of the Work
 5.4.2, 14.3
 Suspension or Termination of the Contract
 5.4.1.1, 14
Taxes
3.6, 3.8.2.1, 7.3.7.4
Termination by the Contractor
14.1, 15.1.6
Termination by the Owner for Cause
 5.4.1.1, **14.2**, 15.1.6
Termination by the Owner for Convenience
14.4
 Termination of the Architect
 4.1.3
 Termination of the Contractor
 14.2.2

TERMINATION OR SUSPENSION OF THE CONTRACT

14
Tests and Inspections
 3.1.3, 3.3.3, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2,
 9.10.1, 10.3.2, 11.4.1.1, 12.2.1, **13.5**
TIME
8
Time, Delays and Extensions of
 3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7,
 10.3.2, 10.4.1, 14.3.2, 15.1.5, 15.2.5
 Time Limits
 2.1.2, 2.2, 2.4, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2,
 5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3,
 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 11.1.3, 12.2, 13.5,
 13.7, 14, 15.1.2, 15.4
Time Limits on Claims
 3.7.4, 10.2.8, **13.7**, 15.1.2
 Title to Work
 9.3.2, 9.3.3
Transmission of Data in Digital Form
1.6
UNCOVERING AND CORRECTION OF WORK
12
Uncovering of Work
12.1
 Unforeseen Conditions, Concealed or Unknown
 3.7.4, 8.3.1, 10.3
 Unit Prices
 7.3.3.2, 7.3.4
 Use of Documents
 1.1.1, 1.5, 2.2.5, 3.12.6, 5.3
Use of Site
3.13, 6.1.1, 6.2.1
Values, Schedule of
9.2, 9.3.1
 Waiver of Claims by the Architect
 13.4.2
 Waiver of Claims by the Contractor
 9.10.5, 13.4.2, 15.1.6
 Waiver of Claims by the Owner
 9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.4.2, 14.2.4, 15.1.6
 Waiver of Consequential Damages
 14.2.4, 15.1.6
 Waiver of Liens
 9.10.2, 9.10.4
Waivers of Subrogation
 6.1.1, **11.3.7**
Warranty
3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.4, 12.2.2, 13.7
 Weather Delays
 15.1.5.2
Work, Definition of
1.1.3

Written Consent

1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.8.5,
9.9.1, 9.10.2, 9.10.3, 11.4.1, 13.2, 13.4.2, 15.4.4.2

Written Interpretations

4.2.11, 4.2.12

Written Notice

2.3, 2.4, 3.3.1, 3.9, 3.12.9, 3.12.10, 5.2.1, 8.2.2, 9.7,
9.10, 10.2.2, 10.3, 11.1.3, 12.2.2, 12.2.4, 13.3, 14,
15.4.1

Written Orders

1.1.1, 2.3, 3.9, 7, 8.2.2, 12.1, 12.2, 13.5.2, 14.3.1,
15.1.2

Sample

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

Init.

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.

- .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.

Sample

**SUPPLEMENTARY CONDITIONS TO
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION**

(AIA A201-2007, KDE Version):

- A. The following supplements modify, change, delete from or add to the “General Conditions”. Where any Article of the General Conditions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.
- B. These “Supplementary General Conditions” and Specifications may in some cases be of the abbreviated or “streamlined” type and include incomplete sentences. Omissions of words or phrases such as “the Contractor shall”, “in conformity therewith”, “shall be”, “as noted on the Drawings”, “according to the plans”, “a”, “the”, and “all” are intentional. Omitted words and phrases shall be supplied by inference in the same manner as they are when a “note” occurs on the Drawings. Words “shall be” or “shall” will be supplied by inference where colon (:) is used within sentences or phrases.
- C. The contractor shall provide all items, articles, materials, operations, or methods listed, mentioned, or scheduled on the Drawings and/or herein, including all labor, materials, equipment, and incidentals necessary and required for their completion.
- D. References to known standard specifications shall mean the latest edition of such specifications adopted and published at date of invitation to submit proposals unless noted otherwise.
- E. Reference to technical society, organization or body is made in Specifications in accordance with following abbreviations:

AIA	American Institute of Architects
AASHTO	American Association of State Highway Officials
ACI	American Concrete Institute
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
ASA	American Standards Association
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWSC	American Welding Society Code
CSI	Construction Specifications Institute
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NEC	National Electric Code
UL	Underwriters’ Laboratories, Inc.

ARTICLE 1 - GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

Add the following to the end of paragraph 1.1.1:

The Contractor acknowledges and agrees that the Contract Documents are sufficient to provide for the completion of the Work and agrees to include Work, whether or not shown or described, which reasonably

may be inferred to be required or useful for the completion of the Work in accordance with applicable laws, codes, and customary standards of the industry.

Add the following paragraph:

1.1.9 Miscellaneous Definitions

- .1 The term “product” as used herein includes materials, systems and equipment.
- .2 The term “supplier” as used herein, includes a firm or organization furnishing or delivering products directly to the job site, and because of such direct delivery, could be construed under the lien laws of the State in which the Work is being performed as having lien rights against the funds due the Contractor. Suppliers of material and equipment, delivering to Contractor or Subcontractor on an open account basis and not having lien rights on the Work, will not be considered suppliers within the meaning of the Contract Documents.
- .3 A bidder selected to enter into a Contract with the Owner for Work included under the bidder’s proposal is termed an “Awardee,” until such time as he is awarded a Contract and becomes the Contractor.
- .4 Where “request”, “approval”, “satisfactory”, and similar words appear, it is the request, approval, or satisfaction of the Architect/Engineer that is intended.
- .5 Where “complete” is used, it shall mean, “complete with connections, supports, attachments, and incidental items necessary for a finished and properly operating assembly or installation.” Completed work does not include materials stored on-site.
- .6 Where “drawing” is used, it shall mean plans and detail drawings, both large and small scale, furnished by the Architect/Engineer for the purpose of showing the Work to be done.
- .7 The term “furnish” – to supply (only) to another party for their use of installation, including cost of delivery and unloading to job site.
- .8 The term “install” – to distribute, uncrate, assemble, and fix into the intended final positions, the installer to provide all miscellaneous hardware and supplies required to anchor and support securely, clean up, and dispose of rubbish.
- .9 The term “connect” – to bring service(s) to the point of installation and make final connections of the service(s) to the installed equipment and provide miscellaneous auxiliary appurtenances necessary to make operable for its intended use.
- .10 The term “provide” – to furnish, install, and connect complete.

ARTICLE 3 - CONTRACTOR

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

Add the following sub-paragraphs to paragraph 3.2.1:

- 3.2.1.1 By execution of this Contract, the Contractor warrants that they have visited the site of the proposed work, and are fully acquainted with the conditions as they relate to the construction of

the new work, and that they fully understand the facilities, difficulties and restrictions attending the execution of the Work under Contract.

- 3.2.1.2 By execution of this Contract, the Contractor warrants that they have thoroughly examined and are familiar with the Drawings, Specifications and all other documents comprising the Contract.
- 3.2.1.3 By execution of this Contract, the Contractor warrants that it is their responsibility, during the bidding process, to visit the site and acquaint themselves with the existing conditions. Failure on the Contractor's part to visit the site during their review / examination of forms, instruments or documents in no way relieves them from this responsibility. The Contractor agrees that the Owner shall be justified in rejecting any claim based on facts regarding existing conditions of which they should have been aware.
- 3.2.1.4 Before ordering material or performing any work, the Contractor shall verify all measurements at the work site. Any difference between the dimensions on the Drawings and actual measurements shall be brought to the Architect's attention for their consideration, before work may proceed. No extra compensation will be allowed because of difference between actual measurements and dimensions indicated on the Drawings. The Contractor shall assume full responsibility for accuracy of measurements obtained at the Work Site.
- 3.2.1.5 Dimensions which are lacking shall be obtained from the Architect. In no case shall Drawings be scaled.

Add the following paragraph:

- 3.2.5 Plans and Specifications for this Project show or specify various structural, architectural, mechanical and electrical entities, diagrams and devices for each item. The mention of acceptable manufacturer does not necessarily imply that their particular "standard" product meets all of the requirements of any detail or specification. Therefore, the cost of deviations, extensions or adjustments required for the low Bidder's product must be included in the Prime/General Contractor's bid. No additional cost will be considered.

3.4 LABOR AND MATERIALS

Add the following paragraph:

- 3.4.4 Where the salvage of materials is indicated on the Drawings and Specifications, all such materials shall be carefully removed and stored as directed by the Owner or Architect.

3.5 WARRANTY

Add the following paragraph:

- 3.5.1 The Contractor shall provide all warranties as required by the Project Manual.

3.7 PERMITS, FEES AND NOTICES

Add the following paragraphs:

3.7.6 All Contractors and Subcontractors of the Work shown on the Plans or Specifications 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.

3.7.7 All Contractors and Subcontractors must be qualified, and meet all requirements provided and/or required under any local and/or state statute, code, ordinances, or rule, governing the performance of the type of work for which they submit a bid, and they must be able to submit proof thereof upon request.

3.9 SUPERINTENDENT

Add the following to the end of paragraph 3.9.1:

The Superintendent shall be satisfactory to the Owner, and the Owner shall have the right to require the Contractor to remove a Superintendent from the Project whose performance is not satisfactory to the Owner, and to replace the Superintendent with a Superintendent who is satisfactory to the Owner. The Contractor shall not replace the Superintendent without the consent of the Owner, except with another Superintendent who is satisfactory to the Owner.

ARTICLE 5 - SUBCONTRACTORS

5.3 SUBCONTRACTUAL RELATIONS

Add the following paragraph:

5.3.1 All subcontractors shall familiarize themselves with all conditions relating to this Contract since the terms set forth in the General Conditions bind all subcontractors to the Contract.

ARTICLE 7 - CHANGES IN WORK

7.2 CHANGE ORDERS

Add the following to paragraph 7.2.1:

.4 The Contractor's proposals for work to be covered by Change Order shall contain a detailed breakdown of all costs. The Contractor shall provide Architect with a cost breakdown of the lump sum, showing trades involved and their portion of the total cost. Provide material, labor, overhead and profit breakdowns for each category as required by Architect.

.5 The Contractor shall be paid the net cost of said work, plus profit and overhead. The 15% maximum profit and overhead mark-up allowed by the Kentucky Department of Education shall be divided between the Prime/General Contractor and their subcontractors as mutually agreed among themselves. Bond and insurance costs are not allowed profit and overhead mark-up.

.6 The following shall be covered by Overhead and Profit Mark-Up:

Office Personnel	Site Investigation Time	Truck Expense
Field Supervision	Shop Drawing Time	Small Tools
Estimating Time		

Paragraph 7.3.7:

The allowed mark-up for overhead and profit shall be as specified in Paragraph 7.2.1

Paragraph 7.3.7.5 - Delete

Paragraph 7.3.9, replace the first sentence with the following:

Changes in the work may not be included on the Application for Payment until a Change Order has been executed by all parties.

ARTICLE 8 - TIME

8.2 PROGRESS AND COMPLETION

Add the following paragraphs:

8.2.4 Should the Contractor fail to complete the Work under this Contract on or before the date stipulated for Substantial Completion, or such later date as may result from extensions in the Contract time granted by the Owner, they agree that the Owner is entitled to, and shall pay the Owner as Liquidated Damages, the sum of \$1,000.00 for each consecutive calendar day until such time as Substantial Completion is provided and accepted by the Owner.

8.2.5 Should the Contractor fail to “Final Complete” the Project on or before the date stipulated for Final Completion, they agree that the Owner is entitled to, and shall pay the Owner as Liquidated Damages, the sum of \$1,000.00 for each consecutive calendar day until such time as Substantial Completion is provided and accepted by the Owner.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.3 APPLICATIONS FOR PAYMENT

Add the following sub-paragraphs to paragraph 9.3.1:

9.3.1.4 All contractor payment requests shall be prepared by the Contractor using AIA Document G-702 and G-703 and submitted in digital format. Applications for payment shall be sent to Studio Kremer Architects, via email to Cate Noble Ward, cate@studiokremer.com

Add the following paragraphs:

9.3.5 The Owner and the Contractor each bind themselves, their partners, successors, assigns, and legal representatives of such other party in respect to all covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract or sublet it as a whole without written consent of the other, nor shall the Contractor assign any monies due or to become due to them hereunder, without the previous written consent of the Owner.

9.3.6 Retainage amount as stipulated in AIA A201 – 2007 – KDE Version, subparagraph 9.3.4 shall be applied to the Contractor’s Application for Payment and shall include retainage for material invoices for direct purchases materials, where applicable. Retainage shall be retained from

Contractor's Pay Application and not retained on invoiced materials. Retainage for invoiced materials shall be held from Contractor's Application for Payment.

9.8 SUBSTANTIAL COMPLETION

Add the following to the end of paragraph 9.8.1:

Refer to Article 3 of the Standard Form of Agreement Between the Owner and Contractor for the Date of Substantial Completion.

Paragraph 9.8.2, replace with the following paragraph:

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 notify the Architect so that the Architect, Engineer and Owner can accompany the Contractor in the preparation of the punch list. This list identifies 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.

9.10 FINAL COMPLETION AND FINAL PAYMENT

Add the following to sub-paragraph 9.10.1:

.2 Final Completion of the Work shall mean when all "punch list" items are completed, when "waiver of lien" is submitted, the manufacturer's warranties are submitted and the Contractor has delivered to the Architect all required certificates of inspection. Final Completion shall include final clean-up of the building and premises.

Paragraph 9.10.2, add the following to the paragraphs:

.1 Retainage will not be reduced below five percent (5%) until all items have been worked off of the punch list.

The following items must be submitted to the Owner before approval of the final payment: The dollar amounts reflect the security funds that will be withheld for each item until it is received by the Owner.

- .1 Affidavit of payment as required under this Paragraph shall be in the form of AIA Document G-706 - Contractor's Affidavit of Payment of Debt and Claims. (\$300.00)
- .2 Release of liens as required under this Paragraph shall be in the form of AIA Document G-706A - Contractor's Affidavit of Release of Liens. (\$300.00)
- .3 Consent of Surety as required under this Paragraph shall be in the form of AIA Document G-707 - Consent of Surety Company to Final Payment. (\$300.00)
- .4 As-Built Drawings (\$7,500.00)
- .5 Operation and Maintenance Manuals (\$5,000.00)

Submit releases and final unconditional waivers of lien from major subcontractors and suppliers.

- .1 Warranties

- .2 Letter Confirming no Asbestos Used (\$100.00)
- .3 Certification that all punch list items have been completed.
- .4 Attic stock materials (\$2,500.00)
- .5 Other closeout documents required by other portions of the Specifications. (\$300.00)

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

10.2 SAFETY OF PERSONS AND PROPERTY

Add the following paragraph:

- 10.2.9 CONSTRUCTION AND SAFETY DEVICES: The contractor shall provide safety controls for protection of the life and health of employees. They will utilize precautionary methods for the prevention of damage to property, materials, equipment and supplies, and for avoidance of work interruptions in the performance of this Contract. In order to provide such safety controls, the Contractor shall comply with all pertinent provisions of the Kentucky Safety Standards of the Division of the Occupational Safety Standards of the Division of Occupational Safety, Department of labor and Federal Occupational Safety and Health Construction Standards (OSHA), that are effect at the time of this Contract is entered into and during the period in which the Contract is to be performed. The Contractor shall also take, or cause to be taken, such additional measures as the Division of Occupational Safety may determine to be reasonably necessary for the purpose.
- .1 The Contractor shall maintain an accurate account of and shall report to the Division of Occupational Safety in the manner, and on the forms prescribed by Division, exposure date and all accidents resulting in death, traumatic injury, occupational diseases, and/or damage to property, materials, supplies and equipment incident to work performed under this Contract.
 - .2 The Division of Occupational Safety will notify the Contractor, through the Owner, of any non-compliance with the foregoing provisions and the action to be taken. The Contractor shall, after receipt of such notice, immediately correct conditions. Such notice, when delivered to the Contractor or their representatives at the site of work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner may issue and order stopping all or part of the Work until unsatisfactory or corrective action has been taken. Failure or refusal to comply with the order will be grounds for stopping all payments due under the Contract of the Contractor. No part of the time lost due to any such stop order shall be made the subject of claim, or extension of the time, or for excess cost, or damages to the Contractor.
 - .3 Compliance with the provisions of the foregoing sections by subcontractors will be the responsibility of the Prime Contractor.
 - .4 Nothing on these provisions shall prohibit the US Department of Occupational Health and Safety from enforcing pertinent occupational safety and health standards as authorized under Federal or State occupational safety and health law.
 - .5 In any emergency affecting the safety of persons or property, the Contractor shall act, at their discretion, to prevent threatened damage, injury or loss. Any additional compensation or extension of time claimed by the Contractor on account of emergency work shall be determined, as provided in Article 7 "Changes in Work".

Add the following paragraphs:

10.3.7 ASBESTOS NOTIFICATION

10.3.7.1 NEW CONSTRUCTION: Materials utilized in the new work shall **NOT** contain any asbestos. Contractor shall submit, with closeout documents, a statement on company letterhead verifying that no materials used in the project contained asbestos.

The following is provided for informational purposes only to the Contractor:

10.3.9 WORKER PROTECTION

The OSHA Construction Industry Standard (1926.62) applies to “all construction work where an employee may be exposed to lead.” Construction work is defined as “work for construction, alteration and/or repair.” It includes:

- (1) Demolition or salvage of structures where materials containing lead are present.
- (2) New construction, renovation of structures, or portion thereof where materials containing lead are present.
- (3) Maintenance operations associated with construction activities.

The rule requires “each employer who has a workplace or operation covered by the standard to initially determine if any employee may be exposed to lead at or above the action level.” This is to be determined by personal exposure monitoring. The rule further states that “until the employer performs an employee exposure assessment as required, the employer shall treat the employee as if the employee were exposed above the PEL, and not in excess of ten times the PEL, and shall implement appropriate employee protective measures. **The tasks covered by these requirements include manual demolition of structures (e.g., dry wall), manual scraping, manual sanding, heat gun applications and power tool cleaning with dust collection systems.**”

The employee must collect at least one sample for each job classification.

Until an employer performs an initial employee exposure assessment, the employer must provide to the employees:

- (1) Appropriate respiratory protection and respirator physicals
- (2) Appropriate personal protective equipment
- (3) Change areas
- (4) Hand washing facilities
- (5) Biological monitoring
- (6) Proper training

However, “where the employer has previously monitored for lead exposure, and the data were obtained within the past 12 months during work operations closely resembling the process, type of material, work practices and environmental conditions used and prevailing in the employer’s

current operations, the employer may rely on this existing data to satisfy the initial monitoring requirements.”

If the initial monitoring data indicate that workers are not exposed to lead concentrations at or above the 30 ug/m³ action level, no additional control or worker protection measures are required. Should data indicate that employees may be exposed to elevated lead concentrations exceeding the action level, the other aspects of 1926.62 concerning worker protection shall apply.

ARTICLE 11 - INSURANCE & BONDS

11.3 PROPERTY INSURANCE

Paragraph 11.3.1, change with the following in the first sentence:

“Owner” to “Contractor”

Paragraph 11.3.1.2, replace with the following paragraph:

- 11.3.1.2 The Owner will maintain Property Insurance on the Property but will not be purchasing Builder’s Risk Insurance for the Contractor. The Contractor shall, as a requirement of the contract, obtain insurance that will protect the interests of the Contactor, Sub Contractors and Subcontractors in the Work. Purchase of Builder’s Risk insurance is not considered Optional under this Agreement. If the Owner is damaged by the failure or neglect of the Contractor to purchase or maintain insurance as described above, then the Contractor shall bear all reasonable costs properly attributable thereto. The Owner shall be listed as additional insured on the Contractor’s policy.

Paragraph 11.3.1.3, change and add the following:

Change the word “Owner” to “Contractor”.

Add: The amount of the deductible is \$5,000.00 per claim.

11.4 PERFORMANCE BOND AND PAYMENT BOND

Add the following paragraphs:

- 11.4.3 Performance and payment bonds shall be executed only by a Surety Company possessing an A.M. Best Co. rating of “A-” or better and which holds a certificate of Authority issued by the Department of Treasury and shall be listed as an acceptable surety in the Circular, published annually as of July 1, by the Department of the Treasury, Financial Management Service in the Federal Register. The amount of the performance and payment bonds shall be within the underwriting limitations set forth for the Surety Company in the Circular of the Department of the Treasury referenced above. Any Co-Surety of the Surety Company shall also possess a Best’s rating of “A-” or better and shall hold a Certificate of Authority issued by the Department of Treasury and shall be listed in the Circular issued by the Department of the Treasury referenced above. The contract instrument of Bonds must be counter signed by a duly appointed and licensed agent resident of Kentucky.

- 11.4.4 If the surety on any Bond furnished by the Contractor is declared bankrupt, or becomes insolvent, or its right to do business is terminated in the State of the point of delivery, or the surety ceases to meet the requirements stated in the above paragraph, the Contractor shall, within five days thereafter, substitute another Bond and surety, both of which must be acceptable to the Owner at no additional cost to the Owner.
- 11.4.5 Performance and Payment Bond amounts are to include both contract sum and purchase order amounts as included in the bid sum.

ARTICLE 13 – MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

Add the following paragraphs:

- 13.1.2 The Kentucky Fairness in Construction Act, KRS 371.400 to 371.990, applies to this construction contract, and where there is a conflict between the terms and conditions of these documents and the provisions of the Kentucky Fairness in Construction Act, the latter shall prevail.
- 13.1.3 Within 10-days after the award of contract, and as required by KRS 45A.343, Section (2)(a), each contractor and all subcontractors performing work under this 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.

13.5 TESTS AND INSPECTIONS

Add the following paragraphs:

- 13.5.7 Testing of materials and systems are specified in their particular sections of the Project Manual.
- 13.8 Full compliance by the Contractor and Subcontractors as to their duties prescribed by the “Act Relating to Contracts for Public Works”, KRS 337.505 to 337.550 is required in the performance of work under this contract.

13.9 NON-DISCRIMINATION

- 13.9.1 During the performance of this Contract, the Contractor agrees to the following:
- .1 The Contractor and Subcontractors shall not discriminate against employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor

agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

- .2 The Contractor and Subcontractors shall, in solicitations or advertisements for employees placed by them or on their behalf, state that qualified applicants will receive consideration for employment without regard to race, religion, color, sex, or national origin.
- .3 The Contractor will send each labor union, or representative of workers with which they have a collective bargaining agreement, or other contract, or understanding, a notice advising said labor union or workers’ representatives of the Contractor commitments under this section, and shall post copies of the notice in places conspicuous to employees and applicants for employment. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency sanctions for non-compliance.

13.10 AFFIDAVIT OF ASSURANCES

13.10.1 Prior to the execution of the Contract, the Owner will require of the Contractor a completed and notarized AFFIDAVIT OF ASSURANCES, PURSUANT TO KRS 198B.060(10).

- .1 A copy of the affidavit for DOH-BCE-04 (7/90) is attached at the end of this Section.

ARTICLE 15 – CLAIMS AND DISPUTES

15.1.5 CLAIMS FOR ADDITIONAL TIME

Add the following paragraph:

15.1.5.3 The reference to “adverse weather” shall be clarified to mean weather conditions which are in excess of the 20-year norm, as recorded by the National Oceanographic Association.

END OF SECTION 00 70 00
(Form attached)

DOH-BCE-04
7/90

Case No: _____
Project Name _____
City/County _____

**AFFIDAVIT OF ASSURANCES
PURSUANT TO KRS 198B.060(10)**

Comes the Applicate, _____ and states:
(print name)

That pursuant to KRS 198B.060(10), all contractors and subcontractors employed, or that will be employed on any activity under the above referenced project shall be in compliance with the Commonwealth of Kentucky requirements for Worker's Compensation Insurance (according to KRS Chapter 341).

THIS the _____ day of _____, 20__

CONTRACTOR, OWNER OR OWNER'S AGENT

SUBSCRIBED AND SWORN to before me by _____, Applicant, on this
the _____ day of _____, 20__

NOTARY PUBLIC STATE AT LARGE

MY COMMISSION EXPIRES _____

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

Performance Bond

CONTRACTOR:

(Name, legal status and address)

T B D

SURETY:

(Name, legal status and principal place of business)

T B D

OWNER:

(Name, legal status and address)

Bullitt County Public Schools
1040 Highway 44 East
Shepherdsville, Kentucky

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

Company: _____
(Corporate Seal)

SURETY

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:)



This version of AIA Document A312–2010 is modified by the Kentucky Department of Education. Publication of this version of AIA Document A312 does not imply the American Institute of Architects' endorsement of any modification by the Kentucky Department of Education. A comparative version of AIA Document A312–2010 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.

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)

T B D

SURETY:

(Name, legal status and principal place of business)

T B D

OWNER:

(Name, legal status and address)

Oldham County Schools
6165 W Highway 146
Crestwood, Kentucky

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:)



This version of AIA Document A312–2010 is modified by the Kentucky Department of Education. Publication of this version of AIA Document A312 does not imply the American Institute of Architects' endorsement of any modification by the Kentucky Department of Education. A comparative version of AIA Document A312–2010 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.

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: _____

Signature: _____

Name and Title: _____

Name and Title: _____

Address _____

Address _____

FACPAC Purchase Order Form

Form Status: Saved

Project:

BG Number:

Status: Active

District: Bullitt County (071)

Phase: No Data

Con

Type

Proposed

District PO Number

Ky Sales Tax Exempt Number

Date of Order

Specification Section

Material Description / Category

Requested By

Vendor Name

Vendor Address

Vendor Phone

Vendor Email

Bill To

Bill To Address

Ship To

Ship To Address

Attention Of

Contacts

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

Contact Name

Contact Phone

Materials

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 Description

**Item
Number**

Quantity

Unit Price

Total

Purchase Order Total:

Authorization

Owner Authorization Date

Vendor Authorization Date

Purchase Order Signature Page (Online Form Ref# 48284)

Vendor

Date

Owner

Date

Terms and Conditions

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 local 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 01 01 10 – SUMMARY OF WORK

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification sections, apply to work of this section.
- B. Contractor shall provide all items, articles, materials, operations, or methods listed, mentioned, or scheduled on Drawings and/or herein, including all labor, materials, equipment, and incidentals necessary and required for their completion.

1.02 DEFINITIONS

- A. The term “OWNER” used throughout the Contract Documents refers to:
Bullitt County Public Schools, 1040 Highway 44 East, Shepherdsville, Kentucky, 40165.
- B. The term “ARCHITECT” used throughout the Contract Documents refer to:
Studio Kremer Architects, 1231 S. Shelby Street, Louisville, Kentucky, 40203.
- C. The term “ENGINEER” or “CONSULTANT” used throughout the Contract Documents refers to the one of the following:
 - 1. Landscape Architect and Civil Engineer: SWT Design, 1229 South Shelby Street, Louisville, Kentucky, 40203.
 - 2. Structural Engineer: Brown + Kubican Structural Engineers, 8900 Greenway Commons Place #201, Louisville, Kentucky, 40220.
 - 3. MEP Engineer: CMTA Consulting Engineers, 10411 Meeting Street, Prospect, Kentucky, 40059.

1.03 PROJECT / WORK IDENTIFICATION

- A. General: Project name is “Bernheim Middle School Renovation ”, as shown on Contract Documents prepared by Studio Kremer Architects and their consultants.
- B. Work Included: Work under this Contract shall include ALL materials, labor, and equipment necessary for the Renovation Work of Bernheim Elementary School at 700 Audubon Drive, Shepherdsville, Kentucky 40165, indicated or hereinafter specified.
- C. Contract Documents: Indicates the work of the Contract and related requirements and conditions that have an impact on the Project. Related requirements and conditions that are indicated on the Contract Documents include, but are not necessarily limited to the following:
 - 1. Work which may be performed concurrently by separate Contractors.
 - 2. Work to be performed subsequent to Work under this Contract, by others.

3. Allowances.
- D. Summary by References: Work of the Contract can be summarized by references to the Contract, General Conditions, Supplementary Conditions, Specifications Sections, Drawings, addenda, and modifications to the Contract Documents issued subsequent to the initial printing of this project manual and including but not necessarily limited to printed material referenced by any of these. It is recognized that work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomenon including weather conditions and other forces outside the Contract Documents.
- E. Abbreviated Written Summary: Briefly and without force and effect upon the Contract Documents, the Work of the Contract can be summarized as follows:
1. Project involves the renovation of and addition to an existing 6th – 8th grade school for accommodation of 500 students. The existing construction of the building is a combination of a pre-engineered metal structure system with masonry veneer at the perimeter and load bearing masonry and sloped bar joists at the center over the media center. There are two additions to the end of the building to expand classroom space. Interior renovation includes the reconfiguration of partitions at the classrooms, media center, administration suite, and gym locker rooms.
 2. Roofing scope includes new metal standing seam installed over the existing and modified bitumen roofing over the classroom additions. The existing insulated foam roof is under warranty, preservation measures of the warranty and coordination with the warranty holder is required.
 4. Openings include aluminum windows, storefront, and curtain wall. Doors are primarily hollow metal doors in hollow metal frames.
 5. New canopies will be constructed to provide cover at the main entry and bus entry sidewalk.
 6. Work involves HVAC systems, electrical systems (including lighting), plumbing, fire protection, communications, and electronic safety and security systems.
 7. Finishes include drywall, luxury vinyl tile (LVT), carpet, tile, painting, and acoustical/grid ceilings.
 8. Select existing parking and drives will be resurfaced to serve the building, as will multiple outdoor paved areas. Above grade detention facilities will be constructed to mitigate additional runoff caused by the construction of this project.
 9. Other site development includes outdoor classroom and cafeteria seating plazas, grasses, plantings, geothermal well field and signage.

See specifications index for all elements of work included in the project.

1.04 PLANS AND SPECIFICATIONS

- A. The terms “PLANS” and “DRAWINGS” are used interchangeably and are understood to have the same meaning.
- B. Drawings provided show areas of work and details of construction. Do not scale drawings for measurements.

- C. The Work under this Contract does not include any items marked N.I.C. (not in contract) on the Drawings.
- D. In case of conflicts between the Drawings and Specifications, the more stringent requirement shall apply.
- E. It is the Contractor's responsibility to notify the Architect if they discover discrepancies or inaccuracies in the dimensioned drawings before making any changes to the Work. Changes to dimensioned drawings shall only be made with the approval of the Architect.
- F. Contractor shall be responsible for obtaining all field measurements and verification of on-site conditions which may affect the Work. Should the Contractor discover any error or discrepancy between drawings and actual on-site conditions, they shall notify the Architect immediately for clarification.
- G. Should any error or inconsistency appear in the Drawings or Specifications, the Contractor, before proceeding with the Work, must make mention of the same to the Architect for proper adjustment and in no case proceed with the Work in uncertainty or with insufficient drawings. Refer to the Supplemental Instruction to Bidders for written request requirements.

1.05 ADMINISTRATION OF THE CONTRACT

- A. The Architect will perform certain administrative functions of the Construction Contract. Nothing contained in the Contract Documents, any verbal or written agreements, or written correspondence shall imply any contractual relationship between the Architect – or their consultants – and the General Contractor.
- B. The Architect, or their consultants, will make periodic visits to the Project Site in accordance with the conditions of their contract with the Owner. The purpose of these visits and observations is an effort to guard against defects and deficiencies, not to supervise the Contractor's work.
- C. The Architect, or their consultants, make no express or implied representations of guaranteeing the Contractor's work.
- D. The Architect, or their consultants, do not assume responsibility for construction operations and safety programs / requirements.

1.06 COORDINATION

- A. The Work of this Contract includes coordination of the entire work of the project, including preparation of general coordination drawings, diagrams and schedules, and control of site utilization, from beginning of construction activity through project close-out and warranty periods.

- B. Contractors and Subcontractors shall coordinate their work with adjacent work and cooperate with other trades so as to facilitate general progress of the Work. Each trade shall afford other trades every reasonable opportunity for installation of their work and for storage of their materials.
- C. Coordinate scheduling, submittals, and work of the various Specification Sections to ensure efficient and orderly sequence of installation of interdependent construction elements.
- D. Work will be performed by a separate contractor for the installation of the Safety and Security components. Work shall be coordinated with this project for a simultaneous completion date.
- E. Verify that all utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work with other trades. All Contractors are required to coordinate and have mutual responsibilities for installing, connecting to, and placing in service, such equipment.
- F. Coordinate space requirements and installation of mechanical and electrical work, which are indicated diagrammatically on the Drawings. Follow routing shown for pipes, ducts and conduit, as closely as practicable place runs parallel with lines of the building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance and for repairs, by holding all installation as high as possible. Each Contractor shall coordinate their work with all other trades, existing and anticipated conditions, as necessary to maximize the use of the space. If in doubt about the acceptability of a proposed installation, contact the Architect / Engineer for instructions.
- G. In finished areas, except as otherwise indicated, conceal pipes, ducts and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- H. Coordinate completion and clean-up of work requirements of all Specification Sections in preparation for Substantial Completion.
- I. After Owner occupancy of the premises, coordinate access to site for correction of defective work and work not in accordance with the Contract Documents, to minimize disruption of Owner's activities.
- J. Coordinate parking, material storage, work schedules with BCPS Facilities Director, Tony Roth.
- K. Contractor shall maintain a foreman or supervisor on-site during all construction activities. The individual in charge shall be introduced to the building principal and plant operator and be responsible for coordination and act as the liaison with the school administration.
- L. All subcontractors shall communicate any questions or requests through the General Contractor.
- M. Contractor shall not modify, add, or delete any scope of work requested by school personnel. Changes to the Contract must be properly authorized by the project Architect and Owner.

1.07 PERMITS AND APPROVALS

- A. The Contractor shall be responsible for obtaining and paying for any required permits, local plan review fees, or approvals that may be required by any city, county, or state agency, any utility company, or any other agency which may have authority over any aspect of the Work being done. The HBC State plan review fee will be paid by the Owner.
1. Contractor is required to submit plans to local Fire Department and County Building Department and pay all required fees.

1.08 CONTRACTOR USE OF PREMISES

- A. General: The Contractor shall limit their use of the premises to the Work indicated.
- B. Use of the Site: Confine operations to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed.
1. Refer to Division 01 section "Temporary Facilities" for construction fencing requirements.
 2. Refer to Division 01 section "Temporary Facilities" for other allowable use of the site.
 3. Do not load the structure with weight that will endanger structure.
 4. Confine operations in each phase to areas indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
 - a. Protect, do not damage portion of areas that are to remain and are outside the project area. Restoration of damaged areas will be required.
 5. Keep required means of egress open, accessible, and free from construction debris.
 6. Keep existing driveways and entrances serving areas outside the areas of work clear and available to the Owner at all times, unless specifically identified as available for Contractor use. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
 7. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas agreed with Owner / Architect. If additional storage is necessary, obtain and pay for such storage off site.
 8. Assume full responsibility for protection and safekeeping of products stored on site.
 - a. It is the responsibility of the General Contractor to protect the following items during all construction activities by wrapping (and securing) plastic wrap around them. If required, the Contractor shall move the said items to install new work and then move or reinstall in the designated location.
 - 1) Miscellaneous Casework
 - 2) Miscellaneous Equipment

9. Use of gasoline / diesel powered equipment will not be allowed in the building. Any equipment used shall be electrically or propane powered. Provide the necessary ventilation needed to meet OSHA requirements.
10. Lock automotive type vehicles, such as passenger cars and trucks and other mechanized or motorized construction equipment, when parked and unattended, so as to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place.

C. Work Sequence:

1. From the **Notice to Proceed** until **Substantial Completion**, all work shall be done at during the hours agreed to during the Pre-Construction Conference. The Contractor is responsible for establishing work hours and obtaining the Owner's approval.
2. If the Contractor finds that double or even triple shifts of work crews are necessary for performance of work within designated Contract Time, this factor is to be included in the Contract Sum.

1.09 OWNER OCCUPANCY AND COORDINATION OF ANY REQUIRED OUTAGES

A. Full Owner Occupancy:

1. Substantial Completion of the Work shall be as follows:
 - a. **July 15, 2025.**
 - b. Note that Liquidated Damages will apply if school does not start because of construction. Liquidated damages have been set at \$1,000.00 per calendar day.
 - c. **Starting on June 15, 2025**, the Owner will need to begin moving in and setting up furniture. A staging area to receive the furniture and equipment will need to be available on June 15, 2025, and all rooms shall be final cleaned prior to the installation of furniture and equipment.
2. Obtain a Certificate of Occupancy from local building officials prior to Owner occupancy.
3. Prior to Owner occupancy, mechanical and electrical systems shall be fully functional. Required inspections and tests shall have been successfully completed.

- B. In all cases, the Owner shall be notified a minimum of 48-hours prior to any anticipated interruption of utilities.

1.10 SALVAGE ITEMS

- A. All salvageable and / or reusable site stone material shall remain the property of the Owner unless, after inspection, the Owner determines they do not want the salvageable items.

- B. If the Owner does not want to reuse site stone, it shall then be disposed of in accordance with these Specifications by the Contractor at no additional cost to the Owner.
- C. All topsoil suitable for planting shall remain on the property of the Owner and redistributed following provisions of drawings and specifications.

1.11 PROTECTION OF PROPERTY

- A. The Contractor shall protect all property at the site and adjacent thereto, including landscaping, lawns, walks, structures, roof, utilities, equipment, and all interior finishes.
- B. The Contractor shall clean, repair, or replace all damaged parts as required, bringing them to their original condition.
- C. The Contractor shall take all necessary steps to protect the work of others and their own work during the process of construction.
- D. Construction materials and equipment are to be maintained in a safe and secure manner when the Contractor is not on site.

1.12 MAINTENANCE AND WORKMANSHIP

- A. The Contractor shall maintain the Work and repair same where necessary until the Work has been finally accepted.
- B. Work shall be performed by mechanics skilled in their respective trades and present an appearance typical of best trade practice. Work not installed in this manner shall be repaired, removed, and replaced or otherwise remedied as directed by the Architect, Engineer, or other inspecting authority. Contractor should ensure that the Work is done correctly the first time so as not to get the opportunity to do the Work over again.

1.13 CLEANING

- A. The Contractor shall proceed to complete their Work in a neat and orderly fashion and keep the building and site free from undue amounts of debris and miscellaneous material that will cause the area to become unsightly. Contractor is responsible for the removal from the site and legal disposal of all removed materials and debris.
- B. Upon completion of the Work and before acceptance and final payment will be made; the Contractor shall remove and dispose of legally from the site all machinery, equipment, surplus and discarded materials, rubbish, and temporary facilities.
- C. The Contractor shall perform final cleaning, as specified in Division 01 section "Cleaning".
- D. During construction, the facility shall be left in a clean, neat, and presentable condition acceptable to the Owner.

1.14 ACCEPTANCE OF WORK

- A. Contractor shall comply with all conditions as stated per the Contract Documents. Upon the completion of their Work, clean the applicable area, remove all debris, tools, equipment, etc., from the site and shall leave the Work site in a first-class condition, suitable for immediate use by the Owner.
- B. Contractor shall notify the Architect of their substantial completion, whereupon the Architect and Owner will make an inspection of the Work.
- C. Contractor shall correct any and all deficiencies in the Work (as covered in these Specifications) and upon correction of the deficiencies notify the Architect for re-inspection. Payment shall be made upon Architect's and Owner's satisfaction of the Work in accordance with these Specifications.

1.15 PROJECT CLOSEOUT

- A. Provide all written guarantees and certificates required by these Specifications, in accordance with the General Conditions and Division 01 Sections.

1.16 CORRECTION PERIOD

- A. The Contractor shall repair or replace any material and/or Work installed under this Contract found to be defective for a period of one-year from the Date of Substantial Completion unless other sections of the Specifications require greater than one-year. Any defects developing during that time period shall be remedied by the Contractor at no additional cost to the Owner, in accordance with the General Conditions of the Contract. The one-year correction period shall not be construed to establish a period of limitation per Article 12.2 of the General Conditions.
- B. All items identified shall be corrected within 90 days of General Contractor being notified. Note that a penalty of \$1,000.00 per calendar day will be applied for work is not corrected in this time frame.

1.17 SECURITY AND PROTECTION

- A. Provide all necessary barricades, warning signs, lights, roadway traffic plates, and fencing required to protect the health, safety, and welfare of the public. Building shall be secured at the end of each workday.
- B. Construction materials and equipment are to be maintained in a safe and secure manner when the Contractor is not on site.
- C. General: All work shall be performed in compliance with all applicable and governing safety regulations. All safety lights, guards, signs, and other safety materials and provisions required for the performance of the work shall be provided by and operated by the Contractor.

- D. OSHA: It shall be the duty and responsibility of the Contractor and all subcontractors to be familiar and comply with all requirements of the Occupational Safety and Health Act of 1970, (OSHA) and all amendments thereto, and to enforce and comply with all provisions of this Act.
- E. Emergencies: In any emergency affecting the safety of persons or property, the Contractor shall act, at its direction, to prevent threatened damage, injury or loss.
- F. Refer to “Contractor Safety” (green pages) for additional requirements.

1.18 CONDUCT OF WORKERS

- A. The Contractor shall be responsible for the conduct of all workers under their supervision. Misconduct on the part of any worker to the extent of creating a safety hazard, endangering the lives and/or property of others, shall result in the prompt removal of the worker. The consumption of alcoholic beverages, narcotics, or any debilitating drugs, where the worker’s judgment is impaired is **strictly forbidden** on the Project Site.
- B. Firearms are **prohibited** on school property including vehicles parked on school property.
- C. Workers shall not fraternize with students or staff. Conflicts between workers and students shall be immediately reported to the School’s Administrative Staff.
- D. Smoking, any tobacco products, vapor pipes and the use of e-cigarettes are **prohibited** on school property, including vehicles parked on school property.
- E. Appropriate language shall be used at all times.
- F. Proper attire, including shoes, shirts, pants, and necessary safety equipment shall be worn at all times.
- G. No worker on the project site shall be a registered sex offender. The Contractor is required to verify through The National Sex Offender (NSOPW.gov) web site that none of the workers on the site are registered sex offenders. Provide the Owner a list of names of the workers to be on site and verification of their status.
- H. Background checks and drug tests for all workers on the site are to be presented to the Owner. Badges will be provided for all workers on site and must be visible at all times. The Contractor is responsible for providing a USB flash drive to BCPS Construction for each subcontractor which contains the following information:
 - a. Worker’s Driver License
 - i. If Worker does not have a Driver’s License a legible photo must be provided digitally in JPEG format.
 - b. Worker’s Drug Test Results
 - c. Worker’s Criminal Background Check

The USB flash drive must be updated periodically to account for all workers on site during different phases of construction. Workers will receive their badges from BCPS Construction upon submission of the digital paperwork. Badges will be delivered to the project site – no-person badging will be administered at the Central Board Office.

1.19 PROJECT SIGN

- A. Provide a 4'-0" x 8'-0" color construction sign following requirements of the Owner. The Architect will provide digital file of construction sign after the contract is awarded.

1.20 BUILDING TECHNOLOGY

- A. While some building technology and communications elements are in the project, the Owner will have a separate contract for furnishings and equipment and a separate contract for instructional technology. It is the responsibility of the General Contractor to coordinate ongoing construction work with the work of these separate contractors, assuring sequencing is conducive to the successful installation of the Work of all contracts.

1.21 SEPARATE CONTRACTS

- B. The Owner will have separate contracts running concurrently with general construction, these contracts include the following:
 - a. Bid Package 2: Building Automation Temperature Control
 - b. Bid Package 3: Technology
- C. It is the responsibility of the Contractor to coordinate with contractors under the Owner's separate contracts.

END OF SECTION 01 01 10

SECTION 01 02 10 – ALLOWANCES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 DESCRIPTION

- A. Related requirements specified elsewhere include, but not limited to:
 - 1. General Conditions, Article 3.8, Allowances
 - 2. Division 01 Section “Measurement and Payment”
 - 3. Division 01 Section “Submittals”
 - 4. Division 04 Section “Unit Masonry Assemblies”
- B. Designate in Schedule of Values separate item for cost allowances of the Work.
- C. Designate in Construction Schedule for delivery dates of Products.

1.03 SCHEDULE OF ALLOWANCES

- A. Purchase product / material under allowance only as directed by Architect / Engineer.
- B. Include the following amounts in Base Bid for inclusion in Contract Sum.
 - 1. Site Electrical and Communication Utility Connections: Allow \$20,000 for tap and easement fees as required by the local utilities. Refer to Site Utilities Plan UE1.0 and utilize amount for existing electrical connection fees.
 - 2. Soil Stabilization for Building and Paved Areas: Allow \$40,000 for undercut and refill due to soft soils at building and new pavement. Allowance price shall be adjusted by Unit Price #1, 5, 6, and 7.
- C. Amount of allowance includes:
 - 1. Net cost of product.
 - 2. Delivery to the Project Site.
 - 3. All applicable taxes.
- D. Unless otherwise noted, include in the Allowance amount the Contractors cost for the following:
 - 1. Handling at Project Site, including unloading, uncrating and storage.
 - 2. Protection from elements from damage, including any packaging.
 - 3. Labor, installation and finishing.

4. Other expenses (i.e. testing, adjusting and balancing) required to complete installation.
5. Overhead and profit.

E. The use of Allowance money must be approved by the Bullitt County Public Schools before work can proceed.

1.04 DELIVERY

A. Contractor shall be responsible to arrange for delivery, unloading, and prompt inspection of product for damage for defects and submission of claims for transportation damage.

1.05 INSTALLATION

A. Comply with referenced Specification Section requirements.

1.06 ADJUSTMENT OF CASH ALLOWANCE

A. Adjustments shall only be by Change Order in accordance with the General Conditions, Article 3.8, subparagraph 3.8.2.3.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION (not applicable)

END OF SECTION 01 02 10

SECTION 01 02 50 – MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Basic Requirements for Applications for Payment and Change Orders: GENERAL CONDITIONS.

PART 2 SCHEDULE OF VALUES

2.01 GENERAL

- A. Submit to the Architect the Schedule of Values for review, at least (10-days prior to submitting the first Application for Payment.
- B. Upon request by the Architect, support values given with data that will substantiate their correctness.
- C. Submit quantities of designated materials.
- D. Use the Schedule of Values only as a basis for Contractor's Application for Payment.

2.02 FORM OF SUBMITTAL

- A. Submit the Schedule of Values prepared on AIA Document G702 and G703.
- B. Use the Index of these Specifications as a basis for format for listing cost codes of work for each Section.

2.03 PREPARING SCHEDULE OF VALUES

- A. Itemize separate line item cost for each of the following general cost items:
 - 1. Performance and Payment Bonds
 - 2. Field Supervision and layout
 - 3. Construction Facilities and Temporary Controls
 - 4. General Conditions (i.e. Supervision, Shop Drawings, etc.)
 - 5. Close-Out Documents
- B. Itemize separate line item cost for work required by each section of this Specification.

- C. Breakdown installed costs into:
 - 1. Materials costs, including delivery, with taxes paid.
 - 2. Labor cost, with overhead and profit.
- D. For each line item which has installed value of more than \$1,000.00, breakdown costs to list major products or operation under each item.
- E. Round off figures to the nearest dollar.
- F. Make sum of total costs of all items listed in schedule equal to the total Contract Sum.

PART 3 PAYMENTS

3.01 APPLICATIONS FOR PROGRESS PAYMENTS

- A. At a time, consistent with the requirements of this section, the GENERAL CONDITIONS, and the Owner - Contractor Agreement, and for each calendar month during the progress of the Work submit three (3) copies of a properly notarized, Itemized Application for Payment prepared in a manner consistent with the Schedule of Values.
- B. The amount shown on the Application for Payment shall be established by the value of the Work completed in accordance with the Contract Documents, and that all amounts have been paid by the Contractor for work for which previous payments were issued by the Owner.
- C. Payments made on account of materials not incorporated in the Work may be made as a convenience to the Contractor. However, until incorporated in the Work, such stored materials are the responsibility of the Contractor, and they shall carry suitable insurance to cover their loss in the event of theft, fire or other damage. When application for payment includes material or equipment off-site, the application shall be accompanied with a statement giving description of item and location of storage, and certifying that item is covered by all contractual requirements, including liability and fire insurance, and that item or any part thereof will not be installed in any construction other than Work under this Contract. Provide photographic evidence and Certificate of Insurance for the off-site stored material amounts being requested for payment.
- D. The form of application for payment shall be based on the 1992 edition of AIA Document G702, "Application and Certificate of Payment", supported by AIA Document G703, Continuation Sheet, 1992 edition.
- E. Provide following itemized data on Continuation Sheet:
 - 1. Format, schedules, line items, and values shall be from the schedule of values accepted by Architect. Indicate materials and labor separately.
 - 2. Include names, trades and amounts for Subcontractors.

- F. Preparation of Application for Each Progress Payment:
1. Application Form:
 - a. Fill in required information, including that for Change Orders executed prior to the date of submittal application.
 - b. Fill in summary of dollar values to agree with the respective totals indicated on the continuation sheet.
 - c. Execute certification with the signature of a responsible officer of the Contractor's firm.
 2. Continuation Sheets:
 - a. Fill in total list of all scheduled component items of Work, with item number and the scheduled dollar value for each item. Break down each item, indicating values for labor and material separately.
 - b. Fill in the dollar value in each column for each scheduled line item when Work has been performed or products stored. Round off valued to nearest dollar, or as specified for the Schedule of Values.
 - c. List each Change Order executed prior to the date of submission, at the end of the continuation sheets. List by the Change Order number, description, and breakdown of costs as per original component item of Work.
- G. Substantiating Data for Progress Payments:
1. When substantiating data is requested submit suitable information as necessary to substantiate payment request accuracy. Include a cover letter identifying:
 - a. Project.
 - b. Application number and date.
 - c. Detailed list of enclosures.
 - d. For stored products: Item number and identification as shown on application, and description of specific material.
 2. Submit one copy of data and cover letter for each copy of application.
- H. Applications for Payment shall be accompanied by cost breakdowns from Subcontractors and Sub-subcontractors, and shall also be accompanied by the previous billing month's waivers of lien from Subcontractors, Sub-subcontractors and material suppliers, as applicable.
- I. Application of Payment requesting reduction in retainage before final payment shall be accompanied by a properly executed "Consent of Surety to Reduction in or Partial Release of Retainage", AIA Document G707A, 1994 edition.
- J. When the Architect finds the application properly completed and correct, it will be transmitted to the Owner.

3.02 PROGRESS PAYMENTS

- A. The stipulated rates of payment and retainage will be in effect in accordance with Article 5 of the Agreement between Owner and Contractor.
- B. The full contract retainage may be reinstated if the manner of completion of the Work and its progress do not remain satisfactory to the Owner, or if the Surety withholds consent, or for other good and sufficient reasons.
- C. Following a Subcontractor's satisfactory completion of his portion of the Work, and the Contractor including same in an Application for Payment, accompanied by applicable release of liens and written consent of surety, and the Architect's issuance of the Certificate of Payment, the Owner may elect to add a progress payment to amount equal to that required for the Contractor to make final payment, including full retainage, to such Subcontractor.

3.03 APPLICATION FOR FINAL PAYMENTS

- A. Submit final Application for Payment using AIA Documents and following the procedures specified above for progress payments.
- B. Before submitting final Application for Payment, forward to the Architect, for the Owner, the bonds (if required), written warranties and guarantees, Record "As-Built" Drawings, Record and Maintenance Manuals and other documents required by the Contract Documents, and place properly, in approved storage at the site, the extra stock and spare parts specified.
- C. Properly executed releases or waivers of lien in duplicate on AIA Document, Form G706, "Contractor's Affidavit of Payment of Debts and Claims", 1994 edition, and Form G706A "Contractor's Affidavit of Release of Liens", 1994 edition, shall be submitted to Architect digitally, prior to final payment.
- D. Application for Final Payment shall be accompanied, four (4) copies, by a properly executed "Consent of Surety Company to Final Payment: AIA Document G707, 1994 edition".
- E. Contractor shall submit, with the close-out documents, a statement on company letterhead verifying that no materials used in this project contained asbestos.
- F. Refer to Division 01 Section "Contract Closeout" for further information.

3.04 FINAL PAYMENT

- A. Final payment will be made in accordance with the Agreement after final satisfactory completion of the Work, as certified by the Owner and Architect, and receipt of all close-out documents by the Owner.

- B. The retained amount will be paid by the Owner, after approval of the BG-4 Form by the Kentucky Department of Education, providing there are no undischarged or unsecured liens, attachments or claims in connection with the Work.

PART 4 CHANGE ORDERS

4.01 GENERAL

- A. All Change Orders must have Bullitt County Public Schools Board Approval before the work may proceed.**
- B. Regardless of method used to determine value of changes, the estimated or actual cost shall be submitted in detailed breakdown form, giving quantity and unit costs by each trade of each item, labor cost with hourly rates, allowable overhead and profit. No additional amount will be paid for submittal in this form or for resubmittal should the breakdown be considered inadequate by the Architect. Back-up data submitted with applications for payment may be used as basis for approving or reflecting costs submitted in Change Orders.
- C. Where unit prices are not quoted and value of changes resulting in reductions in the Work is determined by estimate and acceptance in a lump sum, by cost and percentages, or by cost and a fixed fee, **the percentage for overhead and profit or commission that shall be refunded to the Owner shall be not less than 3% of the net reduction.**
- D. In Change Orders involving both increases and decreases and resulting in a net increase, the overhead, profit, and commission added shall be required only on the net increases.
- E. In Change Orders involving both increases and decreases and resulting in a net decrease, the overhead, profit, and commission refund shall be required only on the net decrease.
- F. In cases of rearrangements, quantities of materials omitted shall be deducted from quantities added. Labor computations shall be made in the same manner.
- G. Estimates for materials shall be based on reasonable current prices at which materials are available to the Contractor and Subcontractor. Upon request, submit satisfactory evidence of such costs.
- H. The Contractor shall maintain an accurate account of labor and material involved in each change. Such time and material records are subject to verification. Notify Architect when work on each change is to start and when it has been completed. To receive full recognition, labor assigned to Contract changes must, insofar as possible, work continuously on the change, rather than interchanging between Contract Work and the change.
 - 1. Unit of measurement in calculating areas, quantities, volumes shall be understood to mean **actual in place measurements of materials or volumes.**

- I. In order that proposed changes in Work, if they should occur, can be processed without undue delay, indicate in each separate proposal requesting a change in the Contract supporting information in detailed breakdown form, including the exact location of the change requested, the reason for the change, and the square feet, square yards, cubic yards, linear measure or any other unit of measure applicable to the Work involved, together with the unit cost of labor by trades and materials. Labor unit costs shall include associated insurance. Other types of protection are assumed to be covered by overall job insurance with no additional charges assigned to unit costs.

PART 5 UNIT PRICES

5.01 GENERAL

- A. A unit price is the amount stated in the agreement or subsequently agreed upon by the Owner and the Contractor as a price per unit of in place measurement for addition or deduction of materials or services as described in the Contract Documents. Unit prices shall include costs of labor, materials, services, overhead and profit, bonds, insurance, and other costs to cover the completed work. Additions or deductions in the work authorized to be carried out and paid for or deducted from payment and omitted from the work shall be executed in accordance with the applicable sections of the Specifications.

END OF SECTION 01 02 50

SECTION 01 04 00 – PROJECT COORDINATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
 - 1. Coordination.
 - 2. Administrative and supervisory personnel.
 - 3. General installation provisions.
- B. Field Engineering is included in Division 01 Section, "Field Engineering".
- C. Progress meetings, coordination meeting and pre-installation conferences are included in Division 01 Section "Project Meetings."
- D. Requirements for the Contractor's Construction Schedule are included in Division 01 Section "Submittals".
- E. Requirements for Cleaning are included in Division 01 Section "Cleaning".

1.03 COORDINATION

- A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection and operation.
 - 1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
 - 2. Where availability of space is limited, 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.
 - 4. The Drawings indicate the general arrangement and spacing of the roof structure, anticipated duct, and pipe routings, etc., however the Contractor is expected to field verify the installation prior to fabrication of the ductwork.
 - 5. The Contractor shall develop their own fabrication installation drawings for the Project. Prior to purchase/shipment of the ductwork, manufacturer shall provide as a part of the

submittal process scaled, field coordinated AutoCAD drawings of the complete system to be furnished. Drawings will indicate all system components including fittings, ductwork and manifolds. Drawings shall be available in an electronic format. The Engineer will not be approving the Contractor prepared drawings and will review for general intent only.

6. The Contractor shall finally coordinate the fabrication and installation of the mechanical services with the limitations of the proposed building structure. The anticipated conditions have been designed by the Engineer as much as possible, however the Contractor shall make the necessary provisions in the Bid for any and all differences. **Change Orders shall not be considered for any differences due to lack of field investigation and coordination.**
- 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. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work. Refer to Division 01 Section "Summary of Work" for disposition of salvaged materials that are designated as Owner's property.

1.04 SUBMITTALS

- A. Coordination Drawings: Prepare and submit coordination drawings where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.
1. Show the interrelationship of components shown on separate Shop Drawings.
 2. Indicate required installation sequences.
 3. Comply with requirements contained in Division 01 Section "Submittals."
 4. Refer to Division 20 Sections for specific coordination requirements for mechanical installations.

5. Refer to Division 26 Sections for specific coordination requirements for electrical installations.
- B. 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, their duties and responsibilities; list their addresses and telephone numbers.
1. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS

- A. 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.
- B. Continuity of Material Availability: If it is known by the General Contractor, a supplier, or a subcontractor that a product described for use on this project is discontinued, going out of production, or scheduled to be discontinued, a substitute compliant with the requirements of the relevant specification shall be provided. Discontinued or soon-to-be discontinued products shall not knowingly be used on this project.
- C. 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.
- D. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- E. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
1. No contractor shall drill through, cut through, or connect through structural members or their components without express approval by the architect or structural engineer. Attachments shall be made with clamps, clips, or other non-penetrating fasteners.
 2. Anchors shall not be shot into exposed concrete or any precast concrete assemblies. At precast assemblies, attachment points shall be made by drilling and anchoring.
- F. 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.

- G. Recheck measurements and dimensions before starting each installation.
- H. 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.
- I. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- J. Mounting Heights: Where mounting heights are not indicated, refer mounting height decision to the Architect.

END OF SECTION 01 04 00

SECTION 01 05 00 – FIELD ENGINEERING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SCOPE OF WORK

- A. Provide field engineering work as shown, specified, or both shown and specified, and as required to complete the Work.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION

3.01 GENERAL FIELD ENGINEERING REQUIREMENTS

- A. Employ licensed civil engineers and / or surveyors to perform field engineering services required, including:
 - 1. Layout building as indicated, informing Architect of any discrepancies. **The licensed engineer / surveyor shall layout all new building foundations and columns lines.**
 - 2. Review and verify locations and figures shown before undertaking construction. General Contractor is responsible for accuracy of finished work.
 - 3. Before beginning work, locate general reference points and benchmarks, and take action to preserve or replace them and prevent their destruction. Record the location and elevation of each benchmark and make no changes in location without the written approval of the Owner.
 - 4. Locate and lay-out site work, utility slopes and inverts, using surveying instrument and techniques.
 - 5. Plumb, level and align concrete forms and structural elements.
 - 6. Set stakes for grading, fill, backfill and paving.
 - 7. Locate and level screeds. Lay-out formwork.
 - 8. Measure and record changes or variations from Contract Documents throughout construction for transfer to permanent Record Drawings.

- B. Establish vertical and horizontal control points remote from the Work, before starting excavation, or trenching. Control points shall be, or shall be related to, benchmarks or other indices that are sufficiently secure and remove from the Work that construction operations and traffic do not affect reliability. Take readings of benchmarks, control points and reference points, and record them. Make a copy of this initial record for the Owner.
- C. All new underground utilities (primary and secondary) installed will be surveyed by a licensed Kentucky Surveyor, i.e., water lines, waste lines, electrical lines, telephone service, etc., any line / pipe installed below grade outside of the building footprint. The Contractor will be responsible for employing a Surveyor to document underground utilities as described in Division 01 Section "Quality Control". The Contractor is responsible for coordinating when surveyor is needed on site. Surveyor shall be contacted 48-hours in advance of backfilling underground utilities / piping / conduits, etc.
- D. Expose tracer wires at ends, valves, junction boxes, etc., for Owner's future use. Contractor shall verify / prove to Owner that all tracer wires are installed and continuous without breaks, utilizing tracer equipment at the end of the project.

END OF SECTION 01 05 00

SECTION 01 17 00 – STORAGE, PROTECTION AND SAFETY

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Comply with the requirements of the Conditions of the Contract relating to protection of persons and property and with the requirements specified herein.
- B. Protect products scheduled for use in the Work by means including, but not necessarily limited to, those described in the Section.
- C. Related Work:
 - 1. Documents affecting work in the Section include, but are not necessarily limited to the, General Conditions, Supplementary General Conditions and Division 01 Sections of this Project Manual.
 - 2. Additional procedures also may be described in other Sections of this Project Manual.

1.03 QUALITY ASSURANCE

- A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.
- B. **Coordinate all construction activities with separate Contractors responsible for Bid Package #2 – Building Automation Temperature Control and Bid Package #3 – Technology.**

1.04 MANUFACTURER'S RECOMMENDATIONS

- A. Except as otherwise approved by the Architect, determine, and comply with manufacturer's recommendation on product handling, storage and protection.

1.05 PACKAGING

- A. Deliver products to the job site in their manufacturer's original container, with labels intact and legible.
 - 1. Maintain packaged materials with seals unbroken and labels intact until time of use.
 - 2. Promptly remove damaged material and unsuitable items for the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the Owner.

- B. The Architect may reject, as non-complying, such material and products that do not bear identification satisfactory to Architect as to manufacturer, grade, quality and other pertinent information. In addition, the Architect may reject any materials or products damaged due to inadequate packaging.

1.06 STORAGE

- A. Store materials in a manner acceptable to manufacturer so as to not damage the materials prior to installation. Provide coverings, pallets, dunnage and / or storage facilities necessary to protect stored materials.

1.07 REPAIRS AND REPLACEMENTS

- A. In the event of damage, promptly make replacements and repairs to the approval of the Architect, with no additional cost to the Owner.
- B. Additional time required to secure replacements and to make repairs will not be considered by the Architect to justify the extension of the Contract Time of Completion.

1.08 FIRE PROTECTION

- A. Maintain good housekeeping practices at all times to reduce the risk of fire damage. All scrap materials, rubbish and trash shall be removed daily from the site and shall not be permitted to be scattered on adjacent property. Use of the Owner's dumpster shall not be permitted.
- B. Comply with all applicable fire protection requirements of the local fire district.

1.09 SPECIAL NOTICE CONCERNING UTILITIES

- A. Contractor shall, before starting any work, locate all underground lines / piping including electrical power and lighting, telephone, gas, water, sewers, or other as necessary, to ascertain if there are any underground installations that could be damaged due to this contract work. Contractor shall take every precaution necessary so as not to damage any of these underground services. Contractor will be held entirely responsible for any damage whatsoever to these underground installations and shall pay for remedial work as required at no cost to the Owner.
- B. All utilities shown on the Drawings are approximate. Individual service lines are not shown. The General Contractor, or subcontractor, shall notify the Kentucky Dig Safely toll-free hotline (1.800.752.6077, or 811) 48-hours in advance of any construction on this Project. This number was established to provide accurate location of existing below ground utilizes (i.e. cables, electric wires, gas and water lines). The General Contractor shall be responsible of becoming familiar with all utility requirements set forth in the Contract Documents and make special provisions. The General Contractor shall employ the services of a qualified underground utility locator to identify and mark any underground utilities that may be encountered in the work area not specifically located by the utility services locator (i.e. secondary houses lines etc.).**

1.10 PROTECTION OF THE WORK

- A. It shall be the Contractor's responsibility to prevent uplift and movement of structures in any direction, until receipt of written acceptance of completed work of this contract. Ground water surrounding the structure shall be maintained at safe levels.
- B. Take all necessary measure to protect the Work from damage by moisture, freezing and other causes, both before and after installation, until receipt of written acceptance of the completed work.

1.11 SAFEGUARDS

- A. Provide barricades and temporary signage for the protection of persons and property and the control of vehicular and pedestrian traffic as required by the governing agency.
- B. Secure the building at the end of each day. All exterior doors, windows and openings shall be locked or secured to prevent unauthorized entry into the building. Building alarm system shall be activated.
- C. Adhere to OSHA 1926 construction manual for work in confined spaces.

1.12 PROTECTION OF PERSONS AND PROPERTY

- A. Comply with applicable laws, ordinances, rules, regulations, and orders of public authorities having jurisdiction for the safety of persons and property to protect them from damage, injury, or loss.
- B. Throughout the Owner's property, protect permanent improvements to remain, curbs, pavements, fences, planting, buildings, and other improvements subject to damage due to Contractor's operations.
- C. Erect and maintain, as required by conditions and progress of the work, necessary safeguards, for safety and protection, including temporary fences, guards, railings, barricades, canopies, lighting, shoring, directional and danger signs, signals and other warnings against hazards.
- D. Protect and secure the site, materials and equipment from theft and damage, by whatever reasonable means are effective. Methods such as the following may be employed, singularly or together: Locks, fences, signs, patrols, radio, alarms, locked storage on-site and off- site warehousing.
- E. Do not permit trenches to remain open, without adequate board or fencing, barricade, or other means of identifying an open trench.
- F. Repair and restore all damaged items to the condition existing at the beginning of construction, or better. Existing site improvements: such as pavements, curbs, buildings, fences, lawns,

plantings and lighting which are not to be removed under this Contract, but are damaged or defaced by Contractor's operations, they be repaired or replaced.

- G. Fire Extinguishers: Provide types, sizes, numbers and locations as would be reasonably effective in extinguishing fires during early stages of construction, by personnel at the Project Site. Provide Type A extinguishers at locations of low potential for either electrical or grease-oil-flammable liquid fires; provide ABC dry chemical extinguishers at other locations; comply with recommendations of NFPA No.10. Post warning and quick instructions at each extinguisher location and instruct personnel at the Project Site, at time of their first arrival, on proper use of extinguishers and other available facilities at the Project Site. Post local fire department call number on each telephone instrument at the Project Site.
1. Permanent Fire Protection: Complete each fire protection facility at earliest reasonable date and make ready for emergency use and instruct personnel at site on availability and proper use.
- H. Building Enclosure and Lockup: Secure building against unauthorized entrance at times when personnel are not working. Provide secure temporary enclosures at ground floor and other locations of possible entry, with locked entrances.
- I. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
1. Excessive static or dynamic loading
 2. Excessive internal or external pressures
 3. Excessively high or low temperatures
 4. Thermal shock
 5. Excessively high or low humidity
 6. Air contamination or pollution
 7. Water or ice
 8. Solvents
 9. Chemicals
 10. Light
 11. Radiation
 12. Puncture
 13. Abrasion
 14. Heavy traffic
 15. Soiling, staining and corrosion
 16. Bacteria
 17. Rodent and insect infestation
 18. Combustion
 19. Electrical current
 20. High speed operation
 21. Improper lubrication

22. Unusual wear or other misuse
 23. Contact between incompatible materials
 24. Destructive testing
 25. Misalignment
 26. Excessive weathering
 27. Unprotected storage
 28. Improper shipping or handling
 29. Theft
 30. Vandalism
- J. Fire and Windstorm Protection: Take the following precautions to protect the Project against fire and windstorm damage during construction.
1. Set up an effective fire brigade and arrange for response to the building site by the community fire department in the event of an emergency.
 2. Provide adequate portable fire extinguisher equipment for all areas of storage, construction, temporary enclosures, and construction offices.
 3. All temporary contractor's offices, storage sheds, workmen's shanties, etc., shall be located outside of, and well detached from, the building under construction.
 4. The installation of water supplies, sprinklers, standpipes, and fire hose shall closely follow completion of floors and areas.
 5. Storage of combustible and flammable materials shall be maintained outside of, and well detached from, the building under construction. Storage of combustibles shall not be located inside the building under construction.
 6. Only flame-proofed tarpaulins shall be used.
 7. The supply of flammable paints, solvents, oils, gas cylinders, etc., inside the building under construction shall be limited to that required for one day's use.
 8. Cutting and welding operations present a severe hazard, and such work should be done outside of the building under construction whenever possible.
 9. Insulation materials required for the curing of concrete shall be non-combustible.
 10. Temporary electric wiring should be kept to a minimum. Flood lights are preferable to individual unprotected lamps. All temporary electric circuits should be properly installed to prevent physical damage, and they should be provided with overload protection as specified in the national Electric Code.
 11. All roofing kettles (or any similar equipment) shall be located outside the building under construction, with as much detachment as possible.
 12. Smoking, any tobacco products, vapor pipes and the use of e-cigarettes are **prohibited** on school property, including vehicles parked on school property.
 13. All combustible waste and scrap materials shall be removed from the building under construction on a daily basis. No on-site incineration shall be permitted.
 14. Ready access for the public fire department shall be maintained to all areas at all times.
 15. All structural steel shall be properly secured and braced at the end of each working day.
 16. All masonry walls should follow the erection of the permanent structural members, so that adequate lateral stability is improved. Brace wall as required until permanent lateral bracing is installed.
 17. All concrete forms shall be adequately fastened in place.

18. All roof decking shall be permanently secured as it is laid in place.
 19. All vapor barriers, insulation and roofing materials shall be permanently fastened to the roof deck as it is applied.
 20. All construction materials shall be adequately protected against wind damage during storage.
 21. All tarpaulins or any other temporary enclosure materials shall be securely fastened.
- K. Protect installed work and provide special protection where specified in individual specification sections.
1. Protect finished surfaces, including walls, projections, jambs, sills, and soffits of openings used as passageways, through which equipment and materials are handled.
 2. Protect finished floors and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects by protecting with durable sheet materials.
 - a. Lay Down / Work Areas: The Contractor shall protect any floors where toolboxes, pipe bending, gang boxes, etc. are placed. Provide 3/4" plywood with plastic sheeting. Contractor is responsible for repairing / replacing any damaged floors.
 3. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.
 4. Protect all roof surfaces from traffic or storage. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
 5. Prohibit traffic from landscaped areas.

1.13 SAFETY MEETINGS

- A. The Contractor shall conduct meetings to discuss safe working methods with all employees under his control on a regularly scheduled basis, but not less than weekly.
- B. Contractor shall be held entirely responsible for safety regulations, procedures, and policies.
- C. Coordinate safety meetings with separate Contractors responsible for *Bid Package #2 – Building Automation Temperature Control* and *Bid Package #3 – Technology*.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION (not applicable)

END OF SECTION 01 17 00

SECTION 01 20 00 – PROJECT MEETINGS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 DESCRIPTION

- A. Attend Pre-Construction Conference and Progress Meetings as specified.

1.03 PRE-CONSTRUCTION CONFERENCE

- A. As soon as possible after issuance of Notice to Proceed and prior to start of construction, Architect will arrange an on-site meeting with the Contractor. The meeting agenda will include the following:
 - 1. Correspondence procedures;
 - 2. Designation of responsible personnel;
 - 3. Changes;
 - 4. Payments to Contractor;
 - 5. Subcontractors;
 - 6. Construction Schedule;
 - 7. Submittals;
 - 8. Restrictions on access to and use of site;
 - 9. Security;
 - 10. Review of existing mechanical, electrical, communication, or other systems in the areas for new Work. The method to document the existing conditions of these systems will be reviewed and scheduled with the Owner.

1.04 PROGRESS MEETINGS

- A. Attend progress meetings every two (2) weeks at the site during the construction period, at a time suitable to Owner and Architect. Also organize other site meetings as requested by Owner or Architect.
 - 1. Agenda:
 - a. Review of work progress to date and work to be completed in the time frame before the next progress meeting.
 - b. Review of field observations, problems and decisions.
 - c. Identification of problems which may impede planned progress.
 - d. Corrective measures to regain projected schedules.
 - e. Effect of proposed changes on progress schedule and coordination.

- f. Other business relating to work.
- B. Each interested Subcontractor shall be present at meetings to report the condition of their work and to receive instructions.
- C. Architect shall record the minutes of each meeting, including names of principal participants, significant proceedings and decisions, and distribute copies of minutes within seven (7) days after meetings.
- D. Progress of work shall be reported, in writing, in detail with reference to construction schedule and submit copies to Owner and Architect at each progress meeting.
- E. When attendance is requested, attendance shall be mandatory.

1.06 FOCUS MEETINGS

- A. Prior to the start of any major activities (i.e. masonry, roofing, paving) a focus / coordination meeting shall be held to ensure the Work is properly coordinated and performed as specified.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION (not applicable)

END OF SECTION 01 20 00

SECTION 01 22 00 – UNIT PRICES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Division 01 Section “Quality Control” for general testing and inspecting requirements

1.03 DEFINITIONS

- A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.04 PROCEDURES

- A. Indicate 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 necessary labor and materials, plus cost for delivery, installation, insurance, bonds, applicable taxes, overhead and profit for the Contractor, as well as any Subcontractor involved. These unit prices shall be listed in units of work.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections, or in the description of the Unit Price itself.
 - 1. **Unit of measurement in calculating areas, quantities, volumes shall be understood to mean actual in place measurements of materials or volumes.**
- C. 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 Owner’s expense, by an independent surveyor acceptable to Contractor.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION

3.01 LIST OF UNIT PRICES

- A. Refer to the Kentucky Department of Education's Form of Proposal for a schedule of Unit Prices to be included.

END OF SECTION 01 22 00

SECTION 01 23 00 – ALTERNATES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This section includes administrative and procedural requirements governing Alternates.
- B. This section identifies each Alternate by number and describes the change(s) to be incorporated into the Work.
- C. It is the responsibility of each Contractor to review the Contract Documents to determine if an Alternate(s) affects their Contract Package at time of Bidding.
- D. Materials and workmanship not otherwise described in the Alternate(s) shall match similar items specified under the Base Bid.

1.03 DEFINITIONS

- A. An Alternate is an amount proposed by Bidders and stated on the Form of Proposal for certain work defined herein that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. The cost or credit for each Alternate is the net addition to or deduction from the Contract Sum to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.

1.04 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent Work as necessary to completely and fully integrate the Alternate scope into the Project.
 - 1. Include as part of each Alternate any miscellaneous devices, accessory objects, materials and similar items incidental to or required for a complete job whether or not mentioned as part of the Alternate.
- B. Notification: Immediately following the award of the Contract, notify each party involved, in writing, of the status of each Alternate. Indicate whether Alternate(s) have been accepted, rejected, or deferred for later consideration.

- C. Note: If any Alternate bid results in a change to a listed subcontractor or vendor, then such subcontractor or vendor changes are to be identified with the Alternate bid and in the List of Proposed Subcontractors (as applicable) as part of the Form of Proposal.
- D. Execute accepted Alternates under the same conditions as the other Work of this Contract.
- E. Schedule: The “Schedule of Alternates” is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials necessary to achieve the work described under each Alternate.
- F. If there is no change to the Base Bid when including an Alternate, insert zero-dollar amount on the Form of Proposal so that alternate amount is not left blank.

1.04 USE OF ALTERNATES

- A. The successful Contractor shall be determined by the combination of Base Bid and Alternate(s) selected by the Owner.
- B. The Owner reserves the right to use an Alternate(s) in whatever combination that best serves their interest.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION

3.01 SCHEDULE OF ALTERNATES

- A. **Alternate No.1:** Door Hardware
 - 1. Use Owner’s Preferred Hardware, as described in Division 08 Section “Door Hardware”, 1.3, A.
 - a. If any alternate bid results in a change to a listed subcontractor or vendor, then such subcontractor or vendor changes are to be identified with the alternate bid.
 - b. Note: Where Hardware is part of a storm-rated assembly, including door and frame, provide assembly from a manufacturer which can include owner’s preferred hardware in a rated assembly.
- B. **Alternate No.2:** Fire Alarm System
 - 1. Base Bid: Provide any approved system listed in Specification Section 28 31 00.
 - 2. Alternate: Provide the specified fire alarm system manufactured by EST/Edwards.

C. **Alternate No.3:** Plumbing Equipment

1. Base Bid: Provide any approved plumbing fixture manufacturer and model as specified in Specification Section 22 02 00 – Plumbing Fixtures, Fitting and Trim.
2. Alternate: Provide the following manufacturer and model of plumbing fixtures as listed below:
 - P-2A – Lavatory Self-Metering Faucet: Delta Model 86T1153
 - P-2B – Lavatory Self-Metering Faucet: Delta Model 86T1153
 - P-6A – Electric Water Cooler: Elkay Model #VRCTL8S
 - P-6B – Electric Water Cooler w/ Bottle Filler: Elkay Model #VRCTL8WSK

D. **Alternate No.4:** Kitchen Equipment

1. Use **Owner’s Preferred Item**, as indicated in Specification Section 11 40 00.
 - a. If any alternate bid results in a change to a listed subcontractor or vendor, then such subcontractor or vendor changes are to be identified with the alternate bid.

E. **Alternate No.5:** 60kW Photovoltaic System

1. Base Bid: Provide building system **WITHOUT** photovoltaic solar system.
2. Alternate: Provide building system integrating a turnkey photovoltaic solar system, net meter and photovoltaic PV sub electric meter as indicated in Specification Section 26 61 00.

F. **Alternate No. 6:** Extension of Right-of-Way

1. Base Bid: No change to the Right-of-Way, maintain existing private drives.
2. Alternate: Provide extension of private entries 17.5’ to the north in Right-of-Way and 18.5’ to the south in Right-of-Way, as described on Civil Drawings.

G. **Alternate No.7:** Intercom Public Address and Master Clock System

1. Base Bid: Provide any approved system listed in Specification Section 27 51 16.
2. Alternate: Provide the specified intercom system manufactured by Rauland Borg.

END OF SECTION 01 23 00

SECTION 01 30 00 - SUBMITTALS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements for Submittals required for performance of the Work, including:
 - 1. Contractor's Construction Schedule
 - 2. Submittal Schedule
 - 3. Daily Construction Reports
- B. Administrative Submittals: Refer to other Division 01 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
 - 1. Permits
 - 2. List of Subcontractors
- C. The Schedule of Values, included on Division 01 Section "Measurement and Payment".
- D. Inspection and test reports, included in Division 01 Section "Quality Control".

1.03 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittal with performance of construction activities. Transmit each submittal in advance of performance of related construction activities to avoid delay.
- B. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than Contractor will be returned without action.

1.04 CONTRACTORS CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Prepare a fully developed, horizontal, bar-chart type Contractor's schedule. Submit within (15) days of the date of the Notice to Proceed.
 - 1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".

2. Within each time bar, indicate estimated completion percentage in 10% increments. As the Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
 3. Prepare the schedule on a sheet, or series of sheets, on reproducible media, and sufficient width to show data for the entire construction period.
 4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
 5. Coordinate the Contractor's construction schedule with the Schedule of Values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
 6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for Certification of Substantial Completion.
- B. Work Stages: Indicate important stages in construction for each major portion of the Work, including testing and installation.
- C. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, Subcontractors and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- D. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.05 DAILY CONSTRUCTION REPORTS

- A. Project Superintendent shall prepare a daily construction report recording the following information:
1. List of Subcontractors on site, including number of workers.
 2. Equipment on site.
 3. Material deliveries.
 4. Temperature and weather conditions.
 5. Accidents.
 6. Stoppages, shortages or delays.
 7. Inspections.
 8. Visitors on site.
- B. Reports shall be forwarded to the Architect and Owner on a weekly basis.

PART 2 **PRODUCTS** (not applicable)

PART 3 **EXECUTION** (not applicable)

END OF SECTION 01 30 00

SECTION 01 34 00 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 GENERAL

- A. Submit, with such promptness as to cause no delay in construction, shop drawings, product data and samples required by Specifications Sections. The completion time of the Project will NOT be extended for delays caused by tardiness of delivery.

1.03 SHOP DRAWINGS

- A. Original drawings, prepared by the Contractor, Subcontractor, supplier or distributor, which illustrate some portion of the Work, showing fabrication, layout, setting or erection details.
- B. Prepared by qualified detailer.

1.04 PRODUCT DATA

- A. Manufacturer's standard schematic drawings:
 - 1. Modify drawings to delete information which is not applicable to the Project.
 - 2. Supplement standard information to provide additional information applicable to the Project.
- B. Manufacturer's catalog sheets, brochures, diagrams, schedule, performance charts, illustrations, and other standard descriptive data:
 - 1. Clearly mark each copy to identify pertinent materials, products, or models.
 - 2. Shop dimensions and clearance required.
 - 3. Shop performance characteristics and capacities.
 - 4. Show wiring diagrams and controls.

1.05 SAMPLES

- A. Physical examples to illustrate materials, equipment, or workmanship, and to establish standards by which completed work is judged.
- B. Office Samples of sufficient size and quality to clearly illustrate:

1. Functional characteristics of product or material, with integrally related parts and attachment devices.
2. The definition of full range is ALL available colors, regardless of price range.

1.06 CONTRACTOR RESPONSIBILITIES

- A. Review Shop Drawings, Product Data and Samples prior to submission. Indicate on each submittal and sign showing review and date.
- B. Verify:
 1. Field measurements.
 2. Field construction criteria.
 3. Catalog numbers and similar data.
 4. Quantities.
- C. Coordinate each submittal with requirements of the Work and of the Contract Documents.
- D. Contractor's responsibility for errors and omissions in submittal is not relieved by Architect / Engineer's review of submittals.
- E. Contractor's responsibility for deviations in submittals from requirement of Contract Documents is not relieved by Architect / Engineer's review of submittals unless Architect / Engineer gives written acceptance of specific deviations.
- F. Notify Architect / Engineer, in writing at time of submission, of deviations in submittals from requirements of Contract Documents.
- G. Begin no work which requires submittals until return of submittals with Architect / Engineer stamp and initials or signature indicating review.
- H. After Architect / Engineer's review, distribute copies.

1.07 SUBMISSION REQUIREMENTS

- A. All Shop Drawings and Product Data shall be reviewed and stamped by the General Contractor.
 1. Submission of shop drawings and products shall be as follows:
 - a. **OWNER:** All shop drawings and product data (*with transmittal*) to be sent digitally to Bullitt County Public Schools via Tony Roth at the same time of submittal to Architect / Engineer.
 - b. **CIVIL/LANDSCAPE:** All shop drawings and product data (*with transmittal*) to be sent digitally. Send directly to the Civil Engineer/ Landscape Architect and copy the Architect.

- c. **STRUCTURAL:** All shop drawings and product data (*with transmittal*) to be sent digitally. Send directly to the Structural Engineer and copy the Architect.
 - d. **ARCHITECTURAL:** All shop drawings and product data (*with transmittal*) to be sent digitally.
 - e. **MEP:** All shop drawings and product data (*with transmittal*) to be sent digitally. Send directly to the MEP Engineer and copy the Architect.
2. Provide separate transmittal for each submittal indicated with Specification Section.
 3. Email addresses / contacts will be provided at the Pre-Construction Meeting.
- B. Samples: Submit as indicated in the Specification of the product.
- C. After development and acceptance of the Contractor's construction schedule, prepare and submit a complete schedule of submittals.
1. Coordinate submittal schedule with the subcontractors, Schedule of Values, and the list of products as well as the Contractor's construction schedule.
 2. Provide the following information:
 - a. Related Specification Section number.
 - b. Name of Subcontractor.
 - c. Description of the Work covered.

1.08 ARCHITECT / ENGINEER DUTIES

- A. Review submittals with reasonable promptness.
- B. Review for:
 1. Design concept of Project.
 2. Information given in Contract Documents.
- C. Review of separate item does not constitute review of an assembly in which item functions.
- D. Affix stamp and initials or signature certifying review of submittal.
- E. Return submittals to Contractor for distribution.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION (not applicable)

END OF SECTION 01 34 00

SECTION 01 40 00 – QUALITY CONTROL

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SCOPE OF WORK

- A. This section includes requirements for testing and special inspection services and for published standards and specifications.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Types and Quantities of Field Tests required are identified in the Technical Specifications Sections.
- B. Tests Required of Manufacturer in Factory or Plant for Quality Assurance are identified in the Technical Specifications sections.
- C. Refer to Structural Drawings and Division 01 Section “Special Inspections” for Structural Special Inspection requirements.

1.04 TESTING AND INSPECTION SERVICES

- A. The Owner will employ and pay for the following testing and inspection services:
 - 1. Soils / Geotechnical Services
 - 2. Concrete
 - 3. Reinforcement placement
 - 4. Mortar and grout
 - 5. Masonry inspections
 - 6. Welding quality control
 - 7. Structural Steel, including connections
 - 8. Metal deck fastening / attachment
 - 9. Testing and Balance
 - 10. Commissioning.
- B. Except where specifically specified above, Contractor shall employ testing and inspection laboratories or agencies to perform inspecting and testing required by the various Specification Sections and pay all costs for such services. Contractor shall coordinate with Owner’s testing agency to arrange required inspections at appropriate times.

- C. Testing or inspection of the Work or both shall not relieve the Contractor of their responsibility for conforming to the requirements of the Contract Documents.
- D. Certification that Work conforms to the requirements of the Contract Documents remains the responsibility of the Contractor.

1.05 PROCEDURE FOR TESTING LABORATORY AND INSPECTION SERVICES

- A. Testing laboratory and inspection services, including such services as sample taking, sample curing and preparation, testing, and reporting, shall be performed by an agency or agencies, referred to hereafter as the Inspection Agency or Testing Laboratory, approved by the Owner and Architect.
- B. The Contractor shall provide access and incidental equipment and shall schedule operations in such a way that inspections may be made freely by the Testing Agency or Inspection Agency or, when requested, make arrangements with manufacturers for inspection of materials and equipment during manufacture.
- C. Reports of tests shall be submitted by the Agency or Laboratory, by email, directly to the Architect and Owner for interpretation at the same time forwarded to the Contractor, for their distribution. The Architect will transmit copies to their consultants.
- D. Retest Responsibility: Where results of required inspections, tests or similar services are unsatisfactory (not in compliance with the Contract Documents), retesting will be the responsibility of the Contractor at their expense.
- E. Notify the Owner's testing agencies a minimum of 24-hours in advance of work requiring their on-site presence. It is the General Contractor's responsibility to coordinate with the Owner's testing service. Contractor will be back charged for the time expended by the testing company due to the lack of notification for cancellation of work regarding testing.

PART 2 PUBLISHED STANDARDS AND SPECIFICATIONS

2.01 USE OF PUBLISHED STANDARDS AND SPECIFICATION STANDARDS

- A. Work specified by reference to the published standard or specifications of a government agency, technical associations, trade association, professional society, testing agency, or other organization shall comply with or exceed the minimum standards of quality for materials and workmanship established by the listed standard or specifications. References used in the project specifications are to be the latest edition adopted and published prior to the publication date of these specifications unless the specific date of the standard is listed in the project specification.

- B. In case of conflict between the referenced standard or specification and the Building Code or other legal requirement having jurisdiction, comply with the one establishing the more stringent requirements.
- C. In case of conflict between the referenced standard or specification and the project specifications, the project specifications shall govern.
- D. In case of conflict between the referenced standards or specifications when more than one standard or specification is cited, the priority of interpretation shall be as follows:
 - 1. First priority: UL, NFPA, or FML.
 - 2. Second priority: ASTM or ANSI Standard or Federal Specifications.
 - 3. Third priority: Other listed standard or specification.

2.02 ABBREVIATIONS FOR PUBLISHED STANDARDS AND SPECIFICATIONS

- A. Following is a list of organizations publishing specifications and standards to which references may be made in the project specifications, with abbreviations used. The addresses from which published standards can be obtained will be furnished by the Architect upon request.

AA	Aluminum Association
AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ABPA	Acoustical and Board Products Association
ACI	American Concrete Institute
AGA	American Gas Association
AI	Asphalt Institute
AIA	American Institute of Architects
AInA	American Insurance Association (formerly NBFU)
AISC	American Institute of Steel Construction
AITC	American Institute of Timber Construction
ANA	American Nurseryman's Association
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWPB	American Wood Preservers Bureau
AWSAWS	American Welding Society
BIA	Brick Institute of America (formerly SCPI)
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards of the U. S. Department of Commerce
FGMA	Flat Glass Marketing Association

FED.Spec.	Federal Specifications
FML	Factory Mutual Laboratories
FTI	Facing Tile Institute
GA	Gypsum Association
IEEE	Institute of Electrical and Electronic Engineers
MFMA	Maple Flooring Manufacturer's Association
MIA	Marble Institute of America
MLSFA	Metal Lath/Steel Framing Association
MIL	Military Specifications
NAAMM	National Association of Architectural Metal Manufacturers
NBGQA	National Building Granite Quarries Association
NBS	National Bureau of Standards of the U. S. Department of Commerce
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NOFMA	National Oak Flooring Manufacturer's Association
NSF	National Sanitation Foundation
NTMA	National Terrazzo and Mosaic Association, Inc.
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PEI	Porcelain Enamel Institute
PI	Perlite Institute, Inc.
PS	Product Standard, National Bureau of Standards
RTI	Resilient Tile Institute
SBI	Steel Boiler Institute
SDI	Steel Deck Institute
SDI	Steel Door Institute
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc.
SFPA	Southern Forest Products Association
SSPC	Steel Structures Painting Council
TCA	Tile Council of America
UL or U.L.I.	Underwriters' Laboratories, Inc.
WWPA	Western Wood Products Association

PART 3 EXECUTION (not applicable)

END OF SECTION 01 40 00

SECTION 014110 – STRUCTURAL SPECIAL INSPECTION, & CONTRACTOR RESPONSIBILITY

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. General Conditions of the Construction Contract Inspection of Work / Defective or Incomplete Work / Special Inspections shall apply in its entirety to this project. Where any conflict exists between this Specification Section and the General Conditions, the General Conditions provisions shall supersede in all aspects.

1.2 SUMMARY

- A. Special Inspections as defined in Section 1704 of The Kentucky Building Code are required.
- B. The Risk Category, Seismic Design Category, and Basic Wind Speed for the structure are shown in the General Notes section of the structural drawings.
- C. Special inspections per Kentucky Building Code Sections 1704 and 1705 are required for the following materials and work:
 - 1. Inspection of Fabricators per Section 1704.2.5 of the Kentucky Building Code.
 - 2. Steel Construction per Section 1705.2 of the Kentucky Building Code.
 - 3. Concrete Construction per Section 1705.3 of the Kentucky Building Code.
 - 4. Masonry Construction per Section 1705.4 of the Kentucky Building Code.
 - 5. Prepared Fill per Section 1705.6 of the Kentucky Building Code.
 - 6. Additional materials and work as/if indicated on the Construction Drawings.
- D. The structural special inspections required on this project are further defined in the Special Inspections section of the structural drawings. Other, non-structural special inspections may be required and are specified elsewhere if applicable.

1.3 SCOPE

- A. The scope of the construction work to be inspected / tested / observed is that structural and foundation work shown on the structural construction drawings (S- sheets) as well as the following:
 - 1. Geotechnical fill immediately below and within the footprint of the building and retaining wall foundations shown on the structural drawings.
- B. All inspections and tests performed shall be documented by report including, but not limited to, inspections for grout and concrete placement, reinforcing inspection, curing, fabricators, deck attachment, etc.

1.4 DEFINITIONS

- A. In accordance with the intent of the Building Code, inspection work specified to be “continuous” shall be inspected the full, uninterrupted time that the Contractor is performing said construction work. Work specified to be “periodic” may be inspected as convenient to the Inspector, except that all work must be inspected prior to being covered by other work, during the working hours of the Contractor, and in a fashion that does not delay the Contractor. Regardless as to whether inspections are performed in “continuous” or “periodic” fashion, 100% of the construction work shall be inspected, unless noted otherwise.

1.5 SELECTION AND PAYMENT

- A. The Inspection Agency shall be retained by the Owner. Costs for reinspection and retesting, should discrepancies be found, will be paid for by the Owner, except where rework is due to negligence or omission deemed excessive by the Owner.
1. In case of excessive rework, such retesting and reinspection shall be paid for by the Owner as an additional service of the Inspection Agency, but will be backcharged by deductive change order to the Contractor’s contract.
 2. In case of excessive waste/lost time of the Special Inspector due to inadequate scheduling by the General Contractor, such time shall be paid for by the Owner as an additional service of the Inspection Agency but will be backcharged by deductive change order to the Contractor’s contract.
- B. Special Inspections are additional to testing and inspection requirements shown elsewhere in the specifications and on the drawings, which is to be paid for by the Contractor. The Contractor shall also pay for additional structural testing and inspection required for their convenience. Inspection work not part of the Structural Special Inspections may be performed by an Inspection Agency of the Contractor’s choosing, unless noted otherwise.

1.6 INFORMATIONAL SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
- B. Fabricator certificate of current good standing with Qualified Certification Program.
- C. Fabricators exempt from special inspection shall submit a *Certificate of Compliance* to the structural engineer of record at the completion of fabrication stating that all work was completed in accordance with the approved construction documents.

1.7 QUALITY ASSURANCE

- A. Qualified Certification Authorities: Subject to compliance with Kentucky Building Code Requirements, Qualified Certification Authorities providing certification which may be applicable to Project include:
1. American Concrete Institute (ACI).

2. American Institute of Steel Construction (AISC).
3. American Society of Nondestructive Testing (ASNT).
4. American Welding Society (AWS).
5. Cold Formed Steel Engineers Institute (CFSEI).
6. International Accreditation Service (IAS).
7. International Code Council (ICC).
8. National Institute of Certified Engineering Technology (NICET).
9. Steel Joist Institute (SJI).

PART 2 – EXECUTION

2.1 PROGRESS MEETINGS

- A. The Special Inspector's designated Project Manager is to attend any pre-construction meetings which may be conducted at the construction site by the Structural Engineer to discuss quality issues.
- B. The Special Inspector's designated Project Manager is to attend construction progress meetings which will be held at the construction site by the Architect, Engineer, and General Contractor.

2.2 CONTRACTOR'S RESPONSIBILITIES

- A. Provide a complete copy of all structural shop drawings to the Structural Testing/Inspection Agency.
- B. Arrange the preconstruction meeting to discuss quality issues.
- C. Notify the Structural Testing/Inspection Agency sufficiently in advance of operations to allow assignment of personnel and scheduling of tests.
- D. Cooperate with Structural Testing/Inspection Agency and provide access, including equipment with operator, to work. Access equipment includes, but is not limited to, man lifts, excavation equipment, etc.
- E. Provide samples of materials to be tested in required quantities.
- F. Provide storage space for Structural Testing/Inspection Agency's exclusive use, such as for storing and curing concrete testing samples. If required by Special Inspector, General Contractor shall provide cure box with electricity, water, and blankets for curing concrete specimens.
- G. Provide labor to assist the Structural Testing/Inspection Agency in performing tests/inspections. Labor includes, but is not limited to, construction of masonry prisms, etc.
- H. Construction and work for which Special Inspection is required shall remain accessible and exposed for special inspection purposes until the completion of the inspections and tests.

- I. All parties who are to receive inspection and testing reports shall maintain an active email account to receive reports by.
- J. General Contractor shall create and maintain a discrepancy log on site. Log shall list each discrepancy documented by the Special Inspector; state the date of discovery and Special Inspector's report number; and provide room for the Special Inspector to sign and date when said discrepancy is corrected. No work containing discrepancy shall be covered prior to having reinspection and approval by the Special Inspector.
- K. Neither the observation of the Architect/Structural Engineer in the administration of the contract, nor tests/inspections by the Testing/Inspection Agency, nor approvals by any other person(s) shall relieve the Contractor from their obligation to perform the work in accordance with the Contract Documents.

2.3 SPECIAL INSPECTOR'S RESPONSIBILITIES

- A. Cooperate with the Contractor and provide timely service.
- B. Notify Contractor of minimum advance notice for each type of inspection/test.
- C. Upon arriving at the construction site, sign in and notify the Contractor of presence.
- D. Select the representative samples that are to be tested/inspected.
- E. Perform tests/inspections as outlined in the Contract Documents, the applicable codes, and as directed by the Structural Engineer.
- F. Keep records of all inspections.
- G. Furnish inspection reports to the Architect, Structural Engineer, and General Contractor weekly as construction progresses.
 - 1. Each report shall include photographs of the project status and the typical work inspected and documented in that subject report. These general photographs are in addition to the required photograph at discrepancies.
- H. Inform General Contractor and / or Fabricator of all discrepancies immediately for correction.
 - 1. Document in writing correction of discrepancies.
 - 2. Highlight discrepancies within the report.
 - a. The report shall include a text description of each discrepancy. Description shall convey the discrepancy location on the project and the issue.
 - b. The report shall include a photograph of each discrepancy observed in the field and/or in the shop. Photograph shall be labeled to convey location on project and the issue shown. (Photographs of material strength tests for concrete and/or masonry are not required, unless otherwise instructed.)

- c. The report shall document the date that each discrepancy was initially discovered.
 - d. Inspection related discrepancies shall be reinspected by the Special Inspector along the course of the project and prior to concealment by other work. Subsequent reports shall document date that prior discrepancy was confirmed to be corrected.
- 3. If discrepancies are not corrected, the discrepancies shall be brought to the attention of the Code Official and the Structural Engineer prior to the completion of that phase of the work.
 - I. Leave copies of field notes with the Contractor prior to leaving the construction site. Field notes shall include the message given to the Contractor, date, time of message, name of Contractor's representative informed, type and location of work or materials tested/inspected, whether the work or materials complies with Contract Documents and name of the Structural Testing/Inspection Agency's representative.
 - J. Immediately notify General Contractor, Architect, and Structural Engineer by separate letter if work yet to be inspected is found on site that is either being covered by other work or was to receive continuous inspection.
 - K. Structural Testing/Inspection Agency shall not alter requirements of Contract Documents, approve or reject any portion of the work, or perform duties of the Contractor.
 - L. Submit a final report of inspections documenting completion of **all** required Special Inspections and correction of any discrepancies noted in inspections to the Structural Engineer. Final report shall be prepared by, sealed, and signed by the Special Inspector and shall include a complete list of materials and work inspected during the course of the project. One copy of said report is to be provided to the Contractor for their records.

END OF SECTION 014110

SECTION 01 50 00 – TEMPORARY FACILITIES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 GENERAL

- A. Contractor shall provide and maintain temporary facilities as specified and as required for the progress and completion of the Work under contract.
- B. Contractor shall be responsible for coordinating and scheduling among all trades and subcontractors the furnishing and use of all temporary facilities required for the Work.

1.03 REQUIREMENT OF REGULATORY AGENCIES

- A. Contractor shall provide and maintain all temporary facilities in compliance with governing rules, regulations, codes, ordinances and laws of agencies and utility companies having jurisdiction over work involved in project.
- B. Contractor shall be responsible for all temporary work provided and obtain any necessary permits and inspections for such work.
- C. Do not interfere with normal use of streets in vicinity of project site except as indicated on the Drawings and/or as absolutely necessary to execute required work, and then only after proper arrangements have been made with applicable authorities, including traffic control as applicable.

1.04 TEMPORARY FIELD OFFICES

- A. Contractor shall provide a 12' X 60' field office in a suitable temporary, waterproof, heated and cooled, structure at the site and provide the following:
 - 1. The field office should be internally subdivided to provide two enclosed offices at each end of the unit. Each office should be a minimum of 12' x 12' with the center area left open for construction meetings, one office will be for the Owner's use during construction.
 - 2. Copies of the Drawings, Specifications, shop drawings, samples and other data pertinent to the work shall be kept on-site at all times for reference.
 - 3. Space is to be complete with a plan rack, reference table and chairs (for approximately 20 people) and file cabinet.
 - 4. Construction Superintendent shall be in possession of a portable cellular phone, and the number shall be provided to Owner and Architect.

5. Provide and maintain computer station with email for construction correspondence with the Construction Superintendent.
 6. Provide and maintain a copy machine for use by Contractor and persons connected with the Work.
- B. Contractor to pay the cost of providing and maintaining any temporary office facilities.
- C. Location of temporary office shall be coordinated with the Owner.

1.05 WATER FOR CONSTRUCTION

- A. The Contractor must provide and pay for all temporary water service during construction. All effort must be used to conserve these services.
1. Any temporary extension of utilities or services required for the completion of the Work under this contract shall be borne by the Contractor.
- B. Contractor to provide sufficient branch lines and suitable fixtures at termination of line of adequate size to serve the needs of all trades. Locate water supply at convenient locations on site.
- C. Provide insulated housing for temporary service lines to protect against freezing when applicable.
- D. Remove temporary water lines and fixtures upon completion of work.

1.06 NATURAL GAS FOR CONSTRUCTION

- A. The use of natural gas is not available to the General Contractor during construction.

1.07 TEMPORARY ELECTRICAL ENERGY AND LIGHT

- A. The Contractor is responsible for providing (and paying for) all temporary electrical services during construction, or for service needed but not available on site. All effort must be used to conserve these services.
1. The Contractor is responsible for providing (and paying for) temporary electrical generation for either power not available at the site that is necessary for the Project at their expense or during power outages necessary during the course of the Project (i.e., electrical service change over).
 2. Any temporary extension of utilities or services required for the completion of the Work under this contract shall be borne by the Contractor.
- B. If Owner's service is interrupted for any reason, Owner is not responsible for temporary power. Contractor shall provide source of power as necessary to complete the Work.

1. If temporary service is necessary, provide main service disconnect and overcurrent protection at a convenient location.
 2. Provide temporary electrical service lines at the start of project and as work progresses.
 3. Provide portable electrical energy sources if necessary.
- C. Provide adequate power sources at convenient central locations required, with each source terminating in suitable load centers with circuit breakers or fuses. Provide distribution of all electrical power outlets to accommodate all trades and proper execution of work.
- D. Provide all temporary lights and wiring, including lamps, as required for adequate illumination to perform work and for the safety of people.
- E. Contractor to be responsible for a safe and satisfactory installation. Keep circuits properly fused at all times and remove temporary provisions when the permanent system is ready for use. No temporary wiring, devices, etc., shall be incorporated into permanent construction.
1. All temporary wiring and lighting shall comply with the requirements of the National Electric Code.
- F. Remove temporary wiring and equipment upon completion of the Work.

1.08 TEMPORARY HEAT AND VENTILATION

- A. Provide and pay for necessary temporary covering, enclosures, ventilation and / or heating to protect workers and work under contract against injury or damage by weather elements.
1. Provide and pay for heating devices and heat as required to maintain specified conditions for construction operations.
- B. Use safe effective means of heating, ventilation and / or other protection required at all times. Maintain temperatures and ventilation required for proper installation and completion of work by all trades.
- C. If the permanent heating and / or ventilation equipment is used for temporary service during construction period, it is understood that this use in no way affects the required guarantees which become effective the same time of acceptance of building by Owner. Also, if permanent equipment is used, have all used filters replaced at the end of the construction period. Refer to Division 23 Sections for further direction regarding filters and use of permanent HVAC equipment.
- D. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated, and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

- E. Maintain minimum ambient temperature of 50-degrees F in areas where construction is in progress.
- F. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.09 HEALTH AND SANITATION

- A. The operations of the Contractor shall be in full conformity with all the rules and regulations of boards and bodies having jurisdiction with respect to health and sanitation. Supply safe and sufficient drinking water and toilet facilities to all employees, obey and enforce all sanitary and health regulations and orders, and take precautions against the spread of infectious diseases.
- B. Provide and pay for temporary toilet facilities, while school is in session, of type acceptable to public health authorities, in quantity to meet the needs of all workmen and agents present on the project site. Locate in convenient locations and relocate as necessary as work progresses.
 - 1. Provide temporary facilities necessary due to project conditions as required.
 - 2. Facilities shall be kept clean by the Contractor.
 - 3. Remove temporary sanitary facilities upon completion of the Work.

1.10 TEMPORARY STORAGE

- A. Provide suitable storage facilities for materials delivered to site and protect materials from weather and damage.
- B. Any temporary storage of materials at site shall not interfere with or damage work of any contractor at work or the property of the Owner. If necessary, or as directed by the Architect, stored materials shall be relocated or removed.
- C. Use of a public way for storage of materials shall be permitted only if the Contractor receives approval from the applicable governing authorities.

1.11 VEHICLE ACCESS

- A. Provide and maintain temporary access into contract work areas as necessary for vehicles and equipment of all trades requiring such access. Repair any damage to the existing residential development pavement or other construction when damage results from operations under this contract.
 - 1. Owner and Contractor shall survey existing residential development paving for damage.
 - 2. Contractor to repair any damage caused during construction.
- B. Contractor shall be responsible for all traffic control at streets adjacent to project site as required when vehicles enter and leave the site. Comply with all governing City / State regulations for traffic control and access.

- C. Roads and Paved Areas: Maintain existing roads and paved areas during construction operations. Repair residential development roads and paved areas within construction limits that become damaged from construction operations.
 - 1. Grass areas beyond the area of Work shall not be used for parking. Damaged areas shall be returned to its original condition once construction is complete.
- D. Paved driveways on Owner's property and public streets and thoroughfares shall be kept clean, by cleaning daily or more often, if necessary, of earth and debris spillage from trucking involved in all construction operations. Provide heavy metal plates to cover utility trenches in driving areas as necessary.
- E. Keep mud and dirt off of surrounding roadways. Provide sweepers and water trucks as necessary to keep roadways clean.
- F. Keep dust knocked down by watering as necessary.
- G. Sweep all paved areas and run magnetic catcher to eliminate nails, screws or other metal items that can puncture tires, daily if necessary.

1.12 TEMPORARY PARKING

- A. Temporary parking facilities for construction personnel and equipment shall be confined to areas designated by the Owner. Do not park on playfields or grass areas.
- B. Parking vehicles and equipment which may be necessary outside Owner's site shall be legally provided by Contractor. The Owner assumes no responsibility for temporary parking.

1.13 SIGNS

- A. Allow no signs to be erected on the Project site or on the building structure by any subcontractor, fabricator, or material supplier, except for contract identification signs as specified and those which are required for safety, traffic control, and protection of persons and property during construction.

1.14 CONSTRUCTION FENCING AND GATES

- A. Provide temporary construction fencing to prevent public entry to the project site or contractor's storage area during construction and to protect adjacent properties from damage, and the general public from injury, by construction operations.
- B. Provide a 6'-0" high chain link fence around storage and staging areas to enclose material and operations. Equip fencing with appropriate number of personnel gates and vehicular gates of widths as required for construction vehicle passage. Gates shall be provided with locks for securing the site at the end of each day's work. Material and method of construction shall be

sufficient as to withstand daily construction operations, be highly visible and be maintained until construction has reached the point of no hazard to persons or property.

- C. Prior to start of construction, submit fencing layout to Architect for review and approval.

1.15 SCAFFOLDING, LADDERS AND HOISTING FACILITIES

- A. Contractor is responsible to provide all temporary scaffolding, ladders and hoists required during construction.
- B. If Contractor's temporary hoisting equipment is to be anchored to or supported by building structure and/or related building construction, submit layout of equipment, loads involved, anchorage proposed and other pertinent data for review by Architect and their Structural Engineer Consultant prior to installation.
- C. Remove ladders each day located on the exterior of the building to prevent access to elevated areas.

1.16 RESPONSIBILITIES OF CONTRACTOR

- A. The General Contractor shall be responsible for and shall include all costs attendant to, the provision of the following temporary facilities:
 - 1. Contractors Office.
 - 2. Sanitary facilities.
 - 3. Warning Signs (as indicated in Article 1.13 above).
 - 4. Normal use of hoisting equipment by Mechanical and Electrical Contractors. The use of hoisting equipment shall be at General Construction Contractor's discretion and subject to their approval and regulation.
 - 5. Construction fence and walkways.
- B. The Mechanical Contractor shall be responsible for, and shall include all costs attendant to, the provision of the following temporary facilities:
 - 1. Temporary office, if deemed necessary, and storage for their exclusive use. Locate as directed by General Contractor and approved by the Owner. At the end of construction, all Contractors' equipment and debris will be removed and the area will be restored to its original condition.
 - 2. Temporary water service and distribution system and maintenance thereof.
 - 3. Operation and maintenance of permanent heating system if used for temporary heat.
 - 4. Hoisting equipment for special lifts which cannot be accommodated by General Contractor's on-site equipment.
- C. The Electrical Contractor shall be responsible for, and shall include all costs attendant to, the provision of the following temporary facilities:

1. Temporary office, if deemed necessary, and storage for their exclusive use. Locate as directed by General Contractor and approved by the Owner. At the end of construction, all Contractors' equipment and debris will be removed and the area will be restored to its original condition.
 2. Temporary electrical service, lighting and distribution system and maintenance thereof. The General Contractor shall pay for the cost of any temporary electrical service (either by the electric utility or portable generator).
 3. Hoisting equipment for special lifts which cannot be accommodated by General Contractor's on-site equipment.
- D. All Contractors shall be mutually responsible for, and shall include all costs attendant to, the provision of temporary facilities specified but not specifically assigned hereinabove.

1.17 WINTER CONSTRUCTION AND WEATHER PROTECTION

- A. Protect the interior of building from water entering and seal all holes or gaps in the building envelope that will allow air to enter.
- B. Take special precautions against damage to materials stored and work installed in freezing weather.
- C. The use of anti-freeze compounds in concrete and in masonry mortars is prohibited.
- D. Throughout the progress of work maintain a daily weather record at job site, recording temperatures and precipitation.

1.18 EXTERIOR ENCLOSURES

- A. Provide temporary 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.

1.19 DEBRIS CONTROL

- A. Provide means of removing rubbish from all parts of the site and other contract areas as work progresses. Remove rubbish from site at frequent intervals to avoid large accumulation and dispose of in a legal manner.
- B. Do not burn or bury rubbish on site.
- B. Excess material, including demolished materials, excavated rock and excess building materials shall be removed from the site and disposed of legally. Owner must review excavated rock for salvage prior to removal from site.

1.20 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment as required.
- B. Protect site from puddling or running water. Control all runoff and pollution in accordance with prevailing codes or regulations.
- C. Interior and exterior drains shall be kept free of clogs caused by debris from construction and shall be swept free of leaves, dirt, trash, etc., on a daily basis during construction.

1.21 MOWING

- A. The Owner will mow and maintain all lawn areas that are accessible outside of the construction fence (around the building).
- B. The Contractor is responsible for mowing adjacent to the building and the remaining areas not covered in Paragraph A above. Grass / weeds shall not exceed 6" in height at any time. Contractor shall do final mowing / trimming prior to Substantial Completion.

1.22 RECYCLING

- A. All Contractors on-site are required to recycle the following materials:
 - 1. Cardboard (boxes are to be broken down, stacked, and banded on a pallet for pickup).
 - 2. Pallets.
 - 3. Metal items.
 - 4. Concrete and masonry materials.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 PROJECT COMPLETION

- A. Contractor shall remove all temporary facilities complete upon completion of the Work.

END OF SECTION 01 50 00

SECTION 01 63 00 – SUBSTITUTIONS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for handling requests for substitutions made before the award of the Contract.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section "Quality Control" specifies the applicability of industry standards to products specified.
 - 2. Division 01 Section "Shop Drawings, Product Data and Samples" specifies requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule.

1.03 DEFINITIONS

- A. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor before award of the Contract are considered to be requests for substitutions.
 - 1. The following are not considered to be requests for substitutions:
 - a. Substitutions requested after award of the Contract, unless products, materials, or equipment are no longer available. Upon notice that availability is an issue, the Architect will provide direction.
 - b. Revisions to the Contract Documents requested by the Owner or Architect.
 - c. Specified options of products and construction methods included in the Contract Documents.
 - d. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.04 SUBMITTALS

- A. Substitution Request Submittal: Substitutions are only allowed during the bidding process.
 - 1. Submit (1) digital copy of each request for substitution for consideration.

2. Identify the product, the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
3. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors that will be necessary to accommodate the proposed substitution.
 - b. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
 - c. Product Data, including Drawings and descriptions of products and fabrication and installation procedures.
 - d. Samples, where applicable or requested.
 - e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - g. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.
 - h. The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
4. Architect's Action: If necessary, the Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution. The Architect will notify the Bidders of acceptance of the substitution via addendum.

PART 2 PRODUCTS

2.01 SUBSTITUTIONS

- A. Conditions: The Owner and Architect will receive and consider the Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by the Architect. If the following conditions are not satisfied, the Architect will return the requests without action except to record noncompliance with these requirements.
 1. Extensive revisions to the Contract Documents are not required.
 2. Proposed changes are in keeping with the general intent of the Contract Documents.
 3. The request is timely, fully documented, and properly submitted.
 4. The specified product or method of construction cannot be provided within the Contract Time. The Architect will not consider the request if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 5. The request is directly related to an "or-equal" clause or similar language in the Contract Documents.

6. The requested substitution offers the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume. The Owner's additional responsibilities may include compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner, and similar considerations.
 7. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.
 9. The specified product or method of construction cannot be coordinated with other materials and where the Contractor certifies that the proposed substitution can be coordinated.
 10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.
 11. Where a proposed substitution involves more than one prime contractor, each contractor shall cooperate with the other contractors involved to coordinate the Work, provide uniformity and consistency, and assure compatibility of products.
- B. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples for construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

PART 3 EXECUTION (not applicable)

END OF SECTION 01 63 00
(Substitution Form attached)

SUBSTITUTION REQUEST FORM

To: Studio Kremer Architects

Project: Bernheim Middle School Renovation – Bid Package #1 – General Construction
BG# 23-051

We hereby submit for your consideration the following product instead of the specified item for the above project.

<u>Section</u>	<u>Paragraph</u>	<u>Specified Item</u>
_____	_____	_____

Proposed Substitution: _____

Attach complete technical data including laboratory tests, if applicable.

Include complete information changes to Drawings and / or Specifications which proposes substitution requires for proper installation.

Fill in Blanks Below:

- A. Does the substitution affect dimensions shown on Drawings? _____
- B. Will the undersigned pay for changes in building design, including engineering and detailing costs caused by substitution, if any? _____
- C. What affect does substitution have on other trades? _____
- D. Differences between proposed substitution and specified item?

- E. Manufacturer’s guarantees of proposed and specified items are:
_____ Same _____ Different (explain on attachment)

The undersigned states the function, appearance and quality are equivalent or superior to the specified item.

Submitted By:

Signature

Firm _____

Address _____

Telephone _____

For Use by Design Consultant:

Accepted	Accepted as Noted
Not Accepted	Received too Late

By: _____

Date: _____

Remarks: _____

SECTION 01 70 00 – CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Work included:
 - 1. Provide an orderly and efficient transfer of the completed Work to the Owner.
- B. Related work:
 - 1. Documents affecting the work of this Section include, but are not necessarily limited to the, Bidding Requirements, Contract Forms, Conditions of the Contract and Division 01 Sections of this Project Manual.
 - 2. Activities relative to Contract Closeout are described in, but not necessarily limited to, Paragraph 9.8, 9.9 and 9.10 of the General Conditions.
 - 3. "Substantial Completion" is defined in Paragraph 9.8.1 of the General Conditions.

1.03 GUARANTEE - WARRANTY

- A. The Contractor and each Subcontractor, in accepting a Contract for the construction of their respective portion of the construction covered by these Drawings and Specifications, do hereby agree to replace and make good, without any expense to the Owner, any work or material which may be found to be defective. Deterioration due to ordinary use and wear will be excluded from this guarantee.
- B. Such guarantees shall not relieve the Contractor from any obligation assumed under any other provision of the Contract.
- C. Refer to Article 12 of the General Conditions, Uncovering and Correction of Work, and other Specification Sections requiring longer / extended warranty requirements.

1.04 QUALITY ASSURANCE

- A. Prior to requesting inspection by the Architect, use adequate means to assure that the Work is completed in accordance with the specified requirements and is ready for the requested inspection.

1.05 PROCEDURES

A. Substantial Completion:

1. Prepare and submit the punch list required by the first sentence of Paragraph 9.8.2 of the General Conditions.
2. Within a reasonable time after receipt of the list, the Architect will inspect to determine the status of completion.
3. Should the Owner and Architect determine that the Work is not substantially complete:
 - a. The Architect will promptly notify the Contractor, in writing, giving the reasons therefore.
 - b. The Contractor shall remedy the deficiencies and notify the Architect when ready for re-inspection.
 - c. The Architect will re-inspect the Work.
4. Certificate of Occupancy shall be obtained from the Building Official prior to request of Substantial Completion.
5. When the Owner and Architect concurs that the Work is Substantially Complete:
 - a. The Architect will prepare a "Certificate of Substantial Completion" on AIA Form G704, accompanied by the Contractor's list of items to be completed or corrected, as verified by the Architect.
 - b. The Architect will submit the Certificate to the Owner and to the Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.

B. Final Completion:

1. Prepare and submit the notice required by the first sentence of Paragraph 9.10.1 of the General Conditions.
2. Verify that the Work is complete including, but not necessarily limited to, the items mentioned in Paragraph 9.10.2 of the General Conditions.
3. Certify that:
 - a. Contract Documents have been reviewed.
 - b. Work has been inspected for compliance with the Contract Documents.
 - c. Work has been completed in accordance with the Contract Documents.
 - d. Equipment and systems have been tested as required, and are operational.
 - e. Work is completed and ready for final inspection.
4. The Architect will make an inspection to verify status of completion.
5. Should the Architect determine that the Work is incomplete or defective:
 - a. The Architect promptly will notify the Contractor, in writing, listing the incomplete or defective work.

- b. The Contractor shall remedy the deficiencies and notify the Architect when ready for re-inspection.
 6. When the Owner and Architect determines that the Work is acceptable under the Contract Documents, request will be made to the Contractor to make closeout submittals.
- C. Closeout submittals include, but are not necessarily limited to, the following:
 1. Project Record Documents described in Division 01 Section "Project Record Documents".
 2. Operation and Maintenance data for items so listed in pertinent other Sections of this Project Manual, and for other items when so directed by the Architect.
 3. Warranties and Bonds.
(Note: All warranty dates are to begin on Date of Substantial Completion regardless of the shipment, or start-up, date of the material).
 4. Keys.
 5. Spare parts and extra stock material. Contractor shall deliver all spare parts to the Project Site, with a receipt to be signed by an authorized Owner's representative.
 6. Evidence of compliance with requirements of governmental agencies having jurisdiction including, but not necessarily limited to:
 - a. Certificates of Inspection.
 - b. Certificates of Occupancy.
 7. Certificates of Insurance for products and completed operations.
 8. AIA Form G706, Contractor's Affidavit of Payment of Debts and Claims (in triplicate).
 9. AIA Form G706A, Contractor's Affidavit of Release of Liens (in triplicate).
 10. AIA Form G707, Consent of Surety to Final Payment (in triplicate).
 11. List of Subcontractors, service organizations, and principal vendors, including names, addresses and telephone numbers where they can be reached for emergency service at all times, including nights, weekends and holidays.
 12. Letter stating no asbestos was used in the construction.
- D. Final adjustment of accounts:
 1. Submit a final Application and Certificate for Payment to the Architect, showing all adjustment to the Contract Sum,
 2. If so required, the Architect will prepare a final Change order showing adjustments to the Contract Sum which were not previously made by Change Orders.

1.06 OPERATION AND MAINTENANCE DATA

- A. Submit (1) copy of complete volumes in final form 15-days prior to final inspection. This copy will be returned after final inspection, with Architect / Engineer comments. Revise content of documents as required prior to final submittal.

- B. Submit (3) sets prior to final inspection, bound in 8-1/2 x 11-inch format pages, three D side ring capacity expansion binders with durable plastic covers.
- C. PREPARE binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of project and subject matter of binder when multiple binders are required.
- D. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- E. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, type on 24-pound white paper.
- F. Part 1: Directory, listing names, addresses and telephone numbers of Architect / Engineer, Contractor, Subcontractors and major equipment suppliers.
- G. Part 2: Operation and maintenance instructions arrange by system and subdivided by Specification Section. For each category, identify names, addresses and telephone numbers of Subcontractors and suppliers. Identify the following:
 - 1. Significant design criteria.
 - 2. List of equipment.
 - 3. Parts list for each component, including exploded drawings or diagrams that indicate all parts.
 - 4. Operating instructions.
 - 5. Maintenance instructions for equipment and systems.
 - 6. Maintenance instruction for finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
- H. Part 3: Project documents and certificates, including the following:
 - 1. Shop drawings and product data.
 - 2. Air and balance reports.
 - 3. Certificates.
 - 4. Photocopies of warranties.

1.07 INSTRUCTION

- A. Instruct the Owner's personnel for proper operation and maintenance of systems, equipment and similar items which were provided as part of the Work.

1.08 PUNCH LIST AND FINAL INSPECTION

- A. The Contractor and each Subcontractor shall carefully and regularly check their Work for conformance as the Work is underway. Unsatisfactory work shall be corrected as the work progresses and not be permitted to remain and become a part of the Punch List.

- B. If, after Substantial Completion of the Work, final completion is delayed for more than 90-days, through no fault of the Owner or Architect, the Contactor shall be responsible for the Owner's costs for additional architectural services.
1. The 90-day period will begin on the day the final Punch List is provided to the General Contractor.
 2. Note that, in addition to any costs accrued for additional consultant services, a penalty of \$1,000.00 per calendar day will be applied if the Punch List is not completed during this time frame. This penalty will be charged to the General Contractor through a deductive Change Order.
 3. During the 90-day period, the Architect will make only (2) inspections to verify completion of re-inspection of Punch List items. Any additional inspections required and related administrative services will be considered additional architectural services. The Owner's costs for additional architectural services will be charged to the Contractor through an appropriate deductive Change Order.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION (not applicable)

END OF SECTION 01 70 00

SECTION 01 71 00 - CLEANING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. Special cleaning for specific units of work is specified in other Sections of the Project Manual. General cleaning during the progress of work is specified in General Conditions and as temporary services in Division 01 Section, "Temporary Facilities". Provide final cleaning of the Work, consisting of cleaning each surface or unit of work to normal "clean" condition expected for a first-class building cleaning and maintenance program. Comply with manufacturer's instruction for cleaning operations. The following are examples, but not by way of limitation, of cleaning levels required.
1. Remove labels which are not required as permanent labels.
 2. Clean transparent materials, including mirrors and window/door glass (both interior sides and exterior sides of window and door glass), to a polished condition, removing substances which are noticeable as vision-obscuring materials. Replace broken glass and damaged transparent materials.
 3. Clean exposed exterior and interior hard-surface finishes to a dirt-free condition, free of dust, stains, films, and similar noticeable distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.
 4. Wipe surfaces of mechanical and electrical equipment clean; remove excess lubrication and other substances.
 5. Remove debris and surface dust from limited-access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes and similar spaces.
 6. Clean concrete floors in non-occupied spaces, broom / vacuum clean, then mop.
 7. Vacuum clean carpeted surfaces and similar soft surfaces.
 8. Clean plumbing fixtures to a sanitary condition, free of stains including those resulting from water exposure.
 9. Clean light fixtures and lamps so as to function with full efficiency.
 10. Clean project site (yard and grounds), including landscape development areas, of litter and foreign substances. Sweep paved areas to a broom-clean condition; remove stains, petrochemical spills and other foreign deposits. Rake grounds which are neither planted nor paved, to a smooth, even-textured surface.
 11. Refer to manufacturer's recommendations for final cleaning of solid vinyl tile.
 12. Cleaning Products:
 - a. All-purpose Cleaner (for floor cleaning and spray applications):

- 1) To be used with manual and / or machine cleaning methods. To be a low sud, easy rinse detergent. Product to be biodegradable and make a clear, soluble solution which leaves no film or residue and not stain or discolor when used at recommended proportions and must dilute in hard or soft water. Chemical composition: Concentrated liquid blend of organic detergents, solvents, water conditioners and alkaline builders with pleasant scent. Approximate pH: 9.8 +/-0.3 in solution. Must be portion-packed in easy-to-handle packaging.

13. Multipurpose Degreaser (for degreasing and spray applications):

- a. To be used for heavy-duty cleaning, degreasing of floors and other difficult-to-clean surfaces. Product to be biodegradable and must dilute in hard or soft water. Chemical composition: Blend of mixed liquid quaternary ammonium chlorides; approximate pH 7.2 +/-0.3 in solution. Must be portion-packed in easy-to-handle packaging.

1.03 PEST CONTROL

- A. Engage an experienced exterminator to make a final inspection of the Project and to rid the project of rodents, insects, and other pests.

PART 2 PRODUCTS

2.01 GENERAL

- A. Use non-staining, non-abrasive cleaning materials and accessories.
- B. Consult with manufacturer and / or installer to determine acceptable cleaning materials and methods for various materials.

PART 3 EXECUTION

3.01 GENERAL

- A. For cleaning, employ only experienced firms or individuals specializing in building cleaning and maintenance.
- B. Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at site or bury debris or excess materials on Owner's property or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste materials from site and dispose of in a lawful manner.

3.02 REMOVAL OF PROTECTION

- A. Except as otherwise indicated or requested by Architect / Engineer, remove temporary protection devices and facilities which were installed during course of the Work to protect previously complete work during remainder of construction period.

3.03 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C. Maintain all areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition.
 - 1. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
 - 2. Broom and vacuum clean interior areas prior to start of surface finishing and continue consistent cleaning to eliminate dust.
 - 3. Remove waste materials, debris, and rubbish from the site periodically as needed and dispose off-site. **School dumpster(s) shall not be used.**
- D. Cleaning shall be conducted prior to the return of students / staff anytime construction occurs during times when school is in session.

3.05 CLEANING ABOVE CEILING (PLENUM)

- A. Upon completion of construction activities, all above ceiling spaces shall be checked and cleared of construction debris, extra material, and tools.
 - 1. The above ceiling cleaning applies to above suspended ceilings, hard surface ceilings and exposed ceilings.
- B. The cleaning scope for the equipment platforms will be limited to construction debris.

END OF SECTION 01 71 00

SECTION 01 73 29 – 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 01 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

- A. Each Contractor, or appropriate Subcontractor, is responsible for cutting, fitting and patching required to complete the Work, or to:
 - 1. Make its several parts fit together properly.
 - 2. Uncover portions of the work to provide for installation of ill-timed work.
 - 3. Remove and replace defective work.
 - 4. Remove and replace work not conforming to requirements of the Contract Documents.
 - 5. Remove samples of installed work as specified for testing.
 - 6. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.
- B. Each Specification Section shall include cutting, patching, digging, for that trade Section, unless otherwise specified, as required for proper accommodation of work of other trade. This does not relieve Contractor from responsibility stated in Article 3.14 of the “General Conditions”. Execute work with competent workmen skilled in trade required by restoration.
- C. Submit written request to the Architect / Engineer well in advance of executing cutting or alteration which affects:
 - 1. Work of the Owner or separate Contractor.
 - 2. Structural value or integrity of any element of the Project.
 - 3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
 - 4. Efficiency, operational life, maintenance or safety or operational elements.
 - 5. Visual qualities of sight-exposed elements.
- D. Request pursuant to paragraph C above, shall include:
 - 1. Identification of the Project.
 - 2. Description of the affected work.
 - 3. Necessity for cutting, alteration, or excavation.
 - 4. Effect on work of the Owner or any separate Contractor, or on the structural or weather-proof integrity of the Project.
 - 5. Description of proposed work:
 - a. Scope of cutting, patching, alteration or excavation.

- b. Trades who will execute work.
 - c. Products proposed.
 - d. Extent of re-finishing.
6. Alternatives to cutting and patching.
 7. Cost proposal, when applicable.
 8. Written permission of affected separate contractors.
- E. Submit written notice to Architect / Engineer designating date and time work will be uncovered.
 - F. Comply with specifications and standards for each specific product involved.
 - G. Inspect in-place conditions of the Project, including elements subject to damage or to movement during cutting and patching.
 - H. After uncovering work, inspect conditions affecting installation of products, or performance of work.
 - I. Report unsatisfactory or questionable conditions to the Architect / Engineer in writing. Do not proceed with work until the Architect / Engineer has provided further instructions.
 - J. Provide adequate temporary support as necessary to assure the structural value or integrity of the affected portion of the work.
 - K. Provide devices and methods to protect the Owner's property and other portions of the Work from damage.
 - L. Provide protection from the elements for that portion of the Project which may be exposed by cutting and patching work and maintain free from water or air infiltration.
 - M. Execute cutting and demolition by methods which will prevent damage to other work and will provide proper surfaces to review installation of repairs.
 - N. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.
 - O. Employ the original installer or fabricator to perform cutting and patching for:
 1. Weather-exposed or moisture-resistant elements.
 2. Sight-exposed finished surfaces.
 3. Elements of the Project which are under active warranty.
 - P. Execute fitting and adjustment of products to provide finished installation to comply with specified products, functions, tolerances, and finishes.

- Q. Restore work which has been cut or removed; install new products to provide completed work in accordance with requirements of the Contract Documents.
- R. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces or structural elements.
- S. Refinish entire surface as necessary to provide an even finish to match adjacent finishes:
 - 1. For continuous surfaces, refinish to nearest intersection.
 - 2. For an assembly, refinish the entire unit.
- T. Contractor shall x-ray or ultrasound-scan the affected area before cutting to identify in-place utilities and conduits. Any damaged conduit or utilities shall be repaired at the Contractor's expense.

1.03 ALTERATION PROCEDURES

- A. Use materials as specified in product sections of this Project Manual; match in-place products and work for patching and extending work.
- B. Close openings in exterior surfaces to protect in-place work from weather, extreme temperatures and humidity.
- C. Remove, cut and patch work in a manner to minimize damage and to provide a means of restoring products and finishes to original condition.
- D. Where new work abuts or aligns with in-place work, perform a smooth and even transition. Patched work shall match adjacent in-place work in texture and appearance.
- E. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate in-place surfaces along a straight line at a natural line on division.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION (not applicable)

END OF SECTION 01 73 29

SECTION 01 78 00 – PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Documents affecting the work of this Section include, but are not necessarily limited to the, General Conditions, Supplementary Conditions and Division 01 Sections of this Project Manual.
- B. Other requirements affecting the Project Record Documents may appear in other pertinent Section of this Project Manual.

1.03 WORK INCLUDED

- A. Throughout progress of the Work, maintain an accurate record of changes in the Contract Documents, as described in Article 3.01 below.
- B. Upon completion of the Work, transfer the recorded changes to a set of Record Documents, as described in Article 3.02 below.

1.04 QUALITY ASSURANCE

- A. Delegate the responsibility for maintenance of the Record Documents to one person on the Contractor's staff, as approved by the Architect.
- B. Accuracy of Records:
 - 1. Thoroughly coordinate changes within the Record Documents, making adequate and proper entries in each page of the Specifications and each sheet of the Drawings and other Documents where such entry is required to show the change properly.
 - 2. Accuracy of records shall be such that future search for items shown in the Contract Documents may reasonably rely on information obtained from the approved Project Record Documents.
- C. Make entries within 24-hours after receipt of information the change has occurred.

1.05 SUBMITTALS

- A. Comply with pertinent provisions of Division 01 Section "Shop Drawings, Product Data & Samples".

- B. Prior to submitting request for final payment, submit the final Project Record Documents to the Architect and secure approval.

1.06 RECORD DOCUMENTS

- A. Job Set: Promptly following the receipt of the Owner’s Notice to Proceed, secure from the Architect, at no charge to the Contractor, (1) complete set of the Contract Documents.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION

3.01 MAINTENANCE OF JOB SET

- A. Immediately upon receipt of the Job Set described in Article 1.06 above, identify each of the Documents with the title “RECORD DOCUMENTS - JOB SET”.
- B. Preservation:
 - 1. Do not use the Job Set for any purpose except for entry of new data and for review by the Architect.
 - 2. Maintain the Job Set at the Project Site.
- C. Making entries on the Drawings:
 - 1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe the change by graphic line and note as required.
 - 2. Date all entries.
 - 3. Call attention to the entry by a “cloud” drawn around the area or areas affected.
 - 4. In the event of overlapping changes, use different colors for overlapping changes.
- D. Make entries in all other pertinent Documents.
- E. Conversion of Schematic layouts:
 - 1. In some cases, on the Drawings, arrangement of conduits, circuits, ducts and similar items are shown schematically and are not intended to portray precise physical layout.
 - a. Final physical arrangement is determined by the Contractor, subject to the Architect’s approval.
 - 1) However, design of future modifications of the facility may require accurate information as to the final physical layout of items which are shown only schematically on the Drawings.

2. Show on the Job Set of Record Documents, by dimension, accurate within 1", the centerline of each run of said items.
 - a. Clearly identify the item by accurate note such as "cast iron drain", "copper water", and the like.
 - b. Show, by symbol or note, the vertical location of the item, such as "under slab", "in ceiling", "exposed", and the like.
 - c. Make all identification sufficiently descriptive that it may be related reliably to the Specifications.
3. The Architect may waive the requirements for conversion of schematic layouts where, in the Architect's judgment, conversion serves no useful purpose. However, do not rely upon waivers being issued except as specifically issued in writing by the Architect.

3.02 FINAL PROJECT RECORD DOCUMENTS

- A. The purpose of the final Project Record Documents is to provide factual information regarding all aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive site measurement, investigation and examination.
 1. Clearly indicate at each affected detail and other Drawings a full description of changes made during construction, and actual location of items described in subparagraph 3.01, E, above.
 2. Call attention to each entry by drawing a "cloud" around the area or areas affected.
 3. Make changes neatly, consistently and with the proper media to assure longevity and clear reproduction.
- B. Review and Submittal:
 1. Submit the completed set of Project Record Documents to the Architect as described in Article 1.03 above.
 2. Participate in review meetings as required.
 3. Make required changes and promptly deliver the final Project Record Documents to the Architect.

3.03 CHANGES SUBSEQUENT TO ACCEPTANCE

- A. The Contractor has no responsibility for recording changes in the Work subsequent to Final Completion, except for changes resulting from work performed under Warranty,

END OF SECTION 01 78 00

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. In-Person & Video Training in operation and maintenance of systems, subsystems, and equipment.
- B. Related Sections include the following:
 - 1. Divisions 02 through 33 Sections for specific requirements for demonstration and training for products in those Sections.

1.3 SUBMITTALS

- A. Instruction Program: Submit **two** copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1.4 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative experienced in operation and maintenance procedures and training.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
1. Equipment, including projection screens.
 2. Fire-protection systems, including fire alarm and fire-extinguishing systems.
 3. HVAC systems, including air-handling equipment, air distribution systems and terminal equipment and devices.
 4. HVAC instrumentation and controls.
 5. Electrical service and distribution, including transformers, switchboards, panelboards, uninterruptible power supplies and motor controls.
 6. Lighting equipment and controls.
 7. Communication and technology systems.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project Record Documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.
 3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.

- b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs: Include the following:
 - a. Diagnosis instructions.

- b. Repair instructions.
- c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
- d. Instructions for identifying parts and components.
- e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner. Duration of training shall be sufficient to impart the instruction required for operation of maintenance of the subject system(s).
 - a. Owner to be involved in establishing all appropriate parties to be trained.
 - 2. Trainer/offeror shall get sign-off from those instructed that training was complete and sufficient to provide introductory familiarity with systems and ability to operate.
- C. As training is conducted, session shall be videotaped. This documentation shall be provided to the Owner as part of Closeout documentation for use in training future new personnel.

END OF SECTION 01 79 00

SECTION 018316 – EXTERIOR ENCLOSURE PERFORMANCE REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes overall building enclosure performance requirements and testing for air infiltration.
- B. CMTA has been contracted to perform a "Standard Test Method for Determining Air Leakage Rate by Fan Pressurization" as part of their required building enclosure performance tests. Testing to be provided, scheduled and coordinated with sub- contractors per project specifications. CMTA shall provide a certified Building Envelope Commissioning Agent, BECx, and owns and operates the required Orifice Blower Doors.
- C. Project scheduling shall be coordinated to indicate all exterior enclosure work to be completed prior to envelope pressure testing and before drywall completion to facilitate the improvement of leakage areas found.
- D. Related Sections: Performance requirements for exterior enclosure components are included, but not limited to the following sections.
 - 1. Section 01 91 13 "General Commissioning Requirements."
 - 2. Section 04 20 00 "Unit Masonry."
 - 3. Section 07 21 00 "Thermal Insulation."
 - 4. Section 07 27 26 "Fluid-Applied Membrane Air Barriers."
 - 5. Section 07 41 13 "Standing-Seam Metal Roof Panels."
 - 6. Section 07 42 13 "Formed Metal Wall Panels."
 - 7. Section 07 42 14 "Metal Plate Wall Panels."
 - 8. Section 07 52 16 "Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing."
 - 9. Section 07 92 00 "Joint Sealants."
 - 10. Section 08 33 23 "Overhead Coiling Doors."
 - 11. Section 08 41 13 "Aluminum Framed Entrances and Storefronts."
 - 12. Section 08 80 00 "Glazing."
 - 13. Section 08 91 19 "Fixed Louvers."
- E. Standards: Comply with the applicable provisions and recommendations of the following standards below, where standards conflict the more stringent shall apply:
 - 1. American Society for Testing and Materials (ASTM):
 - a. ASTM E779, "Standard Test Method for Determining Air Leakage Rate by Fan Pressurization."
 - b. ASTM E1827, "Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door."

- c. ASTM E283, "Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences Across the Specimen."
- d. ASTM E330, "Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference."

1.2 PERFORMANCE REQUIREMENTS

- A. General: Provide exterior enclosure meeting or exceeding the following performance requirements:

- 1. Full Building Air Leakage: Air leakage through full building enclosure shall not have exceeded **0.20 cfm/sq.** ft. of surface area when tested in accordance with ASTM E 1827 at a static-air-pressure difference of 0.30 in. w.g. / 75 Pa.

- B. Design Modifications:

- 1. Submit design modifications necessary to meet the performance requirements and field coordination.
- 2. Variations in details or materials shall not adversely affect the appearance, durability or strength of components, nor shall such variations cause excessive stress, or deflections, to the building structural frame.
- 3. Maintain the general design concept without altering size of members, profiles and alignment.

1.3 SUBMITTALS

- A. Combined Submittals:

- 1. The shop drawings for exterior enclosure work for the entire project shall be combined into a single submission and shall include scheduling to indicate all exterior enclosure work to be completed prior to envelope pressure testing and before drywall completion to facilitate the improvement of leakage areas found.

- B. Product Data: Submit manufacturer's specifications and installation instructions for each exterior enclosure component specified. Include product test reports.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Testing Services: Testing of exterior enclosure shall take place before concealing air barrier components to determine overall compliance of installed assemblies with specified

requirements.

1. Building Air Tightness: perform pressure test in accordance with ASTM E 1827, Single Point Method, and as follows.
 - a. Supplement building air tightness test with requirements of ASTM E 779 as applicable.
 - b. Perform positive pressure test relative to outdoors at multiple pressures up to minimum 0.30 inches w.g. Measure building leakage rate.
 - c. Perform negative pressure test at multiple pressures up to minimum 0.30 w.g. and compare results to positive test. Where difference of 10 percent exists between tests, investigate causes and resolve reasons for differences. Follow up with retest.
 - d. Utilize infrared photography and non-toxic fog agents to identify leaks. Improve areas identified regardless of passing/failing maximum allowed leakage rate. Publish infrared photography to the design team.
 - e. For each test, take a minimum of five readings at various pressures and air flows within the range of the calibrated equipment. In the test report, show test points in graphical form on a log-log scale with pressure in inches water column displayed on the horizontal axis and flow in cfm displayed on the vertical axis. Submit written report for each complying and non-complying test.
 - f. Report results of testing in accordance with cited test standards.

3.2 ADJUSTING AND RETESTING

- A. Exterior wall assemblies will be considered defective if they do not pass tests and inspections.
- B. If building fails to meet airtightness performance requirement specified, use technique described in ASTM E 1186 to locate air leak sources. Utilize infrared photography and non-toxic fog agents to identify leaks. Publish infrared photography to the design team.
- C. Perform remedial air barrier work to correct deficiencies in building construction and to bring the work into compliance with performance requirements.
- D. Perform retesting at Contractors expense to verify corrections meet performance requirements.

3.3 BUILDING PRESSURE TEST PREREQUISITES

- A. Contractor shall provide the following items to CMTA prior to Pressure Test:
 1. Contact List of key construction personnel for building access and operation (Names, e-mail addresses, and phone numbers)
 2. Drawings with floor plans, building elevations, and dimensions (Total Square Footage _____)
 3. Testing Criteria and Air Barrier Specification
 4. Construction schedule, to confirm temperature controls and TAB has been

completed.

- B. Contractor shall verify that the follow items have been completed prior to Pressure Test:
1. Air barrier membrane system has been installed to specification and completely sealed to existing air barriers if needed.
 2. Wall insulation has been installed to specification and completely sealed to existing air barriers if needed.
 3. Any Resolution Tracking Forms (RTF) items have been mitigated to provide a barrier that does not have sources of leakage.
 4. Post "KEEP DOOR CLOSED" signs on doors that are used to get in and out of the building.
 5. Remove at LEAST four sq. ft. of ceiling tile panels for every 500 sq. ft. of ceiling area.
 6. Make sure that every electrical and data/communication junction box has blank covers or seals on them.
 7. Penetrations have been sealed and/or fire-stopped according to specifications.
 8. Make sure the controls contractor is on site for the test in order to coordinate settings for specific equipment.
 9. Have HVAC system operating at least a day prior in order to make sure that there is a temperature differential of at least 20°F between the interior and exterior.
 10. Make sure that the outside air, exhaust, and return fans have all been turned to a closed position (100% Closed, 0% Open)
 11. Identify which dampers are not motorized or connected to the BAS. Make sure that these are off, sealed, or covered for the test. Including outside air openings, louvers, rooftop unit dampers, or exhaust air device.
 12. Make sure that door sweeps and weather stripping have been installed according to specifications.
 13. Prop open all interior conditioned rooms.
 14. Closets and other non-conditioned rooms are closed.
 15. All windows are closed and locked.
 16. Coordinate with CMTA on fan locations for the test.
 17. Seal all dryer vents.
 18. Seal all kitchen hood exhaust grilles and louvers.
 19. Fill all plumbing traps with water or sealed to block the plumbing lines from air leakage.
 20. Need separate 20AMP non-GFCI receptacles for each of the fans. Make sure the receptacles are within 50-100 feet. Coordinate with CMTA on fan locations for the test.
- C. Contractor shall schedule the following tasks prior to test date:
1. Walkthrough for CMTA to observe all the items above.
 2. Date for the Air Barrier Test with acceptable weather conditions.

END OF SECTION 01 83 16

SECTION 02 01 00 – SITE CONDITIONS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION

3.01 EXAMINATION

- A. The site is located at 700 Audubon Drive, Shepherdsville KY.
- B. Bidders, before submitting proposals, shall visit and examine the site to satisfy themselves as to be the nature and scope of the new construction and any difficulties attending to the execution. The submission of a proposal shall be construed as evidence that a visit and examination has 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.
- C. The Contractor is responsible to examine the site conditions prior to construction. The Contractor shall notify the Architect of any conditions that are not as shown in the Contract Documents. The Contractor shall determine and include any additional work required to construct the Project to the final conditions as shown in the Contract Documents.
- D. Unknown conditions that are not shown in the Contract Documents and or not found by the site examination such as: poor foundation conditions, sinkholes, and/or underground structures shall be brought the immediate attention of the Architect. Determination will be made for work to be done to address each condition. Any additional cost of performing this work shall be paid for as described in other Sections of this Project Manual.
- E. The Owner performed a soils test specifically for this Project. Refer to the Geotechnical Report performed by ECS Southeast, LLP, included in this Project Manual. The Contractor shall examine the site prior to bidding and the Contractor shall coordinate the site examination with the Owner.
 - 1. The Geotechnical Report is included in the Project Manual for informational purposes only and is not part of the Contract Documents.

3.02 LOCATION OF UNDERGROUND UTILITIES

- A. The site has existing underground utilities at the north and west edges along the property line.
- B. **Prior to the beginning of Construction**, the Contractor shall locate and mark any/all existing underground utilities by obtaining the location by means of BUD (*Before you Dig*), at 811 **and an independent utility location company**. Cost for locating the lines is the responsibility of the Contractor. Any active lines damaged shall be repaired by the Contractor at no additional cost to the Owner.
- C. All Contractors shall exercise extreme caution while performing work in the area of existing underground work. Locate all underground utilities by careful hand excavation; provide all necessary and proper protection from damage.

END OF SECTION 02 01 00

SECTION 02 08 00 – STAKING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Construction layout staking.

PART 2 PRODUCTS

2.01 MATERIALS

- A. The survey stakes and markers shall be supplied and paid for by the Contractor.

PART 3 EXECUTION

3.01 EXECUTION

- A. The Contractor shall furnish and manage the construction layout to the lines and grades as shown on the Construction Documents. All construction staking shall be performed by a licensed Kentucky Land Surveyor and their crew supplied by the Contractor at the Contractors expense.
- B. The staking crew shall stake the lines and grades in accordance with the Plans and Specifications.
- C. Any items found on the Plans that do not appear to be correct or are not clearly shown shall be brought to the attention of the Engineer. The Engineer will determine the correction or clarify the locations of points to be set.
- D. The construction staking crew shall stake all of the required points to construct this project to the lines and grades as shown on the Plans.

END OF SECTION 02 08 00

SECTION 02 41 21 – SELECTIVE BUILDING DEMOLITION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. The work of this Section consists of the demolition and removal of selected portions of a building as indicated on the Drawings or specified herein. The work includes removal, salvage of specific items for reuse in the building or for delivery to the Owner, and disposal of all other items.
- B. Some removals may require assistance from specialized trades such as mechanical or electrical craftsman. Should the Contractor desire to sublet some of this work to other trades it may be done at the discretion of the Contractor.
- C. It is the intent of this Section to include all removals of every kind except for the following work which is specified elsewhere:
 - 1. Cutting openings in concrete and masonry walls, concrete floor slabs, roofing, etc., for the installation of structural, mechanical, plumbing, fire protection, and electrical lines and equipment.
- D. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Sections "Summary of Work", "Site Conditions" and "Project Coordination" for use of the building.
 - 2. Division 01 Section "Temporary Facilities" for temporary utilities, temporary construction and support facilities, temporary security and protection facilities, and environmental protection measures for selective demolition operations.
 - 3. Division 01 Section "Project Record Documents" for record document requirements.
 - 4. Refer to Division 20 Section "Demolition and Salvage" for Mechanical Demolition requirements.
 - 5. Refer to Division 26 Section "Demolition" for Electrical Demolition requirements.
 - 6. Division 31 Section "Site Clearing" site demolition requirements.

1.03 DEFINITIONS

- A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.

- B. Remove and Salvage: Items indicated to be removed and salvaged remain the Owner's property. Remove, clean and pack or crate items to protect against damage. Identify contents of containers and deliver to Owner's designated storage area.
- 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: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.04 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, in a lawful manner, with further disposition at the Contractor's option.
- B. Historical items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to the Owner, which may be encountered during selective demolition, remain the Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to the Owner.

1.05 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections, for information only, unless otherwise indicated.
 - 1. Inventory of items to be removed and salvaged.
 - 2. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by selective demolition operations.

1.06 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Engage an experienced firm that has successfully completed selective demolition work similar to that indicated for this project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Pre-demolition Conference: Conduct conference at Project site to comply with pre-installation conference requirements of Division 01 Section "Project Meetings."

1.07 PROJECT CONDITIONS

- A. Owner assumes no responsibility for actual condition of buildings to be selectively demolished.
 - 1. Condition existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Asbestos: Asbestos will be encountered in the Work. A Certified abatement firm will be required for all removal. Refer to Asbestos Abatement Specification Sections. If any materials suspected of containing asbestos are encountered, do not disturb the materials. Immediately notify the Owner.
- C. Lead-based Paint: Lead-based Paint should not be encountered in the Work. A survey of painted surfaces has been conducted indicating no presence of Lead Paint. If any materials suspected of containing lead-based paint are encountered, do not disturb the materials. Immediately notify the Owner.
- D. Storage or sale of removed items or materials on-site will not be permitted.
- E. Flame Cutting: Flame cutting will only be permitted with approval of Architect and Owner.

PART 2 PRODUCTS (not applicable)

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Selective demolition is shown on the Drawings to the extent that the scale of the drawings will allow. Due to the small scale and the complexities of building construction, it is not always possible to show every detail of demolition. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Architect.

- E. Survey the condition of the building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition.
- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.02 UTILITY SERVICES

- A. Utility Requirements: Refer to Divisions 20, 21, 22, 23, 26, 27, and 28 Sections for shutting off, disconnecting, removing, and sealing or capping utility services. Do not remove existing service until new service is active.

3.03 PREPARATION

- A. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around selective demolition area.
 - 1. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 - 2. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 3. Provide temporary weather protection, during the interval between demolition and removal of existing construction, on exterior surfaces and new construction to ensure that no water or air leakage or damage occurs to structure or interior areas.
 - 4. Protect walls, ceilings, floors, and other existing finish work that are to remain and are exposed during selective demolition operations.
- B. Seal off openings in exterior walls during demolition operations in order to limit dust and dirt migration.
- C. Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of building to be selectively demolished. Design of structural support, bracing and shoring shall be the responsibility of the Contractor.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.04 POLLUTION CONTROLS

- A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.
 - 1. Erect plastic dust partitions as required to limit dust in existing building.
- B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level.
- C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

3.05 SELECTIVE DEMOLITION

- A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete work within limitations of governing regulations and as follows:
 1. 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 sufficiently to resist damage from weather.
 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 3. Remove decayed or otherwise dangerous or unsuitable materials and promptly dispose of off-site in a legal manner.
 4. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 5. Locate selective demolition equipment throughout the structure and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 6. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.
 7. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.
- B. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools. Exercise caution in removing elements so as not to damage surrounding masonry or other materials.
 1. Where openings are required in existing masonry walls, or where existing openings are shown to be enlarged, tooth the joints in the bond. Remove broken brick or CMU.

3.06 PATCHING AND REPAIRS

- A. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.

3.07 SALVAGE ITEMS

- A. Existing brick that is removed shall be salvaged for re-use. Before brick is re-laid, brick will need to be thoroughly cleaned. Tool mortar joint to match adjacent construction.
- B. Hardware: Unless otherwise noted, remove, and salvage all existing hardware from exterior doors only. Package hardware (in either cardboard boxes or heavy-duty plastic bags) and label with door number where hardware was removed - include all parts (screws or other fasteners, escutcheons, etc.).
- C. Lockers: Existing lockers that are scheduled to be removed shall be turned over to the Owner. Once lockers are removed, General Contractor is to move to a location on-site (*to be determined in the field*) in order for the Owner to retrieve.
- D. Fire Extinguishers: Remove and salvage all existing fire extinguishers and turn over to the Owner. Coordinate delivery (*48-hour notice*) with Bullitt County Public Schools Facilities Department. Provide receipt upon delivery.
- E. Smartboards: Remove and salvage all existing smartboards and turn over to the Owner. General Contractor is responsible for the removal, labelling (including room number) and protection of the existing smartboards. Coordinate delivery (*48-hour notice*) with Bullitt County Public Schools Technology Department. Provide receipt upon delivery.
- F. Projection Screens: Remove and salvage all existing projection screens and turn over to the Owner. Coordinate delivery (*48-hour notice*) with Bullitt County Public Schools Facilities Department. Provide receipt upon delivery.
- G. Marker, Chalk and Tack Boards: All existing display boards are scheduled to be removed and shall be reviewed for possible salvage. Coordinate with the Owner prior to removal to determine if they will be salvaged. Coordinate delivery (*48-hour notice*) of salvaged boards (including all associated mounting brackets) with Bullitt County Public Schools Facilities Department. Provide receipt upon delivery.
- H. Kitchen Equipment: Remove and salvage all existing kitchen equipment and turn over to the Owner. Coordinate delivery (*48-hour notice*) with Bullitt County Public Schools Facilities Department. Provide receipt upon delivery.
- I. Water Heaters: Remove and salvage all existing water heaters and turn over to the Owner. Coordinate delivery (*48-hour notice*) with Bullitt County Public Schools Maintenance Department. Provide receipt upon delivery.
- J. Hand Dryers: Remove and salvage all existing hand dryers and turn over to the Owner. Coordinate delivery (*48-hour notice*) with Bullitt County Public Schools Maintenance Department. Provide receipt upon delivery.

- K. Controlling Equipment: Remove and salvage all existing building control equipment and turn over to the Owner. Coordinate delivery (*48-hour notice*) with Bullitt County Public Schools Facilities Department. Provide receipt upon delivery.
- L. Telescoping Bleachers: Remove existing telescoping bleachers (94'-0" long x 6 Rows tall) and associated wall and floor attachments, complete. Coordinate with Bullitt County Public Schools Facilities Department to decide if bleachers are to be salvaged – OR – disposed of in a lawful manner.
- M. Athletic Equipment: Remove and salvage all existing athletic equipment including but not limited to basketball goals, rock climbing walls, athletic wall pads, chin up bars, score boards, etc. and turn over to the Owner. Coordinate delivery (*48-hour notice*) with Bullitt County Public Schools Facilities Department. Provide receipt upon delivery.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Burning of demolished materials is prohibited.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.
- D. Recycle: Refer to Division 01 Section "Temporary Facilities" for items required to be recycled.

3.08 CLEANING

- A. Sweep the building broom clean on completion of selective demolition operation.

END OF SECTION 02 41 21

SECTION 033000 – CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes. This section applies to concrete work shown on the structural drawings. See Division 32 for site concrete.
- B. Cast-in-place concrete includes the following:
 - 1. Lean concrete backfill and mudmats.
 - 2. Foundations and footings.
 - 3. Foundation walls.
 - 4. Equipment pads and bases.
 - 5. Grout below column base and bearing plates.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section “Structural Special Inspection.”
 - 2. Division 5 Section “Structural Anchors.”
 - 3. Division 7 Section “Thermal and Moisture Protection.”
 - 4. Division 31 Section “Earth Moving” for preparation and excavation of foundations and stone drainage fill.
- D. Coordination: Unless other satisfactory agreements are specifically entered into by contractors concerned, all miscellaneous iron and steel, sleeves, anchors, etc., required by work of other contractors, will be furnished and installed by such other contractors with the cooperation of this contractor.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 ACTION SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.

- B. Design Mixtures: For each concrete mixture with laboratory test reports for the following data. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
1. Method used to determine the proposed mix design (per ACI 301, Section 4).
 2. Gradation and quantity of fine and coarse aggregates.
 3. Proportions of all ingredients including all admixtures added either at the time of batching or at the job site. Indicate amounts of mixing water to be withheld for later addition at Project site.
 4. Water/cement ratio and water/cementitious ratio.
 5. Slump – ASTM C143.
 6. Certification and test results of the total water-soluble chloride ion content of the design mix – FHWA RD-77 or AASHTO T 260-84.
 7. Air content of freshly mixed concrete by the pressure method, ASTM C231, or the volumetric method, ASTM C173.
 8. Unit weight of concrete – ASTM C138.
 9. Strength at 7- and 28-days for structural concrete– ASTM C39. Document strength on basis of previous field experience or trial mixtures, per ACI 301 Section 4. Submit strength test records, mix design materials, conditions, and proportions for concrete used for record of tests, standard calculation, and determination of required average compressive strength.
 10. Complete and include Structural Engineer’s standard mix design submittal form for each mix. A blank copy is included at the end of this section.
- C. Steel Reinforcement Shop Drawings: Fabrication and placing drawings for reinforcement detailing, fabricating, bending, and placing concrete reinforcement. Comply with ACI SP-066(04) “ACI Detailing Manual” showing bar sizes, lengths, material, grade, bar schedules, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, and supports for concrete reinforcement.
1. Computer generated electronic structural construction document files (ACAD) will be made available to the Contractor. The Contractor will be required to sign the Engineer’s standard release of liability form prior to receiving the drawing files. Rules for use of said files shall be as defined in the CRSI “Code of Standard Practice” Sections 4.19 and 6.4.1.
 2. Shop drawing resubmittals are reviewed for conformance with review marks only. Any changes or questions originating on a resubmittal shall be clearly clouded.
- D. Product Data: For proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, vapor retarder/barrier, construction joint slip dowels, joint systems, curing compounds, and others if requested by Architect.
- E. Samples of materials as requested by Architect, including names, sources, and descriptions, as follows:
1. Waterstops.
 2. Vapor retarder/barrier.

- F. Drawings showing proposed construction and/or contraction joint locations.

1.5 INFORMATIONAL SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
- B. Welding certificates.
- C. Laboratory test reports for concrete materials or material certificates in lieu of material laboratory test reports. Material certificates shall be signed by Manufacturer and Contractor, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.
- D. Survey of the as-built locations of anchor rods, foundation bolts, and other embedded items shall be submitted to the Architect, Engineer, and General Contractor/Construction Manager.
- E. Written notification that the concrete in the footings, piers, walls, or other bearing support has attained, on the basis of an appropriate ASTM standard test method of field-cured samples, a minimum of 75% of the intended minimum compressive design strength.
- F. Minutes of preinstallation conference.

1.6 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified. Each contractor having reference to ACI Documents shall maintain copies of same on project site.

AMERICAN CONCRETE INSTITUTE

1. ACI 117-10 – Specifications for Tolerances for Concrete Construction and Materials.
2. ACI 211.1-91 – Standard Practice for Selecting Proportions Normal, Heavyweight and Mass Concrete (Reapproved 2009).
3. ACI 301-10 – Specification for Structural Concrete.
4. ACI 302.1R-04 – Guide for Concrete Floor and Slab Construction.
5. ACI 304.2R-96 – Placing Concrete by Pumping Methods (Reapproved 2008).
6. ACI 305R-10 – Guide to Hot Weather Concreting.
7. ACI 306R-10 – Guide to Cold Weather Concreting.
8. ACI 308R-01 – Guide to Curing Concrete (Reapproved 2008).
9. ACI 309R-05 – Guide for Consolidation of Concrete.
10. ACI 311.1R-07 – ACI Manual of Concrete Inspection.
11. ACI 318-14 – Building Code Requirements for Structural Concrete and Commentary.
12. ACI 347-04 – Guide to Formwork for Concrete.

13. SP-66 – ACI Detailing Manual.

CONCRETE REINFORCING STEEL INSTITUTE (CRSI):

1. CRSI – Manual of Standard Practice.
 2. CRSI RB4.1 – Supports for Reinforcement Used in Concrete (2014a)
 3. CRSI – Placing Reinforcing Bars (2011)
- B. Qualifications of Workers: Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper execution of the work required by this Division.
- C. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.
- D. Contractor shall be responsible for conducting a survey of the as-built locations of anchor rods, foundation bolts, and other embedded items. Survey to include embed placement, bolt projection, and top of foundation elevation. Survey to be conducted by a Professional Land Surveyor.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver steel reinforcement and concrete to Project site in such quantities and at such times to ensure continuity of installation.
- B. Store materials to permit easy access for inspection and identification. Keep steel reinforcement off ground by using pallets, platforms, dunnage, or other supports and spacers.
- C. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- D. Store waterstops and packaged materials in sealed containers with manufacturer's labels intact. Place under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms for Exposed (Smooth) Finish Concrete: Exterior-grade high-density overlay (Class 1 or better), medium-density overlay (Class 1 or better with mill-release agent treated and edge sealed), or Structural1 or Class 1 (B-B or better, mill oiled and edge sealed) plywood panels complying with DOC PS1; or new metal-framed and metal faced panels; or other

acceptable panel-type materials to provide continuous, straight, and smooth exposed surfaces. Furnish in largest practicable sizes to minimize number of joints.

- B. Forms for Unexposed, Rough-Formed Finish Concrete: Plywood, lumber, metal or another acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Chamfer Strips: Non-staining dressed wood, metal, PVC, or rubber strips; $\frac{3}{4}$ by $\frac{3}{4}$ inch, minimum, and as shown on Drawings; in longest practical lengths.
- D. Form-Release Agent: Commercially formulated form-release agent with maximum volatile organic compounds (VOCs) not to exceed those allowable by jurisdictional regulations that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- E. Form Ties (Standard): Factory-fabricated, adjustable-length, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of plastic concrete on forms, prevent form deflection, and to prevent spalling of concrete upon removal.
 - 1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of the exposed concrete surface.
 - 2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.
 - 3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.
- F. Form Joint Tape: Compressible foam tape; pressure sensitive; AAMA800, "Specification 810.1, Expanded Cellular Glazing Tape"; minimum $\frac{1}{4}$ inch thick.
- G. Form Joint Sealant: Elastomeric sealant complying with ASTM C920, Type M or S, Grade NS, that adheres to form joint substrates.
- H. Sealer: Penetrating, clear, polyurethane wood form sealer formulated to reduce absorption of bleed water and prevent migration of set-retarding chemicals from wood.

2.2 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
- B. Welded Wire Fabric: ASTM A 1064, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Smooth Joint Dowel Bars: ASTM A36, plain-steel bars, cut true to length with ends square and free of burrs.

- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than.
- E. Fabric Supports: Chairs for spacing, supporting welded wire fabric in place. Use continuous wire chairs complying with CRSI specifications.
 - 1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

2.3 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- B. Cementitious Materials:
 - 1. Portland Cement: ASTM C 150, Type I. High early strength (when specified), ASTM C150, Type III. One brand of cement shall be used throughout Project duration unless otherwise acceptable to Engineer.
 - 2. Fly Ash: ASTM C 618, Class F or C, except maximum loss on ignition: 3%.
 - 3. Slag Cement: ASTM C 989, Grade 100 or 120.
 - 4. Blended Hydraulic Cement: ASTM C 595, Type IS, portland blast-furnace slag, Type IP, portland-pozzolan, Type IL, portland-limestone, or Type IT, ternary blended cement.
 - 5. Silica Fume: ASTM C 1240, amorphous silica.
- C. Normal-Weight Aggregates: ASTM C 33 Class 3S coarse aggregate or better, graded, and as specified. Provide aggregates from a single source for exposed concrete.
 - 1. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances considered deleterious or that cause spalling or surface discoloration due to oxidation.
 - 2. Fine Aggregate to be free of materials with deleterious reactivity to alkali in cement.
- D. Water: ASTM C 1602 and potable.
- E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494, Type A.
 - 2. Retarding Admixture: ASTM C 494, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.
 - 4. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
 - 5. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
 - 6. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494, Type G.
 - 7. Plasticizing and Retarding Admixture: ASTM C 1017, Type II.

8. Air-Entraining Admixture: ASTM C 260.

F. Shrinkage-Reducing Admixture

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Eucon SRA, Euclid Chemical Company.
 - b. Eclipse Floor or Eclipse Plus, GCP Applied Technologies, Inc.
 - c. Masterlife CRA 007, BASF Corporation.
 - d. SRA-157 EXT, RussTech Admixtures, Inc.

2.4 RELATED MATERIALS

- A. Reglets: Where sheet flashing or bituminous membranes are terminated in reglets, provide reglets of not less than 0.022-inch thick (26-gage) galvanized sheet steel. Temporarily fill reglet or cover face opening to prevent intrusion of concrete or debris.
- B. Construction joint slip dowels: steel rod or plate in a plastic insert to allow contraction of the concrete while preventing vertical differential displacement.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. #4x1'-6" long, Speed Dowel by Sika Greenstreak.
 - b. ¼" plate, Diamond Dowel by PNA, Inc.
 - c. ¼" plate, Speed Plate by Sika Greenstreak.
- C. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or non-impregnated, flexible, synthetic foam with standard bonding agent to hold in place.
- D. Sheet Vapor Retarder: Provide vapor retarder that is resistant to deterioration when tested according to ASTM E 154, as follows:
 1. Polyolefin/Resin or multi-ply extrusion coated polyethylene sheet not less than 10 mils thick conforming to ASTM E 1745 Class A. Maximum water vapor permeance when tested in accordance with Test Method ASTM E154, Sections 7, 8, 11, 12, and 13 (based on ASTM E96) or ASTM F1249 of 0.038 perms. Minimum tensile strength when tested to ASTM D154 of 45 lbs-force/inch.
 2. Accessories: All must be from the same manufacturer of the vapor barrier material used, or must be approved by the vapor barrier manufacturer in writing and submitted to the Architect for record.
 - a. Seams: Manufacturer approved seam tape.
 - b. Sealing Permanent penetrations of vapor retarder: Manufacturer approved vaporproofing mastic or tape.

- c. Perimeter edge/seal: Manufacturer approved tape with a textured surface that creates a mechanical seal to freshly-placed concrete, termination bar, or double-sided sealant tape.
 - d. Non-permanent penetration prevention: Manufacturer approved peel and stick stake base/foot and film safe screed system.
 3. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Perminator Vapor-Mat with Perminator Tape Seal. W.R. Meadows, Inc.
 - b. Stego Wrap with Stego Tape Seal. Stego Industries, LLC.
 - c. Viper Vaporcheck II with manufacturer's recommended tape seal. Insulation Solutions, Inc.
 - d. Vaporblock VB10 with Vapor Bond Plus Tape Seal. Raven Industries, Engineered Films Division.
 - e. Xtreme with Xtreme Tape Seal. Tex-Trude, LP.
- E. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 according to ASTM D 2240.
- F. Bonding Agent: ASTM C 1059, Type II, nonredispersible, acrylic emulsion or styrene butadiene.
- G. Cartridge Injection Acrylic Adhesive (for reinforcing dowels): two-component material for use in concrete. Anchor to be approved for use with cracked concrete per AC308.
 1. Acrylic resin adhesive, suitable for use on dry or damp surfaces. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. HIT HY 200 V3 System, Hilti.
 - b. AC 200+, DeWalt/ Powers.
 - c. AT-XP System, Simpson/Strong-Tie.
- H. Nonmetallic, Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, complying with ASTM C1107, of consistency suitable for application, and a 30-minute working time. Grout to have a minimum compressive strength at 28 days of 8,000 psi when applied in a flowable consistency.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. SureGrip High Performance Grout, Dayton Superior.
 - b. NS Grout, The Euclid Company.
 - c. Masterflow 928, BASF Construction Chemicals.
 - d. Sikagrout 328, SIKA.

2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. General: All non-dissipating compounds shall be certified by curing compound manufacturer to not interfere with bonding of floor covering.
- E. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete for temporary protection from rapid moisture loss.
 - 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. BASF Corporation.
 - b. ChemMasters, Inc.
 - c. Dayton Superior.
 - d. Euclid Chemical Company.
 - e. Kaufman Products, Inc.
 - f. L&M Construction Chemicals, Inc.
 - g. Lambert Corporation.
 - h. Metalcrete Industries.
 - i. RussTech Admixtures, Inc. (EVRT)
 - j. Sika Corporation.
 - k. SpecChem, LLC.
 - l. W. R. Meadows, Inc.
- F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
 - 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. BASF Corporation.
 - b. ChemMasters, Inc.
 - c. Dayton Superior.
 - d. Euclid Chemical Company.
 - e. Kaufman Products, Inc.
 - f. L&M Construction Chemicals, Inc.
 - g. Lambert Corporation.
 - h. SpecChem, LLC.

- i. W. R. Meadows, Inc.
- G. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating.
 1. Coordinate compatibility and product with Polishing Contractor for all polished concrete surfaces.
 2. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. BASF Corporation.
 - b. ChemMasters, Inc.
 - c. Dayton Superior.
 - d. Euclid Chemical Company.
 - e. Kaufman Products, Inc.
 - f. L&M Construction Chemicals, Inc.
 - g. Lambert Corporation.
 - h. Metalcrete Industries.
 - i. SpecChem, LLC.
 - j. W. R. Meadows, Inc.
- H. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 25 percent solids, nondissipating.
 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. BASF Corporation.
 - b. ChemMasters, Inc.
 - c. Dayton Superior.
 - d. Euclid Chemical Company.
 - e. L&M Construction Chemicals, Inc.
 - f. Lambert Corporation.
 - g. Metalcrete Industries.
 - h. SpecChem, LLC.
 - i. W. R. Meadows, Inc.
- I. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. ChemMasters, Inc.
 - b. Dayton Superior.

- c. Euclid Chemical Company.
- d. Kaufman Products, Inc.
- e. L&M Construction Chemicals, Inc.
- f. Lambert Corporation.
- g. SpecChem, LLC.
- h. W. R. Meadows, Inc.

2.6 PROPORTIONING AND DESIGNING MIXES

- A. Prepare design mixes for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field data methods, or both, according to ACI 301. Mix proportions shall be established so that the concrete can be placed readily without segregation into forms and around reinforcement under anticipated placement conditions. Use an independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures. Trial batch and field experience tests shall have been performed within 24 months of submittal date. Use mix design submittal form included at the end of this section.
 - 1. Do not use the same testing agency for field quality control testing.
- B. Submit written reports to Architect of each proposed concrete mix type at least 15 days prior to start of Work. Do not begin concrete production until proposed mix designs have been reviewed by Architect. The approved mix designs shall be used throughout this project unless changes are approved by the Architect/Engineer prior to use.
- C. Cementitious Materials: Supplier shall coordinate surface treatment compatibility with cementitious materials. Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 - 1. Fly Ash: 20 percent for Type F or 25% for Type C except for lean or flowable backfill. Use of fly ash in concrete for use in colored concrete, polished concrete floor systems, or where incompatible with admixtures or other treatments is prohibited.
 - 2. Combined Fly Ash and Pozzolan: 25 percent.
 - 3. Slag Cement: 50 percent.
 - 4. Combined Fly Ash or Pozzolan and Slag Cement: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
 - 5. Silica Fume: 10 percent.
 - 6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
 - 7. Combined Fly Ash or Pozzolans, Slag Cement, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete as required for placement and workability and in all pumped concrete, architectural concrete, and concrete required to be watertight.
 - 2. Use accelerating and retarding admixtures at Contractor's discretion to control set time when required by extreme temperatures or humidity, or other adverse

- placement conditions. Use accelerating admixture in concrete slabs placed at ambient temperatures below 35 deg F.
3. Use shrinkage-reducing admixture in all concrete for polished concrete or other exposed architectural concrete floor systems. Dosage rate to be 2% by weight cementitious material. Coordinate compatibility with other admixtures and floor treatments.
 4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.
- E. The minimum compressive strength measured 28 days after placement (f'_c), minimum cementitious content, slump, maximum water/cementitious content ratio (W/C), and air content of the concrete for each portion of the structure shall be as follows:
1. **Mix Type 1.** Controlled Low Strength Material CLSM (Flowable fill). Provide blend of cement, flyash, and sand with minimum cementitious content as follows:
 - a. Excavatable flowable fill: 100 lb cement and 250 lb fly ash per cubic yard.
 - b. Structural flowable fill (250 psi): 175 lb cement and 200 lb fly ash per cubic yard. Add CLSM performance additive at manufacturer's recommended dosage rate, adjusting water content to provide desired flow and strength characteristics.
 2. **Mix Type 2.** Lean Concrete Backfill and Mudmats. Normal-weight concrete.
 - a. Minimum Design Compressive Strength: 1,500 psi.
 - b. Minimum Cementitious Material: 200 lbs/cy.
 - c. Slump Limit: N/A.
 - d. Air Content: Natural.
 3. **Mix Type 3.** Footings. Normal-weight concrete.
 - a. Minimum Design Compressive Strength: 3,000 psi.
 - b. Minimum Cementitious Material: 470 lbs/cy.
 - c. Slump Limit: Minimum of 4 inches and maximum of 6 inches, plus or minus 1 inch.
 - d. Air Content: Natural.
 4. **Mix Type 4.** Interior Piers, Foundation walls. Normal-weight concrete.
 - a. Minimum Design Compressive Strength: 4,000 psi.
 - b. Minimum Cementitious Material: 550 lbs/cy. With an approved water-reducing agent, minimum cement content may be reduced by 47 pounds of cement per cubic yard.
 - c. Water Reducing Admixture: Mandatory.
 - d. Slump Limit: Maximum 4 inches or 8 inches after adding admixture to 2-to-3-inch slump concrete, plus or minus 1 inch.
 - e. Air Content: Natural.
 5. **Mix Type 5.** Interior Slab on Grade, and Equipment Bases. Normal-weight concrete.

- a. Minimum Design Compressive Strength: 4,000 psi.
 - b. Minimum Cementitious Material: 505 lbs/cy.
 - c. Water Reducing Admixture: Mandatory.
 - d. Slump Limit: Maximum 8 inches after adding water reducing admixture to 2-to-3-inch slump concrete, plus or minus 1 inch.
 - e. Air Content: Maximum 3 percent.
- F. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in Work.

2.7 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.
1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 GENERAL

- A. Coordinate the installation of joint materials, vapor retarder/barrier, and other related materials with placement of forms and reinforcing steel.

3.2 FORMWORK INSTALLATION

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied until concrete structure can support such loads.
- B. Construct formwork so concrete members and structures are of correct size, shape, lines, alignment, elevation, position, level, plumb, and dimension and indicated. Maintain formwork construction tolerances and surface irregularities within limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 - 1. Class A, 1/8-inch tolerances for smooth-formed concrete surfaces exposed to view.
 - 2. Class D tolerances for earth formed foundation elements. Tolerance applies as a variation inward towards reinforcing only. No tolerance limit away from reinforcing applies.
 - 3. Class C, 1/2-inch tolerances for other concrete surfaces.
- D. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.
- E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like for easy removal.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspections where interior area of formwork is inaccessible before and during concrete placement. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Form openings, chases, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, and other features required in the Work. Chamfer exposed corners and edges at exterior corners and edges of permanently exposed concrete and as indicated, to produce uniform smooth, straight lines and tight edge joints.
- I. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
- J. Earthen forms may be used for footings and foundation elements when ground is stable and capable of resisting erosion and fluid pressure of wet concrete without sloughing. All tolerances and clear covers shall be maintained. Excavation shall be clean of all loose soil and mud along bottom and sides.
- K. Use selected materials to obtain required finishes.

- L. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- M. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
 - 1. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed.
 - 2. Do not spray reinforcing with form oil.
 - 3. Coat steel forms with a nonstaining, rust-preventative material. Do not use rust-stained steel form-facing material.

3.3 INSTALLING EMBEDDED ITEMS

- A. Place and secure anchorage devices, anchor rods, and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, templates, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303. Column anchor rods shall be set in a rigid template and securely braced to formwork or ground prior to placing concrete. Anchor rods shall not be "wet set" in plastic concrete.
 - 2. Install reglets to receive sheet waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles, and other conditions.
 - 3. Aluminum conduit shall not be installed in concrete.

3.4 REMOVING AND REUSING FORMS

- A. Formwork not supporting weight of concrete, such as sides of walls and piers, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete must first be sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations shall be maintained.
 - 1. Remove forms only if shores and other vertical supports have been arranged to permit removal without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent as specified for new formwork.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets.

1. Do not use patched forms for exposed concrete surfaces except as acceptable to Architect.

3.5 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with Concrete Reinforcing Steel Institute's (CRSI) "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Deliver reinforcement to job site bundled, tagged and marked. Use waterproof tags indicating bar size, length, and mark corresponding to placing drawings.
- C. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
- D. When permitted, field bend bars cold, except during cold weather when moderate heating is necessary to avoid brittle failures.
- E. Accurately position, support, and secure all bar reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum coverages as indicated for concrete protection.
 1. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations.
 2. Walls with reinforcing mats on each face shall have bent U-bar spacers tied to each mat to hold spacing between mats. U-bar spacers shall be minimum #3 bars spaced a maximum of 6 feet on center horizontally and vertically with a row of bars placed at the top of any wall over 4 feet tall.
 3. All walls shall have chairs or bolsters placed between reinforcing mat(s) and both form faces spaced a maximum of 6 feet on center to maintain clear cover.
- F. Install welded- wire fabric reinforcement in longest practicable lengths on fabric supports spaced to minimize sagging. Lap edges and ends of adjoining pieces at least one full mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace outermost cross wires of lace splices with wire to prevent lifting of the ends during concrete placement.
 1. Chair welded wire fabric slab reinforcement with continuous chairs spaced a maximum of 32 inches on center. Provide additional chairs as required. Lift welded wire fabric back into position between chairs where depressed during concrete placement. Lifting welded wire fabric into position during concrete placement without the use of chairs is not permitted.
- G. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

- H. Weld reinforcing bars and fabric, only where indicated, according to AWS D1.4. Do not tack weld crossing reinforcing bars.
- I. Construction tolerances shall be in accordance with ACI 117 and the following:
 - 1. For member depths 12" and smaller, tolerance on concrete cover shall be the smaller of $-3/8"$ and $-(1/3)*[\text{specified cover}]$.
 - 2. For member depths larger than 12", tolerance on concrete cover shall be the smaller of $-1/2"$ and $-(1/3)*[\text{specified cover}]$.
 - 3. At formed soffits, tolerance on concrete cover shall be $-1/4"$.
 - 4. Tolerance for longitudinal location of bends and ends of reinforcement:
 - a. At discontinuous ends of brackets and corbels, $\pm 1/2"$.
 - b. At discontinuous ends of other members, $\pm 1"$.
 - c. At other locations, $\pm 2"$.

3.6 PLACING ADHESIVE SYSTEM

- A. General: Clean all holes per manufacturer instructions to remove loose material and drilling dust prior to installation of adhesive. Holes may be dry, damp or wet. Inject adhesive into holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive. Follow manufacturer recommendations to ensure proper mixing of adhesive components. Sufficient adhesive shall be injected in the hole to ensure that the annular gap is filled to the surface. Remove excess adhesive from the surface. Shim anchors with suitable device to center the anchor in the hole. Do not disturb or load anchors before manufacturer specified cure time has elapsed.
 - 1. Drill holes with rotary impact hammer drills using carbide-tipped bits and core drills using diamond core bits. Drill bits shall be of diameters as specified by the anchor manufacturer. Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface.
 - 2. Cored Holes: Where anchors are to be installed in cored holes, use core bits with matched tolerances as specified by the manufacturer. Acrylic Adhesive Anchors shall not be installed in core drilled holes.
 - 3. Embedded Items: Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items. Notify the Engineer if reinforcing steel or other embedded items are encountered during drilling.
 - 4. Observe manufacturer recommendations with respect to installation temperatures for cartridge injection adhesive anchors and capsule anchors.
 - 5. Perform anchor installation in accordance with manufacturer instructions.

3.7 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints in Slab on Grade: Provide slip dowels (as shown on drawings) for construction joints in field of slabs on grade less than 6" thickness. Provide continuous

keyways at least 1 1/2 inches deep by 1 1/2" wide or slip dowels (as shown on drawings) in construction joints in slabs on grade 6" or thicker. Provide continuous keyways at least 1 1/2 inches deep by one third the slab thickness centered in the construction joint of all formed concrete slabs.

1. Bulkheads designed and accepted for this purpose shall be used for doweled joints. Use manufactured plastic sleeves as indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint for non-sleeved dowels.
 2. Prefabricated pourstop with keyway may be used for simultaneous placement of adjacent slab panel at Contractor's option, where approved by Architect. Use leave-in-place joint system that is compatible with floor finish or treatment system.
 3. Where construction joints at doorways that align with both faces of bearing wall are specified, utilize preformed pourstop with keyway in lieu of slip dowels.
 4. Where joints will be exposed to view in public spaces or warehousing areas, joints shall be straight, crisp, and with sharp edges. Slabs shall be flush across joint.
- C. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
 2. Terminate full-width joint-filler strips flush with top of slab to prevent contact or bonding between the slab and the adjoining member. Use strips with perforated strips that remove the top portion to be not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants are indicated.
 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
 4. At locations where drawings do not specifically call for premolded filler, provide bond breaker between slab and vertical surface. The vapor retarder may be turned up and used for this purpose.
 5. Provide 1/2" expansion joint between slab and all door jambs (at end of walls in opening).
 6. Joint fillers and sealants are specified in Division 7 Section "Joint Sealants."
- D. Contraction (Control) Joints in Slabs-on-Grade: Construct weakened-plane contraction joints, sectioning concrete into areas as indicated, and to a depth equal to at least one-fourth depth of concrete thickness as follows:
1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groove-tool marks on concrete surfaces.
 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

3. Contraction joints may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
4. If joint pattern is not shown, provide joints not exceeding 15 feet in either direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays).
5. Joint fillers and sealants are specified in Division 7 Section "Joint Sealants."

3.8 VAPOR RETARDER / BARRIER INSTALLATION

- A. Sheet vapor retarders and barriers: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions. Place sheeting in position with longest dimension parallel with direction of pour.
 1. Extend film fully over slab area to the full perimeter of the slab. Turn film up 2" onto surrounding wall/column/piers/etc. and seal to vertical element with continuous mastic or tack tape capable of adhering to concrete and masonry. Film and tape shall not extend above finished floor.
 - a. At the point of termination, seal vapor retarder to the foundation wall, footing, grade beam or slab itself. Where obstructed by impediments (such as dowels, waterstops, or any other site condition requiring early termination of the vapor retarder), use manufacturer's recommended accessories for such non-standard terminations.
 2. Lap joints 6 inches and seal with manufacturer's recommended mastic or pressure-sensitive tape.
 3. Apply seam tape to a clean and dry film only.
- B. Seal around all penetrations (including all conduit and pipes) through film with manufacturer's recommended mastic or pressure-sensitive tape. Cut slit around penetrations to place initial layer of film.
 1. For small penetrations, tape film directly to the penetrating element.
 2. For penetrations larger than 2", create collar for penetration of 12" wide by 1 ½ times the penetration's circumference with fingers cut half the width of the film. Wrap the collar around the penetration, tape the collar onto the strip of film, and tape the fingers at each edge/slit to the initial layer of film.
- C. Avoid the use of non-permanent stakes driven through film. If non-permanent stakes are driven through film, repair and seal as recommended by film manufacturer.
- D. Repair damaged areas of film material of similar (or better) permeance, puncture resistance, and tensile strength.

CONCRETE PLACEMENT

- E. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- F. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified. Concrete delivery tickets shall show:
1. Batch number.
 2. Mix by number with cement content in pounds and maximum size aggregate.
 3. Admixtures.
 4. Air content.
 5. Slump.
 6. Time dispatched and discharged.
 7. Date.
 8. Contractor.
 9. Ready Mix Supplier.
 10. Project Name and Address.
 11. Volume of Concrete.
- G. Do not add water to the concrete mix during delivery, at Project site, or during placement unless approved by the General Contractor's representative, noted on the delivery ticket with the amount of water, and signed by the General Contractor's representative. The maximum water/cement ratio of an approved mix design shall not be exceeded.
1. When the ambient air temperature is between 80 and 90 degrees Fahrenheit, one (1) gallon of water per cubic yard of concrete may be added at the job site to compensate for water evaporation during transit.
 2. When the ambient air temperature exceeds 90 degrees Fahrenheit, two (2) gallons of water per cubic yard of concrete may be added at the job site to compensate for water evaporation during transit.
 3. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- H. Discharge concrete within 1 ½ hours after water has been added to the cement, unless a longer time has been authorized by the Architect/Engineer. During hot weather or other conditions contributing to a quick stiffening of the concrete, the Architect/Engineer may require discharge in less than 1 ½ hours.
- I. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation. Do not allow concrete to drop more than 5 feet or from a height which allows concrete to fall against reinforcing.
1. Deposit concrete in forms in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints. Do not subject concrete to any procedure that will cause

- segregation. Deposit concrete as near as possible to the final position to avoid segregation.
2. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 301.
 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.
- J. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 2. Maintain reinforcement in proper position on chairs during concrete placement.
 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- K. Cold-Weather Placement: When air temperature is expected to fall below 40 degrees Fahrenheit (4 deg C) within the first 72 hours after concrete placement, comply with provisions of ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When mean daily air temperature is expected to fall below 40 deg F (4 deg C) for more than three successive days after concrete placement, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature at point of placement as follows:
 - a. Not less than 55 deg F (13 deg C) or more than 75 deg F (24 deg C) for concrete sections less than 12 inches in the least dimension (width or thickness).
 - b. Not less than 50 deg F (10 deg C) or more than 70 deg F (21 deg C) for concrete sections 12 inches or greater in the least dimension (width or thickness).
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.

- L. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305.1 and as specified.
 - 1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
 - 3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
 - 4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Architect.

- M. Pumping Concrete: Grout used to prime a pump shall not be placed in the forms of any concrete exposed to view in the final structure. Concrete shall not be pumped through pipe made of aluminum or aluminum alloys.

3.9 FINISHING FORMED SURFACES

- A. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

- B. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as specified.
 - 1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

- C. Trowel Finish: Apply a trowel finish to monolithic slab surfaces exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or another thin film-finish coating system.

1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units.
2. Allow moisture film or sheen to disappear from the floated surface and allow the concrete to harden enough to prevent fine material and water from being worked into the concrete surface. Then begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks and uniform in texture and appearance.
3. Finish surface to specified tolerances for floor flatness and floor levelness measured according to ASTM E 1155. Minimum local values shall be 2/3 of the specified composite F-number. Unless otherwise shown or noted on the drawings, comply with the following table:

Slabs on Grade		
Composite Flatness F(F)	Composite Levelness F(L)	Typical Use
20	15	Mechanical rooms, non-public areas, surfaces to receive thick-set tile floors
25	20	Surfaces to receive carpet, light traffic (foot) areas

- D. Nonslip Broom Finish: Apply a nonslip broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.
 1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
- E. Surface Cleaning: Where concrete surface is to be left exposed or sealed with thin film or penetrating coating, burnish or burn to remove all protruding synthetic fiber reinforcing.
- F. Exposed Concrete Slabs: Slabs exposed to view in the public spaces shall be free of trowel marks and uniform in texture and appearance. Sharply defined low and high spots are prohibited and cause for rejection by Architect. Grinding and patching to correct discrepancies will be prohibited unless acceptable to Architect. Use new, clean blankets and other protections that will not discolor or dull the finish.

3.11 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix,

place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.

- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on drawings. Coordinate sizes and locations of concrete bases with actual equipment to be provided.
 - 1. Construct concrete bases 3 1/2 inches high unless otherwise indicated, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
 - 2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
 - 3. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 4. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 5. Finish all mechanical housekeeping pads to a finished tolerance of 1/8" in 10 feet.
- D. Grouting of Column Base Plates: Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces, protect installed materials, and allow to cure.
 - 1. Comply with manufacturer's instructions for proprietary grout materials.
 - 2. Grout shall be installed and cured before any elevated concrete slab supported on said columns are placed and prior to installing structural framing in excess of the third story above.

3.12 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Compatibility: Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete. Dosage rate and material compatibility of curing compound shall be coordinated with the Polishing Contractor for polished concrete floor systems.
- C. For cold-weather protection during curing, comply with ACI 306.1 and the following:
 - 1. All freshly placed concrete shall be kept from freezing for the following periods:

- a. 3 days for all concrete with an air entraining admixture.
 - b. 4 days for all concrete without an air entraining admixture.
2. A cumulative curing time of seven days at a minimum surface temperature of 50 degrees F (10 degrees C) shall be provided or until concrete has attained 75% of its design strength. This shall be followed by cooling of concrete in a gradual transition to surrounding conditions. The temperature drop during this period shall not be at a rate exceeding 2 degrees F per hour until the outside or surrounding temperature is reached.
 3. When concrete is placed under conditions of cold weather concreting (defined as a period when the mean daily temperature drops below 40 degrees F for more than three successive days), take additional precautions as specified in "Cold Weather Concreting" by the American Concrete Institute (ACI Report 306) when placing, curing, monitoring and protecting the fresh concrete.
- D. For hot-weather protection during curing, comply with ACI 301 and the following:
1. When concrete is placed under conditions of hot weather concreting, provide extra protection of the concrete against excessive placement temperatures and excessive drying throughout the placing and curing operations. Hot weather is defined as air temperature which exceeds 80 degrees F or any combination of high temperature, low humidity and/or high wind velocity that causes a rate of evaporation in excess of 0.2 pounds per square foot per hour as determined by Figure 2.1.5 of ACI Report 305. Hot weather curing is required if these conditions occur within a 24-hour period after completion of concrete placement.
 2. Forms, reinforcing and the air shall be cooled by water fog spraying immediately before placing concrete.
 3. Immediately following screeding, protect concrete by applying the specified evaporation retarder in accordance with the recommendations of the manufacturer.
- E. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- F. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
1. Cure interior and exterior slab surfaces exposed to deicing salts and slabs where the finish flooring is not compatible with curing compounds by Moisture Curing.
 2. Cure slab surfaces to receive hardwood flooring or sports rubber systems by Moisture Curing.
- G. Cure concrete according to ACI 308.1 by one or a combination of the following methods:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

- a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
- a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
- a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.13 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval. Repair architectural exposed formed and exposed slab surfaces only with specific prior approval by Architect (cutting, grinding, and patching of these surfaces will generally be prohibited).
- B. Contractor shall make mockup of any repairs for review by Architect prior to performing repairs. Coordinate placement and size with Architect prior to proceeding.
- C. Patching Mortar: Mix dry-pack patching mortar, consisting of 1-part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, and a 50:50 mixture of acrylic or styrene butadiene-based bonding admixture and water. Use only enough liquid as required for handling and placing.

- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 2. After concrete has cured at least 14 days, correct high areas by grinding smooth (at covered slabs only) any surface defects that would telegraph through applied floor covering system.
 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
 5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 6. Repair defective areas, except random cracks to be covered with covering capable of bridging and concealing crack and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 7. Repair random cracks to be covered with covering capable of bridging and concealing crack and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
 8. Repair random cracks in exposed architectural concrete slab on grade by fully removing and replacing slab between existing control or construction joints. Drill and install dowel bars between new and existing slab as directed by Engineer.
 9. Repair random cracks in exposed architectural suspended concrete slab by fully removing and replacing slab as directed by Architect. Slab replacement shall extend to third point of framing infill bay and girder span at composite beam systems.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

- F. Repair methods not specified above may be used, subject to acceptance of Architect.

3.14 QUALITY CONTROL

- A. The Owner will employ an independent testing and inspection agency that meets the requirements of ASTM E329 to perform inspections and tests and to prepare test reports. The agency will monitor concrete quality by means of site and laboratory tests. They will be authorized to reject plastic concrete not conforming to specifications. Failure to detect any defective materials shall not prevent later rejection when such defect is discovered, or obligate the Architect or Owner for final acceptance.
1. See Section 014110 – Structural Special Inspections and Contract Drawings for testing and inspection to be performed.
 2. Test results will be reported in writing to the Architect, Engineer, ready-mix producer and General Contractor within 24 hours after tests.
 3. Additional Tests: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect.
- B. The Special Inspector will provide testing of the floor slab F-number tolerances conducted in accordance with the provisions set forth by ASTM E 1155. All tests shall be performed within three working days after concrete placement and prior to any form removal. If in-place floor slabs do not comply with the minimum values shown, the Contractor shall propose remedial measures to bring the surfaces of the floors into compliance. These measures might include grinding, planning, surface repair, retopping, or removal and replacement. Remedial measures shall be approved by the Architect/Engineer prior to the Contractor's commencement of the work.
- C. Commissioning of Vapor Retarder/Barrier System: Comply with requirements in Section "Commissioning of Vapor Barrier System."
- D. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION 033000

BROWN + KUBICAN, PSC

STRUCTURAL ENGINEERS

CONCRETE MIX DESIGN SUBMITTAL FORM

Project: _____
 City, State: _____
 General Contractor: _____
 Concrete Contractor: _____
 Mix Design Number: _____
 Concrete Strength (Mix Type): _____
 Use (describe): _____

Design Mix Information

Check
one

Based on Standard Deviation Analysis
 Based on Trial Mix Laboratory Test Data

Design Characteristics

Density		pcf
Strength		psi (28 days)
Air		%
Slump		inches

*If trial mixes are used, the Mix Design is proportioned to achieve $f'_{cr} = f'_c + 1200$ psi
 (1400 psi for strength higher than 5000 psi at 28 days)*

Materials

	Type	Source	Specific Gravity	Weight (lb.)	Absolute Vol. (cu. ft.)
cement					
flyash					
silica fume					
coarse aggregate					
fine aggregate					
water					
other ()					
Total					27.0 cu. ft.

Water/Cementitious Ratio (W/C) = _____ % (lbs. water /lbs. cementitious)

Admixtures

	Manufacturer	Dosage (oz./cwt)
water reducer		
air entraining agent		
high range water reducer		
non-corrosive accelerator		
other ()		

Slump before high range water reducer = _____ inches
 Slump after high range water reducer = _____ inches

Standard Deviation Analysis (field experience records)

Number of test cylinders evaluated: _____ Standard deviation (s): _____
 k-factor:

Number of Tests	k
15	1.16
20	1.08
25	1.03
≥30	1.00

Required avg. compressive strength (≤5000 psi: Max [$f'c + 1.34ks$, $f'c + 2.33 ks - 500$])
 (>5000 psi: Max [$f'c + 1.34ks$, $0.9f'c + 2.33ks$]): _____

Actual avg. compressive strength: _____
 (Refer to ACI 301 for standard deviation calculation – attach copies of laboratory test reports)

Trial Mix Laboratory Test Data

	Mix #1 (w/c=)		Mix #2 (w/c=)		Mix #3 (w/c=)	
Age	Date	Compressive Strength	Date	Compressive Strength	Date	Compressive Strength
7 days		psi		psi		psi
7 days		psi		psi		psi
28 days		psi		psi		psi
28 days		psi		psi		psi
28 days average	NA	psi	NA	psi	NA	psi

(Refer to ACI 301 for trial mix procedure – attach copies of laboratory test reports)

Required Attachments

	Please check
Coarse aggregate gradation report	<input type="checkbox"/>
Fine aggregate gradation report	<input type="checkbox"/>
Laboratory test reports (strength tests)	<input type="checkbox"/>
Admixture compatibility certification letters	<input type="checkbox"/>

Ready Mix Supplier

Name and Address:

Phone: _____ Miles from project: _____ Date: _____

SECTION 04 20 00 – UNIT MASONRY ASSEMBLIES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Drawings for locations of work to be performed.

1.02 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
 - 1. Concrete masonry units (CMUs).
 - 2. Face brick.
 - 3. Stone trim (e.g., water table, sills).
 - 4. Mortar and grout.
 - 5. Reinforcing steel.
 - 6. Masonry joint reinforcement.
 - 7. Ties and anchors.
 - 8. Embedded flashing.
 - 9. Miscellaneous masonry accessories.
 - 10. Cavity-wall insulation.
- B. Requirements of Sheet S1.1, "Masonry Wall Construction" apply to work of this Section, except where different requirements are stated herein.
- C. Related Sections include the following:
 - 1. Division 07 Section "Bituminous Dampproofing" for dampproofing applied to the cavity face of backup wythes of CMU walls.
 - 2. Division 07 Section "Sheet Metal Flashing and Trim" for exposed sheet metal flashing.
 - 3. Division 07 Section "Joint Sealants" for sealing control and expansion joints in unit masonry.
- D. Products installed, but not furnished, under this Section include the following:
 - 1. Steel lintels and shelf angles for unit masonry, furnished under Division 05 Section "Metal Fabrications."
 - 2. Manufactured reglets in masonry joints for metal flashing, furnished under Division 07 Section "Sheet Metal Flashing and Trim."

1.03 DEFINITIONS

- A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
 - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
 - 2. Stone Trim Units: Show sizes, profiles, and locations of each stone trim unit required.
- C. Samples: For each type and color of the following:
 - 1. Face brick, straps of five or more standard (modular) bricks.
 - 2. Colored mortar.
 - a. Pigmented and colored-aggregate mortar. Make Samples using same sand and mortar ingredients to be used on Project. Label Samples to indicate types and amounts of pigments used.
 - 3. Accessories embedded in masonry.
 - 4. Limestone trim.
- D. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
 - 1. Masonry units: Include material test reports substantiating compliance with requirements.
 - 2. Cementitious materials. Include brand, type, and name of manufacturer.
 - 3. Pre-blended, dry mortar mixes. Include description of type and proportions of ingredients.
 - 4. Reinforcing bars.
 - 5. Joint reinforcement.
 - 6. Anchors, ties, and metal accessories.
 - 7. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 - 8. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 1 and 2 in ACI 530.1 / ASCE 6/TMS 602.

1.05 QUALITY ASSURANCE

- A. 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.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.

- C. 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 other means, as acceptable to authorities having jurisdiction.
- D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution, as directed by the Architect.
 - 1. Build mockups for typical exterior wall in sizes approximately 48-inches long by 48-inches high by full thickness, including face and backup wythes and accessories.
 - a. Architect to provide drawing indicating mock-up configuration.
 - b. Include a sealant-filled joint at least 16-inches long in each mockup.
 - c. Include through-wall flashing installed for a 24-inch length in corner of exterior wall mockup approximately 16-inches down from top of mockup, but not above window, with a 12-inch length of flashing left exposed to view (omit masonry above half of flashing).
 - d. Include flashing, and weep holes in exterior masonry-veneer wall mockup.
 - 2. Clean exposed faces of mockups with masonry cleaner as indicated.
 - 3. Protect accepted mockups from the elements with weather-resistant membrane.
 - 4. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit and stone colors; tooling of joints; and aesthetic qualities of workmanship.
 - a. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by the Architect in writing.
- E. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Meetings."

1.06 DELIVERY, STORAGE, AND HANDLING

- A. 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.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

- D. Deliver pre-blended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store pre-blended, 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.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.07 PROJECT CONDITIONS

- A. Protection of Masonry exposed to weather: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Weight sheeting and wrap around sides in a way that is sufficient to avoid exposure and keep wind from blowing covering off prior to restart of 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 (1) wythe of multi-wythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24-inches down face next to unconstructed wythe and hold cover in place.
- B. Do not apply uniform floor, roof or concentrated loads until mortar and grout have reached its design strength. Coordinate with material testing consultant.
- 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 from mortar splatter by spreading coverings on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of windows 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.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40-degrees F and above and will remain so until masonry has dried, but not less than 7-days after completing cleaning.

- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1 / ASCE 6/TMS 602.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include products specified.
 - 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include manufacturers specified.

2.02 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.03 CONCRETE MASONRY UNITS (CMU)

- A. Shapes: Provide shapes indicated and as follows:
 - 1. Provide special shapes for lintels, corners, jambs, sashes, sills at openings, movement joints, headers, bonding, and other special conditions.
 - 2. Provide bullnose units for outside corners.
- B. Concrete Masonry Units: ASTM C 90.
 - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
 - 2. Weight Classification: Lightweight, unless otherwise indicated.
 - 3. Actual Size: Manufactured to dimensions 3/8 inch less than nominal dimensions.
 - 4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.
 - a. Size: 8-inches by 16-inches, unless otherwise noted. Refer to Wall Type Legend.

2.04 MASONRY LINTELS

- A. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam concrete masonry units with reinforcing bars placed as indicated and filled with coarse grout. Provide

bullnose at all exposed outside corners. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.05 BRICK

- A. General: Provide shapes indicated and as follows:
 - 1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished. These shall be included in the allowance value.
 - 2. Application: Use where brick is exposed, unless otherwise indicated. Refer to the Drawings for location of brick type.
- B. Face Brick: ASTM C 216, Grade SW, Type FBX.
 - 1. Modular: Basis of Design:
 - a. Sioux City Brick (Adel), Red Colonial Iron Spot, Allowance: \$630/m
 - b. Belden, Key West Glaze: Allowance: \$2,100/m
 - c. (Actual Dimensions): 3-5/8-inches wide by 2-1/4-inches high by 7-5/8-inches long.
- C. Available Manufacturers:
 - 1. Sioux City
 - 2. Belden
 - 2. The Bowerston Shale Company
 - 3. Endicott
 - 4. Glen-Gery
 - 5. Watsontown
 - 6. General Shale

2.06 STONE TRIM UNITS

- A. Limestone: ASTM C 568, Classification II Medium.
 - 1. Variety and Sources: Indiana oolitic limestone quarried in Lawrence, Monroe, or Owen Counties, Indiana.
 - a. Grade and Color: Standard, according to grade and color classification established by ILL. Color to match existing limestone at each building for which stone trim is indicated.
- B. Finish: Smooth.
- C. Sizes / Shapes:
 - 1. Profiles as shown on Drawings
 - 2. Lengths:
 - a. Sills: As indicated, based on width of masonry opening.

- b. Running stone trim, standard length: 3'-11 5/8" (equivalent of 6 lengths of brick and 6 head joints).
 3. Corners, horizontal or vertical: Mitered. Lengths to be same either side of miter, coordinated to brick coursing.
- D. Provide stone units accurately shaped, with exposed faces dressed true, and with beds and joints at right angles to faces.
 1. For limestone, comply with recommendations in ILI's "Indiana Limestone Handbook."

2.07 MORTAR AND GROUT MATERIALS

- A. Mortar For Concrete Masonry: Type S
 1. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction.
 2. Hydrated Lime: ASTM C 207, Type S.
 3. 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 270, Type S.
- B. Colored Masonry Cement For Brick: ASTM C 91, Type N.
 1. Pigments shall not exceed 10 percent of portland cement by weight.
 2. Available Products:
 - a. Essroc, Italcementi Group; Brixment Flamingo.
 - b. Lafarge North America Inc.; U.S. Cement Color Masonry Cement.
 - c. Lehigh Cement Company; Lehigh Custom Color Masonry Cement.
 3. Basis-Of-Design Product: Brixment Flamingo, R-20. Color to be determined during submittal process.
- C. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.
 1. Pigments shall not exceed 10 percent of portland cement by weight.
- D. Aggregate for Mortar: ASTM C 144.
 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand.
- E. Aggregate for Grout: ASTM C 404.
- F. Water: Potable.
- G. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
- H. Pre-blended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a pre-blended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- I. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.
 1. For masonry below grade or in contact with earth, use Type S, (CMU).
 2. For above-grade, non-load-bearing walls and parapet walls; and for other applications where another type is not indicated, use Type N, (BRICK).
- J. Grout for Unit Masonry: Comply with ASTM C 476.
 1. Compressive Strength of 2,500 psi
 2. Use grout of type indicated or, if not otherwise indicated, of type (fine or course) that will comply with Table 1.15.1 in ACI 530.1 / ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
 3. Provide grout with a slump of 8 to 11-inches as measured according to ASTM C 143 / C 143M.

2.08 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615, Grade 60 with supplementary requirements (SI).
- B. Masonry Joint Reinforcement, General: ASTM A 951.
 1. Interior Walls: Hot-dip galvanized, carbon steel.
 2. Exterior Walls: Hot-dip galvanized, carbon steel.
 3. Wire Size for Side Rods: W1.7 or 0.148-inch diameter.
 4. Wire Size for Cross Rods: W1.7 or 0.148-inch diameter.
 5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16-inches o.c.
 6. Provide in lengths of not less than 10-feet, with prefabricated corner and tee units.
- C. Masonry Joint Reinforcement for Single-Wythe Masonry: Truss type with single pair of side rods.
- D. Masonry Joint Reinforcement for Multi-wythe Masonry:
 1. Gasket Single Barrel Masonry Fastener with integral Thermal Break
 - a. Heckmann Thermal Pos-I-tie (Basis of Design) or equivalent by Durawall
 - 1) Spaced 16" o.c. vertically and 32" o.c. horizontally.
 - 2) Masonry Veneer Ties: Provide minimum 2-inches embedment in mortar.
 - 3) Wire 3/16 inch x 3-1/2"

- 4) Material for Ties in Exterior Walls: Hot-dip galvanized.
- 5) Material for Ties Exposed to Air in Exterior Walls: Hot-dip galvanized.

2.09 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply with eight subparagraphs below, unless otherwise indicated.
1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153 / A 153M, Class B-2 coating.
 2. Stainless Steel bars: ASTM A 276 or ASTM a 666, Type 304.
- B. Adjustable Anchors for Connecting Masonry to Concrete Wall: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Thermal clip with triangular pintle wire tie.
 - a. Basis-Of-Design Product: Heckmann Pos-I-Tie Thermal Clip
 1. thermal break between wire tie and barrel screw
 2. flame resistance; UL 94 V-0 rating
- C. Stone Anchors: Dowels, cramps, and other stone anchors from stainless steel, similar to Pos-I-Tie Stone Anchors.

2.10 EMBEDDED FLASHING MATERIALS

- A. Thru-Wall Flashing: For flashing not exposed to the exterior:
1. Copper-Laminated Flashing: 5-oz. / sq. ft. copper sheet bonded with asphalt between 2 layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.
 - a. Available Products:
 - 1) Advanced Building Products Inc.; Copper Fabric Flashing.
 - 2) AFCO Products Inc.; Copper Fabric.
 - 3) Hohmann & Barnard, Inc.; H & B C-Fab Flashing.
 - 4) Phoenix Building Products; Type FCC-Fabric Covered Copper.
 - 5) Polytite Manufacturing Corp.; Copper Fabric Flashing.
 - 6) Sandell Manufacturing Co., Inc.; Copper Fabric Flashing.
 - 7) York Manufacturing, Inc.; York Copper Fabric Flashing.
 2. Flexible Flashing: Perma-Barrier, by W.R. Grace, to be installed at corners of openings, at top of thru-wall flashing over termination bar at ICF walls and other locations, where a flexible flashing will provide a better installation.

- a. Termination Bar: Continuous flat metal bar, 1/8" thick by 1-inch wide, aluminum bar with pre-drilled holes at 8" o.c. Install bar with drive pins at masonry walls and screws at ICF walls.
3. Note: This section describes through-wall flashing. Alternate systems by listed manufacturers that do not require penetration of the continuous insulation (except for the anchoring) may be proposed for use, assuming documentation can be provided which indicates that they meet the performance goals of this specification.

2.11 MISCELLANEOUS MASONRY ACCESSORIES

- A. Weep/Vent Products: Use the following, unless otherwise indicated:
 1. Vinyl Vent: One-piece, offset, T-shaped units made from flexible, injection-molded PVC, designed to fit into a head joint and consisting of a louvered vertical leg, flexible wings to seal against ends of masonry units, and a top flap to keep mortar out of the head joint; in color approved by Architect to match that of mortar.
 - a. Available Products:
 - 1) Hohmann & Barnard, Inc.; #343 Louvered Weep Hole.
 - 2) Williams Products, Inc.; Williams-Goodco Brick Vent.
 - 3) Wire-Bond; Louvered Weep holes.
 - B. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
 1. Provide one of the following configurations:
 - a. Strips, full-depth of cavity and 10-inches wide, with dovetail shaped notches 7-inches deep that prevent mesh from being clogged with mortar droppings.
 - b. Strips, not less than 1-1/2-inches thick and 10-inches wide, with dimpled surface designed to catch mortar droppings and prevent weep holes from being clogged with mortar.
 2. Available Products:
 - a. Advanced Building Products Inc.; Mortar Break or Mortar Break II.
 - b. Dayton Superior Corporation, Dur-O-Wal Division; Polytite MortarStop.
 - c. Mortar Net USA, Ltd.; Mortar Net.

2.12 CAVITY-WALL INSULATION

- A. ASTM C578, TYPE IV (25 psi), extruded polystyrene with carbon black technology for increased R-Value (R-5.6 per inch) with ship lap edges:

1. Dow Chemical Styrofoam Cavity Mate Ultra Ship Lap (Basis of Design) or Owens Corning High-R CW Plus Ship Lap.
 2. Thermal Performance Warranty: 50-years
 3. Water Absorption: .03 max per ASTM 272
 4. Vapor Permanence: 1.5 per max at 1" thickness per ASTM E96
 5. Flame Spread: 25 max per ASTM E84
 6. Smoke Development: 250 per ASTM E84
 7. NFPA 285 approval for use in Non-Combustible Construction
 8. Thickness: 2-inches
 9. Size: 4- by 8-feet minimum.
- B. Butyl-rubber self-adhesive membrane at all joints, at all openings and used as penetration sealant at all masonry anchors.
1. Dow Weathermate Plus Flashing or Henry Blue Skin
 2. Water Vapor Transmission, ASTM E96, perm <1
 3. Application Temperature, °F (°C) min. 30 (-1)
 4. UV Resistance, days 120
 5. Thickness, ASTM D3767, Method A, mil 20

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
 2. Verify that foundations are within tolerances specified.
 3. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.

- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
 - 1. Mix units from several pallets or cubes as they are placed.
- F. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.
- G. Comply with construction tolerances in ACI 530.1 / ASCE 6/TMS 602 and with the following:
 - 1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10-feet, 1/4-inch in 20-feet, or 1/2-inch maximum.
 - 2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4-inch in 10-feet, or 1/2-inch maximum.
 - 3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8-inch in 10-feet, 1/4-inch in 20 feet, or 1/2-inch-maximum.
 - 4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8-inch, with a maximum thickness limited to 1/2-inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8-inch.
 - 5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8-inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8-inch.
 - 6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16-inch except due to warpage of masonry units within tolerances specified for warpage of units.
 - 7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16-inch from one masonry unit to the next.

3.03 LAYING BRICK WALLS

- A. Coursing: Lay brick plumb, level and true to line in **full** beds of mortar. Head joints shall be **filled solid** with mortar. Joints in brick work and between brick and other masonry or concrete shall be filled solid (head and bed joints) with mortar as work progresses. Exposed brick shall be laid in running bond pattern unless shown otherwise indicated. Do not install any broken, chipped or cracked bricks.
- B. Once laid, do not disturb face brick in any manner which would impair its mortar bed.

- C. Cleaning: Clean face brick surfaces as work progresses, Final cleaning is specified hereinafter.

3.04 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- D. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
 - 1. Align ends of stone units with head joints in brick.
- C. Lay concealed masonry with all units in a wythe in running bond. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Bed hollow metal frame anchors in mortar joints and fill head and jambs of frame solid with mortar.
- G. Fill first vertical cell of masonry units adjacent to framed openings full with specified grout fill.
- H. When building in electric outlet boxes, pipe sleeves and other similar items, make cuts so face texture will not be damaged beyond face of the cover plate or escutcheon; exposed patching will not be accepted.
- I. Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated.
- J. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- K. Fill cores in hollow concrete masonry units with grout 24-inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
- L. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with requirements of "The Kentucky Building Code".

M. Tuckpoint joints of CMU walls to eliminate voids prior to applying the bituminous dampproofing.

3.05 MORTAR BEDDING AND JOINTING

A. Lay hollow concrete masonry units as follows:

1. With face shells fully bedded in mortar and with **full** head joints of depth equal to bed joints.
2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
3. With webs fully bedded in mortar in grouted masonry, including starting course on footings. Fill / grout cores solid in starting course.

B. Make uniform, nominal 3/8" wide joints, unless otherwise shown. Tool joints smooth and dense with round, non-staining type jointed to provide slightly concave joints. Tool joints behind lockers, casework, markerboards, tackboards and other equipment.

C. Lay solid masonry units with **completely filled bed and head joints**; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

D. Make joints in brickwork uniform and not more than 3/8" wide and as follows:

1. After becoming "thumb-print" hard, tool joints of exterior facing brick with jointed that is slightly larger than the width of the mortar joint. Close cracks and crevasses.
2. All joints above and below grade: tool concave.

E. Set stone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.

1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
2. Wet joint surfaces thoroughly before applying mortar.

3.06 CAVITY WALLS

A. Bond wythes of cavity walls together using the following method:

1. Individual Metal Ties: Provide masonry veneer ties as specified, hooked to fastener in backup wythe; spaced typically at 32-inches o.c. horizontally and 16-inches o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12-inches of openings and space not more than 16-inches apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24-inches o.c. vertically.
2. Masonry Veneer Anchors: Comply with requirements for anchoring masonry veneers.

- B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.
- C. Coat cavity face of backup wythe to comply with Division 07 Section "Bituminous Dampproofing."
- D. Installing Cavity-Wall Insulation: Place small dabs of adhesive, spaced approximately 12-inches o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.
 - 1. Fill cracks and open gaps in insulation and **tape all joints**.

3.07 MASONRY JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8-inch on exterior side of walls, 1/2-inch elsewhere. Lap reinforcement a minimum of 6-inches.
 - 1. Space reinforcement not more than 16-inches o.c. vertically.
 - 2. Provide reinforcement not more than 8-inches above and below wall openings and extending 12-inches beyond openings.
 - a. Reinforcement above is in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.

3.08 ANCHORING MASONRY VENEERS

- A. Anchor masonry veneers to concrete backup with masonry-veneer anchors to comply with the following requirements:
 - 1. Fasten anchors to the insulated concrete form work ribs with two galvanized or stainless steel fasteners.
 - 2. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
 - 3. Space anchors at 16-inches o.c. vertically and 32-inches o.c. horizontally with not less than (1) anchor for each 2.67 sq. ft. of wall area. Install additional anchors within 12-inches of openings and at intervals, not exceeding 16-inches, around perimeter.

3.09 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry as follows:
 - 1. Install foam-plastic filler in head joints.
- C. Form expansion joints in brick made from clay or shale as follows:
 - 1. Form open joint full depth of brick wythe and of width indicated, but not less than 1/2-inch for installation of sealant and backer rod specified in Division 07 Section "Joint Sealants."

3.10 LINTELS

- A. Install steel lintels where indicated.
- B. Provide masonry lintels where shown and where openings of more than 8-inches for brick-size units and 16-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 otherwise indicated.

3.11 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.
- B. Install flashing as follows, unless otherwise indicated:
 - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Lap joints at least 6" and seal both horizontal and vertical surfaces of flashing. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
 - 2. At multi-wythe masonry walls, including cavity walls, extend flashing through outer Wythe to 1/4-inch beyond the exterior face, turned up a minimum of 8-inches, and 1-1/2-inches into the inner Wythe. Form 1/4-inch hook in edge of flashing embedded in inner wythe.
 - 3. At masonry veneer with concrete back-up; extend flashing through veneer, across air space behind veneer, and up face of insulated concrete form work at least 8-inches; with upper edge secured by a galvanized termination bar with sealant along top of bar.

4. At lintels and shelf angles, extend flashing a minimum of 8-inches into masonry at each end. At heads and sills, extend flashing 8-inches at ends and turn up not less than 2-inches to form end dams.
 5. Provide end dams at each end of stepped through wall flashings or at ends of a run of flashing.
 6. Seal all laps and end dams with mastic for a waterproof installation.
- C. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.
- D. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
- E. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in Part 2 "Miscellaneous Masonry Accessories" Article.
- F. Install vents in head joints in exterior wythes at 32-inches o.c. Use specified weep/vent products to form vents.
1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.12 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections indicated below and prepare test reports:
1. Allow inspectors access to scaffolding and work areas, as needed to perform inspections.
 2. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.
 3. Payment for these services will be made by the Owner.
 4. Retesting of materials failing to comply with specified requirements shall be done at Contractor's expense.
- B. Grout Test (Compressive Strength): For each mix provided, per ASTM C 1019.

3.13 REPAIRING, POINTING, AND CLEANING

- 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, where indicated.

- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
 - 4. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces. Do not use acid.
 - 5. Clean and remove all stains and foreign substances from **all new brick**.
 - 6. Clean stone trim to comply with stone supplier's written instructions.
- E. Masonry Cleaning Materials see individual section for related cleaning instructions.
 - 1. Commercial product manufactured for masonry cleaning.
 - 2. "Sure Klean 600" by ProsoCo, Inc. or "Thoro-Clean" by Standard Dry Wall Products, Inc.
 - 3. Verify compatibility with selected masonry units.

3.14 SALVAGEABLE MATERIALS

- A. Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

END OF SECTION 04 20 00

SECTION 051000 – STRUCTURAL ANCHORS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes post-installed metal anchors in concrete, masonry, and steel, as shown on drawings including schedules, notes, and details showing size and location of anchors, typical connections, and types of anchors required.
 - 1. Wedge anchors.
 - 2. Powder actuated fasteners.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section “Structural Special Inspection.”
 - 2. Division 3 Section “Cast-in-Place Concrete.”
 - 3. Division 4 Section “Unit Masonry.”
 - 4. Division 5 Section “Structural Steel Framing.”

1.3 ACTION SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
- B. Product Data for each type of product specified. Include manufacturer’s specifications, load charts, and other data to show compliance with the specifications (including specified standards).

1.4 INFORMATIONAL SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
- B. Installer Qualifications and Procedures: Submit a letter of procedure stating method of drilling, the product proposed for use, the complete installation procedure, manufacturer training date, and a list of the personnel to be trained on anchor installation.
- C. ICC ES Evaluation Reports/Certificates.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Anchors shall be installed by an installer with at least 1 year of experience performing installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Installer Training: Conduct a thorough training with the manufacturer or the manufacturer's representative for the installer on the project. Training to consist of a review of the complete installation process for drilled-in anchors, to include but not limited to:
 - 1. Hole drilling procedure.
 - 2. Hole preparation & cleaning technique.
 - 3. Rebar dowel preparation and installation.
- C. Certifications: Unless otherwise authorized by the Engineer, anchors shall have an ICC ES Evaluation Report indicating conformance with current applicable ICC ES Acceptance Criteria.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver anchors to Project site in such quantities and at such times to ensure continuity of installation.
- B. Store materials to permit easy access for inspection and identification. Protect anchors and packaged materials from erosion and deterioration.
- C. Keep anchors, rod materials, nuts and washers in original manufacturer's packaging with label intact until needed for use
- D. Store all anchoring products in strict accordance with manufacturer's recommendations. For adhesive anchors, consider temperature, exposure to sunlight, and shelf life.

1.7 SEQUENCING

- A. Supply anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, templates, instructions, and directions, as required, for installation.

PART 2 - PRODUCTS

2.1 GENERAL

2.2 FASTENERS AND HARDWARE

- A. Carbon-Steel Bolts and Threaded Fasteners: ASTM A 307, Grade A (ASTM F 568, Property Class 4.6), carbon-steel, hex-head bolts and threaded fasteners; carbon-steel nuts; and flat, unhardened steel washers.
 - 1. Finish: Plain, noncoated.
 - 2. Finish: Hot-dip zinc coating, ASTM A 153, Class C.
 - 3. Finish: Mechanically deposited zinc coating, ASTM B 695, Class 50.
- B. Wedge Anchors: ASTM A510 or ASTM A108.

2.3 MECHANICAL ANCHORS

- A. General: Anchor length shall be as necessary to provide the appropriate projection for the material that is being connected, the washer and full (100% of depth) engagement of the nut, and specified embedment. Embedment depth shall be respective to face of substrate (not attached material). See structural drawings for required minimum embedment of mechanical anchors; where no embedment is specified, provide anchors of sufficient length to result in manufacturer's maximum recommended effective embedment depth.
- B. Basis of design: Structural anchors have been designed using Hilti products as basis of design. Where alternative anchors are substituted which are manufacturer rated as a weaker product for the given application, even when listed as an approved available product, contractor shall decrease member spacing (thereby increasing quantity of anchors) by a proportional amount as part of the base bid.
- C. Wedge Anchors: Wedge type, torque-controlled, with impact section to prevent thread damage and wedge dimples to prevent spinning during installation, complete with required nuts and washers. Provide anchors with length identification markings conforming to ICC ES AC193. Type and size as indicated on Drawings. Suitable for fastening into cored, damp, or wet holes. For use in concrete. Anchor to be approved for use with cracked concrete per AC193.
 - 1. Interior Use: Unless otherwise indicated on the Drawings, provide carbon steel anchors manufactured from materials conforming to ASTM A510 or ASTM A108 with zinc plating in accordance with ASTM B633, Type III Fe/Zn 5 (SC1).
 - 2. Exterior Use (Including within masonry veneer cavity): Unless otherwise indicated on the drawings, provide stainless steel anchors. Stainless steel anchors shall be AISI Type 304 stainless steel provided with stainless steel nuts and washers of matching alloy group and minimum proof stress equal to or greater than the specified minimum full-size tensile strength of the externally threaded fastener. Stainless steel nuts shall conform to ASTM F594 unless otherwise specified. Avoid installing stainless steel anchors in contact with galvanically dissimilar metals.
 - 3. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Hilti Kwik Bolt KB1 (Carbon)
 - b. Hilti Kwik Bolt TZ2 (304 Stainless Steel).
 - c. DeWalt/ Powers Power-Stud+ SD2 (Carbon).
 - d. DeWalt/ Powers Power-Stud+ SD4 (304 Stainless Steel).

2.4 POWDER ACTUATED FASTENERS

- A. Drive Pins: Modified AISI 1060, 1062, or 1070 steel, hardness 49-61 Rockwell C, minimum tensile strength of 282 ksi, and minimum shear strength of 162 ksi; with zinc plating equivalent to ASTM B633, Type III Fe/Zn 5 (5µm min.) unless noted otherwise.
 - 1. For fastening light gauge metal to concrete or concrete masonry: Minimum 0.157" shank diameter, 1 ¼" long, with knurled shank and premounted plastic & steel washer.

- a. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - 1) X-U 32 P8 by Hilti.
 - 2) No. 50208 by DeWalt/ Powers Fasteners.
2. For fastening light gauge metal to steel: Minimum 0.157" shank diameter, 3/4" long, with knurled shank and premounted plastic & steel washer.
 - a. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - 1) X-U 19 P8 by Hilti.
 - 2) No. 50203 by DeWalt/ Powers Fasteners.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General

1. Drill holes with rotary impact hammer drills using carbide-tipped bits and core drills using diamond core bits. **Drill bits shall be of diameters as specified by the anchor manufacturer.** Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface. Drill hole to the specified nominal embedment plus additional length as specified by the Anchor Manufacturer.
2. Cored Holes: Where anchors are to be installed in cored holes, use core bits with matched tolerances as specified by the manufacturer. Acrylic Adhesive Anchors shall not be installed in core drilled holes.
3. Embedded Items: Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items. Notify the Engineer if reinforcing steel or other embedded items are encountered during drilling. Take precautions as necessary to avoid damaging prestressing tendons, electrical and telecommunications conduit, and gas lines.
4. Base Material Strength: Unless otherwise specified, do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
5. Observe manufacturer recommendations with respect to installation temperatures for cartridge injection adhesive anchors and capsule anchors.
6. Perform anchor installation in accordance with manufacturer instructions.

- B. Powder Actuated Fasteners: Perform anchor installation in accordance with manufacturer instructions. Adjust fastener shank diameter and length to achieve manufacturer's minimum recommended penetration of base material.

3.2 QUALITY CONTROL

- A. General: The Owner will engage an independent testing and inspecting agency to perform inspections and tests and to prepare test reports. Testing agency will conduct and interpret tests

and state in each report whether tested Work complies with or deviates from requirements. Failure to detect any defective materials shall not prevent later rejection when such defect is discovered, or obligate the Architect or Owner for final acceptance.

1. See Section 014110 – Structural Special Inspections and Contract Drawings for testing and inspection to be performed.
 2. Provide access for testing agency to places where structural anchors are being installed so that required inspection and testing can be accomplished.
 3. The General Contractor shall provide the testing agency a complete set of approved shop drawings.
 4. Reports will be delivered to the Architect, Engineer, and the General Contractor within one week of inspection.
 5. Deviations from requirements of the contract documents will be reported in writing to the General Contractor within 24 hours.
- B. Correct deficiencies in or remove and replace anchors that inspections and test reports indicate do not comply with specified requirements.

END OF SECTION 051000

SECTION 051200 – STRUCTURAL STEEL FRAMING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes fabrication and erection of structural steel work, as shown on drawings including schedules, notes, and details showing size and location of members, typical connections, and types of steel required.
 - 1. Structural steel is that work defined in American Institute of Steel Construction (AISC) “Code of Standard Practice” and as otherwise shown on drawings.
 - 2. Furnish bearing plates and anchors for steel joists where required.
 - 3. Furnish and install shelf and relieving angles.
 - 4. Furnish loose lintels and loose beam bearing plates in structural and non-structural walls.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section “Structural Special Inspection.”
 - 2. Division 4 Section “Unit Masonry.”
 - 3. Division 5 Section “Structural Anchors.”
 - 4. Division 5 Section “Steel Joists.”

1.3 DEFINITIONS

- A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.4 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.5 ACTION SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.

- B. Shop Drawings detailing fabrication and erection of structural steel components.
1. Submit a schedule of shop drawing submittal dates which allows the Architect reasonable time for review. Schedule shall list size and approximate number of sheets in each submittal. Provide a plan of the proposed quantity and sequences. Schedule and plan shall be submitted for comment prior to beginning shop drawing preparation.
 2. Piecemarks in any given sequence shall be combined such that identical pieces are submitted for review as a single mark/detail. Submittals that submit identical pieces as multiple marks will be rejected unless fabricator compensates engineer for time and materials of shop drawing review.
 3. Shop drawings that show the Architect's or Engineer's title block, logo and/or seal will be rejected and returned unchecked.
 4. Computer generated electronic structural construction document files (ACAD) will be made available to the Contractor. The Contractor will be required to sign the Engineer's standard release of liability form prior to receiving the drawing files. Rules for use of said files shall be as defined in the AISC "Code of Standard Practice for Steel Buildings and Bridges," Section 4.3.
 5. Provide setting drawings, templates, and directions for installation of anchor rods and other anchorages. Provide electronic (AutoCAD) drawing of anchor rods and other embedments to Contractor/Construction Manager for use in preparing a final survey of embedments.
 6. Provide erection details of all field connections.
 7. Include details of cuts, connections, splices, camber, holes, and other pertinent data in accordance with AISC Specifications and the AISC "Detailing for Steel Construction," latest edition.
 8. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
 9. Indicate type, size, and length of bolts, distinguishing between shop and field bolts.
 10. Include erection plans and details. Note any cutting and/or welding required to be performed in the field.
 11. Include ASTM material specifications and grade of steel.
 12. Indicate surface preparation for primer/coating/fireproofing and shop primer/coating to be used.
 13. Shop drawing resubmittals are reviewed for conformance with review marks only. Any changes or questions originating on a resubmittal shall be clearly clouded.
- C. Shop Drawings detailing fabrication and placement of loose lintels. Loose lintels in non-bearing walls and over minor openings in structural walls are not shown on the structural plans but are to be included over all openings over 16" in width shown on architectural and mechanical drawings per the lintel schedule in the structural General Notes.
1. Include erection plans showing location and width of all openings.
 2. Include details of cuts, connections, slip rods, holes, and other pertinent data in accordance with AISC Specifications and the AISC "Detailing for Steel Construction," latest edition.
 3. Indicate welds by standard AWS symbols, and show size, length, and type of each weld.
 4. Include ASTM material specifications and grade of steel.
 5. Indicate surface preparation for primer/galvanizing and coating to be used.

6. Shop drawing resubmittals are reviewed for conformance with review marks only. Any changes or questions originating on a resubmittal shall be clearly clouded.

1.6 INFORMATIONAL SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
- B. Qualification data for firms and persons specified in the "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.
- C. Mill test reports signed by manufacturers certifying that their products, including the following, comply with requirements.
 1. Structural steel, including chemical and physical properties.
 2. Bolts, nuts, and washers, including mechanical properties and chemical analysis.
 3. Weld filler materials.
- D. Present evidence that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone re-certification. Provide continuity log for each welder, signed by the employer, showing that the welder has engaged in the necessary processes of welding during each 6-month period since the qualification. In lieu of qualification tests and continuity log, submit AWS CW number.
- E. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint whether prequalified or qualified by testing including the power source (constant current or constant voltage).
- F. Fabricators who participate in the certified Quality Certification Program shall submit, at the completion of fabrication, a certificate of compliance stating that the work was performed in accordance with the approved construction documents.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed structural steel work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
 1. Installer must participate in the AISC Quality Certification Program and be designated an AISC-Certified *Certified Steel Erector (CSE)*.
- B. Fabricator Qualifications: Engage a firm experienced in fabricating structural steel similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to fabricate structural steel without delaying the Work.
- C. Comply with applicable provisions of the following specifications and documents:

1. AISC 360 "Specification for Structural Steel Buildings."
 2. AISC 303 "Code of Standard Practice for Steel Buildings and Bridges."
 3. AISC 341 "Seismic Provisions for Structural Steel Buildings."
 4. Research Council on Structural Connections' (RCSC) "The Specification for Structural Joints Using High-Strength Bolts, 2009."
 5. American Welding Society's (AWS) D1.1-2010 "Structural Welding Code – Steel."
 6. ASTM A 6 "Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling."
 7. AGA – American Galvanizers Association publication "Recommended Details for Galvanized Structures".
 8. AISC – Steel Construction Manual, 14th Edition.
 9. AWS – "Standard for AWS Certified Welders" AWS QC7-93.
 10. SSPC – Steel Structures Painting Manual, Volume 1 and 2, latest edition.
 11. SSPC Surface Preparation Specification, SP1 through SP15.
- D. Welding Qualifications and Standards: Qualify procedures and personnel in accordance with applicable provisions of AWS D1.1 "Structural Welding Code – Steel" and AISC 360.
1. All shop and field welding shall be performed by personnel qualified by AWS procedure and who have engaged in the necessary processes of welding during each six-month period since the latest qualification.
 2. Fabricator and erector shall institute a *Welder Identification System* wherein the welder who has welded a joint or member can be identified.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."
1. The Contractor shall require reasonable representatives of every party who are concerned with the steel work to attend the Conference, including but not limited to, the following:
 - a. Contractor's Superintendent – Structural Steel Fabricator – Structural Steel Installer – Testing and Inspection Agency – Structural Engineer.
 2. Minutes of the meeting shall be recorded, typed and printed by the Contractor and distributed by them to all parties concerned within five days of the meeting. One copy of the minutes shall also be transmitted to the following for information purposes: Owner's Representative and Architect.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver structural steel to Project site in such quantities and at such times to ensure continuity of installation.
- B. Store materials to permit easy access for inspection and identification. Keep steel members off ground by using pallets, platforms, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- C. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.9 SEQUENCING

- A. Supply anchorage items to be embedded in or attached to other construction without delaying the Work.

PART 2 - PRODUCTS

2.1 STRUCTURAL STEEL MATERIALS

- A. All structural steel shapes shall be new, unused and perfect stock, free from millscale, rust, flake, pitting, and imperfections, without bends, kinks, and distortions. Shop splicing of members will only be permitted if the member exceeds maximum mill length.
- B. Wide Flange (Designated as W): ASTM A992.
- C. Channels, Angles, and Plates: ASTM A572, Grade 50.
- D. Cold-Formed Structural Steel Sections (Square Tubing): ASTM A500, Grade C.
- E. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. General: For clarity in distinguishing between medium carbon steel (A325) bolts and alloy steel (A490) bolts, the structural drawings and this specification classify bolts using generic A325 and A490 designations. Contractor shall provide tension indicating device assemblies, as opposed to ordinary bolts, as required in the bolt specification below.
- B. Medium Carbon Steel High-Strength Bolts, Nuts, and Washers: ASTM A325, Type 1, heavy hex steel structural bolts; ASTM A563, Grade C, heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers, uncoated. Use ordinary bolts, washers, and nuts only where required for installation access, where bolts are called to be galvanized, and at contractor's option for snug-tight installation applications.
 1. Finish: Plain, uncoated, except where indicated to be galvanized.

- C. Anchor Rods, Bolts, Nuts, and Washers: As follows:
 - 1. Non-High Strength Rods (Headed or Threaded): ASTM F1554 Grade 36 .
 - 2. Nuts: ASTM A563 heavy-hex carbon-steel.
 - 3. Plate Washers: ASTM A36 carbon steel.
 - 4. Washers: ASTM F436, Type 1, hardened carbon steel.
- D. Low-Alloy-Steel (Weldable) Reinforcing Bar: ASTM A706, Grade 60, deformed bars.

2.3 PRIMER

- A. Primer for uncoated steel: Fast-drying, low VOC, lead- and chromate-free, non-asphaltic, rust-inhibiting primer. Primer to be formulated for application over SSPC SP2 or SP3 prepared surfaces.
- B. Primer for coated steel: Fast-drying, low VOC, high-build and high-solids, lead- and chromate-free, non-asphaltic, rust-inhibiting primer. Primer to be compatible with topcoat(s) including, but not limited to, intumescent coatings, alkyd, acrylic, and high-performance coatings such as epoxy and polyurethane. Primer to be formulated for application over SSPC SP6 prepared surfaces and selected by coating manufacturer for suitability and compatibility.
- C. Epoxy Polyamide Primer: SSPC-Paint 22.

2.4 GALVANIZING MATERIALS

- A. Galvanizing: The zinc used for the coating shall conform to the specifications for slab zinc (Spelter) ASTM designation: B6.
- B. Galvanizing Repair Paint: High zinc dust content paint for regalvanizing welds and repair painting of galvanized steel, with dry film containing not less than 93 percent zinc dust by weight and complying with DOD-P-21035 A or SSPC-Paint 20, Type II.

2.5 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: Premixed and factory packaged, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, complying with ASTM C1107, of consistency suitable for application, and a 30-minute working time. Grout to have a minimum compressive strength at 28 days of 8,000 psi when applied in a flowable consistency.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. Masterflow 928, BASF Construction Chemicals.
 - b. SureGrip High Performance Grout, Dayton Superior.
 - c. NS Grout, The Euclid Company.
 - d. Sikagrout 328, SIKA.

2.6 ASPHALTIC COATING

- A. High build, polyamide epoxy coal tar coating suitable for use over bare or primed structural steel-SSPC 16.
 - 1. Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. TarGuard, Sherwin Williams Co.

2.7 FABRICATION

- A. Fabricate and assemble structural steel in shop to greatest extent possible. Fabricate structural steel according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," AISC 360, and other specifications referenced in this Section and in Shop Drawings.
 - 1. Camber structural steel members where indicated.
 - 2. Fabricate beams with rolling camber up.
 - 3. Identify high-strength structural steel according to ASTM A6 and maintain markings until steel has been erected.
 - 4. Mark and match-mark materials for field assembly.
 - 5. Fabricate for delivery a sequence that will expedite erection and minimize field handling of structural steel.
 - 6. Complete structural steel assemblies, including welding of units, before starting shop-priming operations.
 - 7. Comply with fabrication tolerance limits of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for structural steel.
- B. Fabricate steel exposed to view with exposed surfaces smooth, square, and free of surface blemishes, including pitting, rust and scale seam marks, roller marks, rolled trade names, and roughness.
 - 1. Remove blemishes by filling, grinding, or by welding and grinding, prior to cleaning, treating and shop priming.
- C. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 - 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.
- D. Finishing: Accurately mill ends of columns and other members transmitting loads in bearing.
- E. Mechanically roll sections to induce curvature where indicated. Fabricator shall increase thickness of curved tubes as part of base bid as required to prevent "oil canning" of the tube walls or "squashing" of the section for the specified radius.
- F. Holes: Provide holes required for securing other work to structural steel framing, for attaching structural steel connections and embeds to other work, and for passage of other work through steel framing members, as shown on Shop Drawings.

1. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame-cut holes or enlarge holes by burning. Drill holes in bearing plates.
 2. Weld threaded nuts to framing and other specialty items as indicated to receive other work.
 3. Provide erection holes, of minimum 3/16" diameter, in steel embed plates for temporary fastening of embeds to concrete formwork. Provide minimum 4 holes per piece. Coordinate hole size, spacing, and layout requirements with other trades contractors.
 4. Provide vent and drain holes in closed sections subject to galvanizing or condensation due to exposure to thermal fluctuations.
 5. Perimeter columns shall have holes through the column web or other devices attached to the columns at 42-45 inches above the finished floor and at the midpoint between the finished floor and the top cable to permit installation of perimeter safety cables.
- G. Assemble and weld built-up sections by methods that will maintain true alignment of axes without warp.

2.8 SHOP CONNECTIONS

- A. Shop install and tighten high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
1. Bolts: ASTM A325 (ASTM A325M) high-strength bolts, unless otherwise indicated.
 2. Connection Type: Unless snug tight connections are noted on the drawings as being permitted, all bolts shall be tightened to full pre-tensioning load. Bolts shall be pretensioned in a systematic progression from the most rigid point of the connections toward the free edges.
- B. When two structural members on opposite sides of a column web, or a beam web over a column, share common connection holes do not use connections that require either member to be completely disconnected (nuts removed from bolts) for installation of the succeeding member.
- C. Do not reuse bolts that have been tensioned.
- D. All bolts of same ASTM type shall be of same diameter. In addition, bolts of different ASTM type shall be of different diameter unless otherwise approved by Structural Engineer.
- E. Weld Connections: Comply with AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work. Remove all cracks, pores, slag inclusions, incomplete fusions, and incomplete penetrations over 1/2" long in any weld and reweld.
1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without warp.
 2. Furnish all steel members in one piece without splicing, unless otherwise noted on project drawings or approved by Structural Engineer.
 3. Design of Members and Connections: Typical AISC connections are to be used except where otherwise shown. Details shown are typical; similar details apply to similar conditions, unless otherwise indicated. Verify dimensions at site whenever possible without causing delay in

the work. Promptly notify Architect whenever design of members and connections for any portion of structure are not clearly indicated.

4. Expansion Joints: Provide expansion joints in steel shelf angles when part of structural steel frame; locate at vertical masonry expansion joints as indicated on drawings. The gap between ends of angles shall equal the width of the masonry expansion joint. The angles shall have support within 8" of the joints.

2.9 SURFACE PREPARATION FOR COATINGS

- A. Steel fabricator shall coordinate fireproofing and finishing requirements with architectural documents.
- B. Surface Preparation: Clean surfaces to be painted. Remove dirt, loose rust, loose mill scale, and spatter, slag, or flux deposits. Wipe steel surfaces with solvent to remove rolling oils that impair primer bond. Prepare surfaces according to SSPC specifications as follows:
 1. SSPC-SP 1 "Solvent Cleaning," all galvanized steel, unless noted otherwise.
 2. SSPC-SP 2 "Hand Tool Cleaning," all steel except as otherwise specified.

2.10 SHOP PRIMING

- A. General: Structural steel shall not be exposed to open atmospheric conditions between surface preparation and priming. Priming operation shall be performed in continuous operation with surface preparation.
 1. Prime any blast-cleaned, bare steel within 8 hours of surface preparation or before flash rusting occurs.
- B. Shop prime steel surfaces, except the following:
 1. Surfaces embedded in concrete or mortar other than column bases and steel lintels. Extend priming of partially embedded members to a depth of 2 inches (50 mm).
 2. Surfaces to be field welded.
 3. Galvanized surfaces.
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 2. Apply 2 coats of shop paint to inaccessible surfaces after assembly or erection. Change color of second coat to distinguish it from first.
- D. Application

1. Steel to be concealed by other trades or which is exposed to view more than 20 feet above or lateral to a walking surface below may have primer applied by brushing, spraying, rolling, flow coating, dipping or other suitable means, at the election of the fabricator.
2. Steel to be exposed to view in the finished structure less than 20 feet above or to a walking surface shall have primer applied by spraying or smooth nap roller.

2.11 GALVANIZING

- A. All welded assemblies to be galvanized shall be prepared according to Recommended Practice for Providing High Quality Zinc Coatings (Hot-Dip) on Assembled Products (ASTM A385).
- B. Steel shall be hot-dip galvanized in accordance with ASTM A123 except that galvanized steel to be finish painted shall not be quenched (including by water, chromate, oil, or other deleterious substance). Coating weight shall conform with paragraph 5.1 of ASTM A123.
- C. Hardware and threaded fasteners shall be galvanized in accordance with ASTM A153. Coating weight shall conform with Table 1 of ASTM A153.
- D. Safeguard products against steel embrittlement according to ASTM A143.
- E. Handle all articles to be galvanized in such a manner as to avoid any mechanical damage and to minimize distortion.
- F. Surface finish shall be continuous, adherent, as smooth and evenly distributed as possible and free from any defect detrimental to the stated end use of the coated article.
- G. Adhesion shall withstand normal handling consistent with the nature and thickness of the coating and normal use of the article.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Before erection proceeds, and with the steel erector present, verify elevations of concrete and masonry bearing surfaces and locations of anchorages for compliance with requirements.
- B. Do not proceed with erection until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.
 1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC specifications referenced in this Section.
- B. Base, Bearing, and Leveling Plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen surfaces prior to setting base and bearing plates. Clean bottom surface of base and bearing plates.
 - 1. Column base plate anchor rods shall not be repaired, replaced, or field modified without the approval of the Structural Engineer. Prior to erection of a column the Contractor shall provide written notification to the Erector if there has been any repair, replacement or modification to its anchor rods.
 - 2. Set base and bearing plates for structural members on wedges, shims, or setting nuts as required.
 - 3. Pretension anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate prior to packing with grout.
 - 4. Weld plate washers all around to top of baseplate with minimum, unless otherwise noted, AISC permitted fillet weld size for thickness of parts joined at all braced frame and moment frame columns.
 - 5. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces, protect installed materials, and allow to cure.
 - a. Comply with manufacturer's instructions for proprietary grout materials.
 - b. Grout shall be installed and cured before any elevated concrete slab supported on said columns are placed and prior to installing structural framing in excess of the third story above.
- C. Maintain erection tolerances of structural steel within AISC 303 "Code of Standard Practice for Steel Buildings and Bridges."
- D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
 - 2. Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.
- E. Splice members only where indicated.
- F. Do not use thermal cutting during erection unless specifically approved by the Engineer.

- G. Do not enlarge unfair holes in members by burning or by using drift pins. Ream holes that must be enlarged to admit bolts.
- H. Provide all bracing, temporary bracing and accessories required for complete erection. Safety and adequacy of bracing and temporary bracing are the Installer's responsibility.
- I. After erection, remove weld flux, rust, dirt or other foreign material from areas to receive touch-up paint. Repaint areas where protective coating has been damaged or is missing with shop primer paint.

3.4 FIELD CONNECTIONS

- A. Install and tighten high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
 - 1. Bolts: ASTM A325 (ASTM A325M) high-strength bolts, unless otherwise indicated.
 - 2. Connection Type: Unless snug tight connections are noted on the Drawings as being permitted, all bolts shall be tightened to full pre-tensioning load.
- B. Do not reuse ASTM A490 bolts, galvanized A325 bolts or bolts that have been tensioned.
- C. Weld Connections: Comply with AWS D1.1 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding. Remove all cracks, pores, slag inclusions, incomplete fusions, and incomplete penetrations over 1/2" long in any weld and reweld.
 - 1. Comply with AISC 303 and AISC 360 for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
 - 2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.
 - 3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without warp.
- D. Remove all erection clips, gussets, bolts, and angles where exposed in the finished structure and where they interfere with other construction. Grind welds smooth where exposed.

3.5 QUALITY CONTROL

- A. General: The Owner engage an independent testing and inspecting agency to perform inspections and tests and to prepare test reports. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from requirements. Failure to detect any defective materials shall not prevent later rejection when such defect is discovered, or obligate the Architect or Owner for final acceptance.
 - 1. See Section 014110 – Structural Special Inspections and Contract Drawings for testing and inspection to be performed.
 - 2. Provide access for testing agency to places where structural steel work is being installed so that required inspection and testing can be accomplished.
 - 3. The General Contractor shall provide the testing agency a complete set of approved shop drawings.

4. Reports will be delivered to the Architect, Engineer, Steel Fabricator and the General Contractor within one week of inspection.
 5. Deviations from requirements of the contract documents will be reported in writing to the General Contractor within 24 hours.
- B. Correct deficiencies in or remove and replace structural steel that inspections and test reports indicate do not comply with specified requirements.

3.6 REPAIRS AND PROTECTION

- A. Touchup Priming: Immediately after erection, clean field welds, bolted connections, abraded areas of shop primer, and exposed areas where primer is damaged or missing. Apply primer using same material as used for shop painting to comply with SSPC-PA 1 for touching up shop painted surfaces.
1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning for standard primers and SSPC-SP6 Commercial Blast Cleaning for zinc-rich primers.
 2. Apply by brush or spray to provide a minimum dry film thickness of 1.5 mils (0.038 mm).
 3. Steel erector shall document with photographs and written correspondence to General Contractor/Construction Manager the condition of primer immediately following erection and Touchup Priming. All degradation of primed surfaces due to exposure, weather, or damage by other construction and trades shall be repaired by Painting Contractor through contract with the General Contractor/Construction Manager.
- B. Coordination with Other Trades: Cleaning and primer touch up/repair that may be required as a result of, but not limited to, the following are not included in the scope of this specification section and are included to be included under Division 9 Section "Painting."
1. Abrasions and rust from: bundling, banding, loading and unloading, chains, dunnage, cables and chains during erection, bridging, installation, and other jobsite handling.
 2. Bolt heads and nuts.
 3. Dirt.
 4. Diesel smoke.
 5. Road salt.
 6. Weather conditions during storage and construction.
- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and apply galvanizing repair paint according to ASTM A780. Minimum thickness requirements for the repair are those described in ASTM A123, Section 4.6.
- D. Asphaltic Coating: After erection clean column base plates, anchor rod nuts, columns and other structural steel below grade up to finished floor. Clean bare steel surfaces to remove loose rust, loose mill scale, and spatter, slag, or flux deposits in accordance with SSPC-SP 2 "Hand Tool Cleaning." Clean primed steel to be free of dirt and moisture. Apply coating by brush or spray to provide a minimum dry film thickness of 10 mils on rods, nuts, and structural steel up to bottom of slab on grade. Do not extend coating above grade.

3.7 CLEANING

- A. All bare, primed, or galvanized steel to be left unpainted shall be thoroughly cleaned by solvent cleaning in accordance with latest edition of Steel Structures Painting Council Surface Preparation Specification No. 1 (SSPC-SP1). Hydrocarbon based solvents are prohibited.

END OF SECTION 051200

SECTION 05 21 00 – STEEL JOIST FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. K-series open-web steel joists.
 - 2. Joist accessories.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Structural Special Inspection."
 - 2. Division 4 Section "Unit Masonry."
 - 3. Division 5 Section "Structural Steel Framing."
 - 4. Division 5 Section "Steel Decking."

1.3 DEFINITIONS

- A. Add-Load: A single vertical concentrated load that occurs at any one panel point along the joist chord.
- B. Bend-Check Load: A vertical concentrated load used to design the joist chord for the additional bending stresses resulting from this load being applied at any location between the joist panel points. This load is already accounted for in the specified joist designation.
- C. SJI: Steel Joist Institute overseeing manufacture of open web steel joists and girders.

1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Engineer, fabricate, and erect joists and connections to withstand design loads within limits and under conditions required.
- B. Deflection:
 - 1. Standard Joists: Design standard joists to withstand SJI Standard Load Table design loads without deflections greater than the following:
 - a. Live Load: Vertical deflection of 1/360 of the span.
- C. Loading:

1. Load data are given at service-load level.
2. Joist sizes have been selected using uniform loading shear and moment envelopes which encapsulate the non-uniform design loading.
3. Unless stipulated otherwise on the drawings, concentrated loads from gravity forces are already accounted for in the joist designation.
4. All joists shall be designed for a bend check from incidental loads on bottom chords. Design for a bend-check on the top and bottom chords of 250 lbs applied concentrically to the bottom chord (between the double angles) and of 100 lbs applied eccentrically to the bottom angle (through the neutral axis of one of the double angles) applied anywhere along the bottom chord. The concentric and the eccentric loads will not occur simultaneously.
5. Wind net uplift on joists for the design of joist chords and bridging by the manufacturer shall be calculated by the joist manufacturer using the minimum dead load provided and either the component and cladding wind load and end zone widths provided in the General Notes or by calculating accurate loading and zone widths under the direction of a professional engineer engaged by the manufacturer. Under no circumstance shall wind end zone design width be less than 15 feet to allow for some future addition.

- D. Engineering Responsibility: Engage a joist manufacturer who utilizes a qualified professional engineer to prepare design calculations, shop drawings, and other structural data for steel joists.

1.5 ACTION SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
- B. Shop Drawings showing layout, mark, number, type, location, and spacings of joists. Include joining and anchorage details, bracing, bridging, accessories, splice and connection details, and attachments to other units of Work.
1. For joists indicated to comply with certain design loadings, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 2. Shop drawings which show the Architect's or Engineer's title block, logo and/or seal will be rejected and returned unchecked.
 3. Computer generated electronic structural construction document files (ACAD) will be made available to the Contractor. The Contractor will be required to sign the Engineer's standard release of liability form prior to receiving the drawing files. Rules for use of said files shall be as defined in the AISC "Code of Standard Practice for Steel Buildings and Bridges," Section 4.3.
 4. Shop drawing resubmittals are reviewed for conformance with review marks only. Any changes or questions originating on a resubmittal shall be clearly clouded.

1.6 INFORMATIONAL SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.

- B. Qualification data for firms and persons specified in the “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.
- C. Material certificates signed by joist manufacturer certifying that joists comply with SJI’s “Specifications.”
- D. Mill certificates signed by manufacturers of bolts certifying that their products comply with specified requirements.
- E. Welder certificates signed by Contractor certifying that welders comply with requirements specified under the “Quality Assurance” Article.
- F. Research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction that evidence joists’ compliance with the Kentucky Building Code.
- G. Fabricators who participate in the certified Quality Certification Program shall submit, at the completion of fabrication, a certificate of compliance stating that the work was performed in accordance with the approved construction documents.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Engage a firm experienced in manufacturing joists similar to those indicated for this Project and that have a record of successful in-service performance.
 - 1. Manufacturer must be certified by SJI to manufacture joists conforming to SJI standard specifications and load tables.
- B. Comply with applicable provisions of the following specifications and documents, except where noted otherwise on the structural drawings and specifications:
 - 1. SJI Design Standard: Comply with recommendations of SJI’s “Standard Specifications Load Tables and Weight Tables for Steel Joists and Joist Girders,” applicable to types of joists indicated.
 - 2. SJI Code of Standard Practice for Steel Joists and Joist Girders.
- C. Welding Standards: Comply with applicable provisions of Steel Joist Institute Technical Digest 8 “Welding of Open-Web Steel Joists and Joist Girders” and applicable provisions of AWS D1.1 “Structural Welding Code – Steel” and AWS D1.3 “Structural Welding Code – Sheet Steel.”
 - 1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle joists as recommended in SJI’s “Specifications.”

- B. Protect joists from corrosion, deformation, and other damage during delivery, storage, and handling.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Steel: Comply with requirements of SJI’s “Specifications” for chord and web section material.
- B. Carbon-Steel Bolts and Threaded Fasteners: ASTM A 307, Grade A (ASTM F 568, Property Class 4.6), carbon-steel, hex-head bolts and threaded fasteners; carbon-steel nuts; and flat, unhardened steel washers.
 - 1. Finish: Plain, noncoated.
 - 2. Finish: Hot-dip zinc coating, ASTM A 153, Class C.
 - 3. Finish: Mechanically deposited zinc coating, ASTM B 695, Class 50.
- C. Medium Carbon Steel High-Strength Bolts, Nuts, and Washers: ASTM A325, Type 1, heavy hex steel structural bolts; ASTM A563 heavy hex carbon-steel nuts; and ASTM F436 hardened carbon-steel washers, uncoated. Use ordinary bolts, washers, and nuts only where required for installation access, where bolts are called to be galvanized, and at contractor’s option for snug-tight installation applications.
 - 1. Finish: Plain, uncoated, except where indicated to be galvanized.
 - 2. Galvanized Finish: Hot-dip zinc-coating, ASTM A153, Class C or mechanically deposited zinc-coating, ASTM B695, Class 50.
- D. Welding Electrodes: Comply with AWS standards.
- E. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035, with dry film containing a minimum of 94 percent zinc dust by weight.

2.2 PRIMERS

- A. Primer: SSPC-Paint 15.
- B. VOC compliance certificate signed by manufacturers certifying compliance of their products with regulations of authorities having jurisdiction over volatile organic compounds (VOCs).

2.3 STEEL JOISTS

- A. Manufacture joists according to SJI’s “Specifications,” with steel angle top and bottom chord members, and as follows:
 - 1. Joist Type: K-series steel joists.
 - 2. End Arrangement: Underslung.
 - 3. Top Chord Arrangement: Parallel.

- B. Comply with AWS requirements and procedures for shop welding, appearance, quality of welds, and methods used in correcting welding work.
- C. Provide holes in chord members where shown for securing other work to steel joists.
- D. Camber steel joists according to SJI's "Specifications."
- E. Equip bearing ends of joists with manufacturer's standard beveled ends or sloped shoes when joist slope exceeds $\frac{1}{4}$ inch in 12 inches (1:48). Equip bearing ends with deep shoes where non-standard seat depths are specified.

2.4 JOIST ACCESSORIES

- A. Bridging: Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI's "Specifications" for type of joist, chord size, spacing, and span.
- B. Bridging: Fabricate bridging as indicated and according to SJI requirements.
 - 1. Supply additional bridging to ensure stability of structure during construction period.
- C. Supply ceiling extensions, either extended bottom chord elements or a separate extension unit of sufficient strength to support ceiling construction. Extend ends to within $\frac{1}{2}$ inch (13 mm) of finished wall surface, unless otherwise indicated.
- D. Supply miscellaneous accessories, including splice plates and bolts required by the joist manufacturer to complete the joist installation.

2.5 SHOP PAINTING

- A. Surface Preparation: Clean and remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories to be primed by either hand tool cleaning, SSPC-SP 2, or power tool cleaning, SSPC-SP 3.
- B. Apply one shop coat of primer to joists and joist accessories to be primed to provide a continuous, dry paint film thickness of not less than 1 mil. Primer may be applied by standard dip coating and per SJI Code of Standard Practice may include drips, runs, and sags.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine supporting substrates, embedded bearing plates, and abutting structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of joists. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Do not install joists until supporting construction is in place and secured.
- B. Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Specifications," joist manufacturer's recommendations, and the requirements of this Section.
 - 1. Before installation, splice joists delivered to Project site in more than one piece.
 - 2. Space, adjust, and align joists accurately in location before permanently fastening.
 - 3. Install temporary bracing and bridging, connections, and anchors to ensure joists are stabilized during construction.
- C. Field weld joists to supporting steel framework and steel bearing plates. Coordinate welding sequence and procedure with placing of joists.
 - 1. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
- D. Bolt joists to supporting steel columns and framework, as required to meet OSHA requirements, using carbon-steel bolts at K-Series joists.
 - 1. Comply with the Research Council on Structural Connections' (RCSC) "Specification for Structural Joints Using ASTM A 325 or ASTM A 490 Bolts" for high-strength structural bolt installation and tightening requirements.
- E. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords where terminating at walls or beams.

3.3 QUALITY CONTROL

- A. General: The Owner will] engage an independent testing and inspecting agency to perform inspections and tests and to prepare test reports. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from requirements. Failure to detect any defective materials shall not prevent later rejection when such defect is discovered, or obligate the Architect or Owner for final acceptance.
 - 1. See Section 014110 – Structural Special Inspections and Contract Drawings for testing and inspection to be performed.
 - 2. Provide access for testing agency to places where structural steel joist work is being installed so that required inspection and testing can be accomplished.
 - 3. The General Contractor shall provide the testing agency a complete set of approved shop drawings.
 - 4. Reports will be delivered to the Architect, Engineer, Steel Fabricator and the General Contractor within one week of inspection.
 - 5. Deviations from requirements of the contract documents will be reported in writing to the General Contractor within 24 hours.
- B. Correct deficiencies in or remove and replace structural steel joists that inspections and test reports indicate do not comply with specified requirements.

3.4 REPAIRS AND PROTECTION

- A. Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A 780 and the manufacturer's instructions.
- B. Touch Up Painting: Following installation, promptly clean, prepare, and prime or re-prime field connections, accessories, bearing plates, and abutting structural steel.
 - 1. Clean and prepare surfaces by hand tool cleaning, SSPC-SP 2, or power tool cleaning, SSPC-SP 3.
 - 2. Apply a compatible primer of the same type as the shop primer used on adjacent surfaces.
- C. Coordination with Other Trades: Cleaning and primer touch up/repair that may be required as a result of, but not limited to, the following are not included in the scope of this specification section and are included to be included under Division 9 Section "Painting."
 - 1. Abrasions and rust from: bundling, banding, loading and unloading, chains, dunnage, cables and chains during erection, bridging, installation, and other jobsite handling.
 - 2. Dirt.
 - 3. Diesel smoke.
 - 4. Road salt.
 - 5. Weather conditions during storage and construction.
- D. Provide final protection and maintain conditions, in a manner acceptable to Manufacturer and Installer, that ensure that joists and accessories are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 05 21 00

SECTION 053100 – STEEL DECKING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Steel roof deck.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section “Structural Special Inspection.”
 - 2. Division 5 Section “Structural Steel Framing.”
 - 3. Division 5 Section “Steel Joist Framing.”
 - 4. Division 9 Section “Painting.”

1.3 ACTION SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
- B. Product data including manufacturer’s specifications and installation instructions for each type of deck, accessory, and product specified.
- C. Shop drawings showing layout and types of deck panels, anchorage details, reinforcing channels, pans, deck openings, special jointing, accessories, and attachments to other construction.
 - 1. Shop drawings which show the Architect’s or Engineer’s title block, logo and/or seal will be rejected and returned unchecked.
 - 2. Computer generated electronic structural construction document files (ACAD) will be made available to the Contractor. The Contractor will be required to sign the Engineer’s standard release of liability form prior to receiving the drawing files. Rules for use of said files shall be as defined in the AISC “Code of Standard Practice for Steel Buildings and Bridges,” Section 4.3.
 - 3. Shop drawing resubmittals are reviewed for conformance with review marks only. Any changes or questions originating on a resubmittal shall be clearly clouded.

1.4 INFORMATIONAL SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.

- B. Product certificates signed by manufacturers of steel deck certifying that their products comply with specified requirements.

1.5 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following codes and standards, except as otherwise indicated.
 - 1. American Iron and Steel Institute (AISI), "Specification for the Design of Cold-Formed Steel Structural Members."
 - 2. Steel Deck Institute (SDI), "Design Manual for Composite Decks, Form Decks and Roof Decks."
- B. Installer Qualifications: Engage an experienced Installer who has completed steel deck similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Available 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. American Buildings Co.
 - 2. Epic Metals Corp.
 - 3. Marlyn Steel Products, Inc.
 - 4. New Millennium Building Systems, LLC.
 - 5. Robertson A United Dominion Co.
 - 6. Roof Deck, Inc.
 - 7. United Steel Deck, Inc.
 - 8. Verco Manufacturing Co.
 - 9. Vulcraft Div. Of Nucor Corp.

2.2 ROOF DECK

- A. Steel Roof Deck: Fabricate panels without top-flange stiffening grooves conforming to SDI Publication No. 28 "Specifications and Commentary for Steel Roof Deck" and the following:
 - 1. Galvanized-Steel Sheet: ASTM A 446, Grade A, G 60 zinc coated according to ASTM A 653.

2. Deck Profile: Type WR, wide rib.
3. Profile Depth: as indicated on drawings.
4. Design Uncoated-Steel Thickness: 0.0358 inch.
5. Span Condition: As indicated on drawings.
6. Side Joints: nested.

2.3 ACCESSORIES

- A. General: Provide accessory materials for steel deck that comply with requirements indicated and recommendations of the steel deck manufacturer.
- B. Mechanical Fasteners: Manufacturer's standard, corrosion-resistant, low-velocity, powder-actuated or pneumatically driven carbon steel fasteners; or self-drilling, self-threading screws.
- C. Self Drilling Steel Screws: Manufacturer's standard hexagonal washer head, self-drilling, carbon steel screws. Screws shall be zinc electroplated to 5 μ m (minimum) thickness in accordance with ASTM B633 SC1 Type III. Select point type and size and thread length per manufacturer's recommendations to fully engage in the base material.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Hilti S-MD.
- D. Powder or Pneumatic Fasteners: Modified AISI 1070 steel, minimum hardness 54 Rockwell C, minimum tensile strength of 285 ksi, and minimum shear strength of 175 ksi; with zinc plating equivalent to ASTM B633, Type III Fe/Zn 5 (5 μ m min.). Fasteners shall have knurled shanks, forged ballistic point, and minimum 12 mm steel washers for bar joists and 15 mm steel washers for structural steel.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Bar Joist and Structural Steel with thickness of 1/8" up to and including 3/8": Hilti X-HSN 24.
 - b. Structural Steel 1/4" or thicker: Hilti X-ENP-19 L15.
- E. Miscellaneous Roof Deck Accessories: Steel sheet, 0.0359-inch-thick minimum ridge and valley plates, finish strips, and reinforcing channels, of same material as roof deck.
- F. Recessed Sump Pans: Manufacturer's standard size, single piece steel sheet 0.071-inch-thick minimum, of same material as deck panels, with 1-1/2-inch-minimum deep level recessed pans and 3-inch-wide flanges. Cut holes for drains in the field.
- G. Flat Receiver Pan: Manufacturer's standard size, single-piece steel sheet, 0.071-inch-thick minimum units, of same material as deck panels. Cut holes for drains in the field.
- H. Steel Sheet Accessories: ASTM A 446, G 60 coating class, galvanized according to ASTM A 653.

- I. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035, with dry film containing a minimum of 94 percent zinc dust by weight. Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 1. ZRC Galvilite, ZRC Worldwide.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine supporting framing and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of steel deck.

3.2 PREPARATION

- A. Locate decking bundles to prevent overloading of supporting members.

3.3 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary of SDI Publication No. 28, manufacturer's recommendations, and requirements of this Section.
- B. Place deck panels on supporting framing and adjust to final position with ends accurately aligned and bearing on supporting framing before being permanently fastened. Do not stretch or contract side lap interlocks.
- C. Place deck panels flat and square and fasten to supporting framing without warp or deflection.
- D. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to the decking.
- E. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of decking, and support of other work.
- F. Do not use deck units for storage or working platforms.
- G. Where options in fastening methods are given, fastening method of deck shall be compatible with supporting framing; including consideration for thickness of supporting steel.

3.4 ROOF DECK INSTALLATION

- A. Specified roof deck fastening is unless noted otherwise in the Construction Drawings.
- B. Fasten roof deck panels to steel supporting members as follows:
 1. Fasten to structural steel supporting members with self-drilling No. 12- diameter or larger carbon steel screws or powder actuated fasteners at each support.

2. Fastener Spacing: Screw or pin deck units at ends and all intermediate supports. Space fasteners a maximum of 12 inches on center, with a minimum of four fasteners per unit at each support.
- C. Side Lap Fastening: Fasten side laps between supports at intervals not exceeding 18 inches with self-drilling No. 10 diameter or larger carbon steel screws.
- D. Perimeter Edge Fastening:
1. Fasten perimeter edges of deck to steel supporting members and angles with No. 12- diameter or larger carbon steel screws or powder actuated fasteners spaced a maximum of 12 inches on center.
- E. End Bearing: Install deck ends over supporting framing with a minimum end bearing of 1-1/2 inches, with end joints as follows:
1. End Joints: Lapped 2 inches minimum.
- F. Where layout of deck does not align bottom flute with edge angles / structure for complete perimeter fastening, provide continuous z-plate along deck edge and fasten to structure and deck in accordance with perimeter edge fastening requirements.
- G. Roof Sump Pans and Sump Plates: Install over openings provided in roof decking, and screw flanges to top of deck. Space screws not more than 12 inches apart with at least one screw at each corner.
- H. Miscellaneous Roof Deck Accessories: Install ridge and valley plates, finish strips, cover plates, end closures, and reinforcing channels according to deck manufacturer's recommendations. Screw to substrate to provide a complete deck installation.

3.5 QUALITY CONTROL

- A. General: The Owner will engage an independent testing and inspecting agency to perform inspections and tests and to prepare test reports. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from requirements. Failure to detect any defective materials shall not prevent later rejection when such defect is discovered, or obligate the Architect or Owner for final acceptance.
1. See Section 014110 – Structural Special Inspections and Contract Drawings for testing and inspection to be performed.
 2. Provide access for testing agency to places where steel decking work is being installed so that required inspection and testing can be accomplished.
 3. The General Contractor shall provide the testing agency a complete set of approved shop drawings.
 4. Reports will be delivered to the Architect, Engineer, Steel Fabricator and the General Contractor within one week of inspection.
 5. Deviations from requirements of the contract documents will be reported in writing to the General Contractor within 24 hours.

6. Correct deficiencies in or remove and replace steel deck that inspections and test reports indicate do not comply with specified requirements.

3.6 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces with galvanized repair paint according to ASTM A 780 and the manufacturer's instructions.
- B. Touchup Painting: Wire brush, clean, and paint scarred areas, welds, and rust spots on both surfaces of installed deck panels.
 1. Touch up painted surfaces with same type of shop paint used on adjacent surfaces.
 2. Where shop-painted surfaces are exposed in-service, apply touchup paint to blend into adjacent surfaces.

END OF SECTION 053100

SECTION 05 40 00 – COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Drawings for locations of work to be performed.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Exterior fascia / soffit / cornice framing.
 - 2. Interior bulkheads and soffits where height or supported load requires use of load-bearing framing.
- B. Related Sections include the following:
 - 1. Division 09 Section "Gypsum Board Assemblies" for interior non-load-bearing, metal-stud framing and ceiling-suspension assemblies.

1.03 PERFORMANCE REQUIREMENTS

- A. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."
 - 1. Headers: Design according to AISI's "Standard for Cold-Formed Steel Framing - Header Design."
- B. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads within limits and under conditions indicated.
 - 1. Design Loads: As follows:
 - a. Dead Loads: Weights of materials (min. 10-PSF).
 - b. Wind Loads: 120-MPH minimum applied per Kentucky Building Code, 2013 Edition, for building components and cladding.
 - c. Interior Framing: 5-PSF lateral load.
 - 3. Deflection Limits: Design framing systems to withstand [design loads] without deflections greater than the following:

- a. Exterior Non-Load-Bearing Curtain-Wall Framing: Horizontal deflection of $1/600$ of the wall height.
3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120-deg F.
4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
 - a. Upward and downward movement of 1-inch.
- B. Design exterior non-load-bearing curtain-wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

1.04 SUBMITTALS

- A. Product Data: For each type of cold-formed metal framing product and accessory indicated.
- B. Shop Drawings: Show layout, spacing, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
 1. For cold-formed metal framing indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:
 1. Steel sheet.
 2. Expansion anchors.
 3. Mechanical fasteners.
 4. Miscellaneous structural clips and accessories.
- D. Research/Evaluation Reports: For cold-formed metal framing.

1.05 QUALITY ASSURANCE

- A. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of

cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.

- B. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.
- C. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
 - 1. Comply with AISI's "Standard for Cold-Formed Steel Framing - Header Design."

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering cold-formed metal framing that may be incorporated into the Work include the following:
 - 1. Allied Studco.
 - 2. AllSteel Products, Inc.
 - 3. Clark / Dietrich Building Systems.
 - 4. Consolidated Fabricators Corp.; Building Products Division.
 - 5. Southeastern Stud & Components, Inc.
 - 6. Steel Construction Systems.
 - 7. United Metal Products, Inc.

2.02 MATERIALS

- A. Steel Sheet: ASTM A-1003 / A-1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
 - 1. Grade: As required by structural performance.
 - 2. Coating: G60 (ZGF90).

2.03 EXTERIOR METAL FASCIA / WALL AND SOFFIT FRAMING

- A. Steel Stud Framing: Manufacturer's standard C-shaped steel sections, of web depths indicated, with stiffened flanges, and as follows:
1. Flange Width: 1-5/8 inches, minimum.
 2. Space studs at maximum 16" o.c.
 3. Stud thickness:
 - a. 18-gauge (min) for span less than or equal to 14'-0".
 - b. 16-gauge (min) for span greater than 14'-0".

2.04 HAT CHANNELS

- A. Manufacturer's standard steel sections, of web depths indicated:
1. Minimum Base-Metal Thickness: 18-gauge, or as shown on the Drawings.
 2. Depth: 7/8-inch.
 3. Spacing: 24-inches o.c.

2.05 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from steel sheet, ASTM A-1003 / A-1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.
- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
1. Supplementary framing.
 2. Bracing, bridging, and solid blocking.
 3. Web stiffeners.
 4. Anchor clips.
 5. End clips.
 6. Foundation clips.
 7. Gusset plates.
 8. Stud kickers, knee braces, and girts.
 9. Joist hangers and end closures.
 10. Hole reinforcing plates.
 11. Backer plates.

2.06 ANCHORS, CLIPS, AND FASTENERS

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

- B. Anchor Bolts: ASTM F-1554, Grade 36, threaded carbon-steel bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A-153 / A-153M, Class C.
- C. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E-488 conducted by a qualified independent testing agency.
- D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E-1190 conducted by a qualified independent testing agency.
- E. Mechanical Fasteners: ASTM C-1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
 - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

2.07 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: ASTM A-780.
- B. Shims: Load bearing, high-density multi-monomer plastic, nonleaching.
- C. Sealer Gaskets: Closed-cell neoprene foam, 1/4-inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.08 FABRICATION

- A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
 - 1. Fabricate framing assemblies using jigs or templates.
 - 2. Cut framing members by sawing or shearing; do not torch cut.
 - 3. Fasten cold-formed metal framing members by screw fastening or riveting as standard with fabricator. Wire tying of framing members is not permitted.
 - a. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
 - 4. Fasten other materials to cold-formed metal framing by bolting, or screw fastening, according to Shop Drawings.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

- C. Fabrication Tolerances: Fabricate assembly's level, plumb, and true to line to a maximum allowable tolerance variation of 1/8-inch in 10-feet (1:960) and as follows:
 - 1. Spacing: Space individual framing members no more than plus or minus 1/8-inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
 - 2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8-inch.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Install load bearing shims, as necessary, between the masonry wall support structures at stud or joist locations to ensure a uniform bearing surface.

3.03 INSTALLATION, GENERAL

- A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.
- C. Install shop or field-fabricated, cold-formed framing and securely anchor to supporting structure.
 - 1. Screw or bolt wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16-inch.
- D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.
 - 1. Cut framing members by sawing or shearing; do not torch cut.
 - 2. Fasten cold-formed metal framing members by screw fastening or riveting. Wire tying of framing members is not permitted.

- a. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.
- E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.
- F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Fasten hole-reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- H. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8-inch in 10-feet (1:960) and as follows:
 - 1. Space individual framing members no more than plus or minus 1/8-inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.04 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A-780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer, to ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 40 00

SECTION 06 10 00 – ROUGH CARPENTRY

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Wood blocking and nailers.
 - 2. Wood nailers and cant strips associated with roofing assemblies.
 - 3. Plywood backing panels.
 - 4. Plywood subflooring (e.g., at raised platforms).
 - 5. Preservative treatment, borate type.

1.03 DEFINITIONS

- A. Dimension Lumber: Lumber that is cut to certain pre-determined sizes, that is sawn, planed, and smooth, ready for building applications.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
 - 2. NLGA: National Lumber Grades Authority.
 - 3. SPIB: The Southern Pine Inspection Bureau.
 - 4. WWPAA: Western Wood Products Association.

1.04 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 - a. Manufacturer's Certificate: Certify that Products conform to specified requirements.
 - 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 - 3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

- B. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
 - 1. Wood-preservative-treated wood.
 - 2. Power-driven fasteners.
 - 3. Expansion anchors.
 - 4. Metal framing anchors.

1.05 QUALITY ASSURANCE

- A. Source Limitations for Engineered Wood Products: Obtain each type of engineered wood product through one source from a single manufacturer.
- B. Source Quality: Obtain each type of treated wood from a single manufacturer.
 - 1. Surface Burning Characteristics: ASTM E84.
 - a. Flame Spread Index: 25, maximum.
 - b. Smoke Developed Index: 450, maximum.
 - 2. Moisture Content after Treatment:
 - a. Lumber: Maximum 19-percent.
 - b. Structural Panels: Maximum 15-percent.
- C. Apply label from agency approved by authority having jurisdiction to identify each fire retardant treated material. Include the following identification:
 - 1. Inspection agency.
 - 2. Standard to which the material was treated.
 - 3. Treating facility.
 - 4. Treatment material and retention.
 - 5. End use for which the product is suitable.
 - 6. Kiln dried after treatment.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 PRODUCTS

2.01 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency

certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, omit grade stamp and provide certificates of grade compliance issued by grading agency.
3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
4. Provide dressed lumber, S4S, unless otherwise indicated.

2.02 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWWA U1, using preservative chemicals acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19-percent. Do not use material that is warped or does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.
 3. Within 18-inches of grade.
- E. Note that, since 2004-2005, treated wood materials cannot be installed in direct contact with some metals without danger of corrosion.
 1. Fasteners shall be hot-dipped galvanized or stainless steel. Follow wood and metal suppliers' recommendations in selection of fasteners.
 2. Follow wood and metal suppliers' recommendations to isolate treated lumber from metal materials (flashings, fittings, etc.) where necessary.

2.03 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 1. Blocking.
 2. Nailers.
 3. Furring.

4. Hanging strips.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 19-percent maximum moisture content of any species.
- C. For concealed boards, provide lumber with 19-percent maximum moisture content and any of the following species and grades:
 1. Mixed southern pine, No. 2 grade; SPIB.
 2. Eastern softwoods, No. 2 Common grade; NeLMA.
 3. Northern species, No. 2 Common grade; NLGA.
 4. Western woods, Standard or No. 2 Common grade; WCLIB or WWPA.
- D. For blocking not used for attachment of other construction, Utility, Stud, or No. 2 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- E. For blocking, nailers, and furring used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.04 PLYWOOD BACKING PANELS

- A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness. Paint panel according to Division 09 Section "Painting" **before installing equipment.**

2.05 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 1. Where rough carpentry is exposed to weather, in ground contact, in pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A-153 / A-153M, or stainless-steel fasteners.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Screws for Fastening wood blocking or nailers to Metal Roof Deck: Steel drill screws, in type and length recommended by screw manufacturer for thickness of material to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117. Countersink fastener flush with surface of furring.

- F. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).
- G. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
- H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).

2.06 PLYWOOD

- A. Trademark: Identify each plywood panel with appropriate APA trademark.
- B. Concealed Performance-Rated Plywood: Where plywood panels will be used for concealed types of applications, provide APA performance-rated panels complying with requirements indicated for grade designation, span rating, exposure durability classification, edge detail (where applicable) and thickness.
 - 1. Wall and Roof Exterior Sheathing: APA Rated Sheathing
 - a. Exposure durability classification: Exterior
 - b. Span rating: As required to suit structure/support spacing indicated.
 - c. Basis of Design: 3/4" CDX, unless noted otherwise.
 - 2. Fire-treatment as indicated.

2.08 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Mineral fiber or other non-glass-fiber insulation, fabricated in strip form, for use as a sill sealer; 1-inch nominal thickness, compressible to 1/32-inch; selected from manufacturer's standard widths to suit width of sill members indicated.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, grounds, furring, and similar supports to comply with requirements for attaching other construction.

- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Do not splice structural members between supports, unless otherwise indicated.
- D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
- E. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with the function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in Kentucky Building Code.
- H. Use common wire nails, unless otherwise indicated (as in case of treated lumber applications). Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

3.03 WOOD BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.04 FIELD TREATMENT

- A. Treat cuts and bored holes in pressure treated lumber and plywood with field treatment materials in accordance with wood treatment manufacturer's instructions.

3.05 PROTECTION

- A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 00

SECTION 06 20 00 – FINISH CARPENTRY

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. Definition: Finish carpentry includes carpentry work which is exposed to view, is non-structural, and which is not specified as part of other sections. Types of finish carpentry work in this section include:
 - 1. Interior trim:
 - A. Soap dispenser blocks
 - B. Stage/Step Nosing
 - C. Running trim as shown, as at acoustical wall panels and gym backdrop
 - B. Rough carpentry is specified in another section within Division 06.
 - C. Architectural millwork is specified in another section within Division 06.
 - D. Builders Hardware and wood doors are specified in section within Division 08.

1.03 QUALITY ASSURANCE

- A. Factory-mark each piece of lumber and plywood with type, grade, mill and grading agency identification; except omit marking from surfaces to receive transparent finish, and submit mill certification that material has been inspected and graded in accordance with requirements if it cannot be marked on a concealed surface.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protect finish carpentry materials during transit, delivery, storage and handling to prevent damage, soiling and deterioration.
- B. Do not deliver finish carpentry materials until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.05 JOB CONDITIONS

- A. Conditioning: Installer shall advise Contractor of temperature and humidity requirements for finish carpentry installation areas. Do not install finish carpentry until required temperature and relative humidity have been stabilized and will be maintained in installation areas.
- B. Maintain temperature and humidity in installation areas as required to maintain moisture content of installed finish carpentry within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. The fabricator of woodwork shall determine optimum moisture content and required temperature and humidity conditions.

PART 2 PRODUCTS

2.01 WOOD PRODUCT QUALITY STANDARDS

- A. Hardwood Lumber Standard: Comply with National Hardwood Lumber Association (NHLA) rules.
- B. Woodworking Standard: Where indicated for a specific product complies with specified provision of the following:
 - 1. Architectural Woodwork Institute (AWI) "Quality Standards".

2.02 MATERIALS

- A. General:
 - 1. Nominal sizes are indicated, except as shown by detailed dimensions. Provide dressed or worked and dressed lumber, as applicable, manufactured to the actual sizes and pattern as shown.
 - 2. Moisture Content of Hardwood Lumber: Provide kiln-dried (KD) lumber having moisture content from time of manufacture until time of installation within the ranges required in the referenced woodworking standard.
 - 3. Lumber for Transparent Finish: Use species made of solid lumber stock.
 - 4. Lumber for Painted Finish: At Contractor's option, use pieces which are either glued up lumber or made of solid lumber stock.
- B. Interior Finish Carpentry:
 - 1. Soap Dispenser Block for Transparent Finish: Clear maple, manufactured to sizes and patterns shown from selected First Grade lumber (NHLA); complying with premium grade requirements of referenced woodworking standard, for quality of materials and manufacture.
 - a. Furnish and install soap dispenser block for each specified. Mount with (2) countersunk expansion anchors.

- 1) Grade: 1
 - 2) Size: 12-inches tall x 6-inches wide x 1-inch thick, with radius corners.
2. Standing and Running Trim for Stained or Transparent Finish: Clear Maple, species graded and inspected WWPA complying with following requirements:
 - a. Grade: Clear A, no knots, limited figure in grain. Premium for quality of materials and manufacture as required in referenced woodworking standard.
 - b. Includes nosing profile: 3 ¼" x ¾" w/ 1 ¼" at nose.
 3. Standing and Running Trim for Painted Finish: Poplar; at Contractor's option, use pieces which are either glued up lumber or made of solid lumber stock.
- C. Miscellaneous Materials:
1. Fasteners and Anchorages: Provide nails, screws and other anchoring devices of the proper type, size, material, and finish for the application indicated to provide secure attachment, concealed where possible, and complying with applicable Federal Specifications.
 - a. Where finish carpentry is exposed on exterior or in areas of high relative humidity, provide fasteners and anchorages with a hot-dipped zinc coating (ASTM A-153).

PART 3 EXECUTION

3.01 PREPARATION

- A. Condition wood materials to average prevailing humidity conditions in installation areas prior to installing.
- B. Back prime lumber for painted finish where indicated, or high relative humidity on the interior. Comply with requirements of Division 09 Section "Painting" for primers and their application.

3.02 INSTALLATIONS

- A. Discard units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate work within minimum joints or optimum jointing arrangements, or which are of defective manufacturer with respect to surfaces, sizes or patterns.
- B. Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level countertops; and within 1/16" maximum offset in flush adjoining 1/8" maximum offsets in revealed adjoining surfaces.
- C. Anchor finish carpentry work to anchorage devices or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fastener

heads are required, use fine finishing nail for exposed nailings, countersunk and filled flush transparent as indicated.

3.03 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION

- A. Repair damaged and defective finish carpentry work wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean finish carpentry work on exposed and semi-exposed surfaces. Touch up pre-finished finishes to restore damaged or soiled areas.
- C. Refer to Division 09 Section "Painting" for final finishing of installed finish carpentry work.
- D. Protection: Installer of finish carpentry work shall advise Contractor of final protection and maintained conditions necessary to ensure that work will be without damage or deterioration at time of acceptance.

END OF SECTION 06 20 00

SECTION 06 30 00 – ARCHITECTURAL MILLWORK

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Extent of millwork is shown on the Drawings and as follows:
 - 1. Custom millwork assemblies
 - 2. Solid wood 1x and running trim.
- B. Related Sections include the following:
 - 1. Division 06 Section “Rough Carpentry”, for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
 - 2. Division 12 Section “Plastic Laminate Casework”, for cabinetry to be coordinated with millwork provided by this section.
- D. Wood blocking within metal stud and gypsum board walls and partitions shall be provided by the General Contractor.
- E. Note: This section is included primarily to address the scope of custom millwork not naturally covered by Section 12 32 00. Generally, these two sections can be thought of as acting in tandem. Section 06 30 00 is included to accommodate special assemblies like the casework at the Upper Commons, the presentation platform in the Commons, and the Gym raised platform.

1.03 DEFINITIONS

- A. Plastic laminate and veneered millwork includes wood furring, shims, and hanging strips, unless concealed within other construction before millwork installation.

1.04 SYSTEM DESCRIPTION

- A. Millwork Accessibility Requirements shall be provided to conform with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and State and local regulations. These requirements supersede Technical Specifications in the section.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's data and installation instruction for each type of manufactured millwork unit.
- B. Samples: Submit 6" x 6" samples of specified finishes. Samples will be reviewed by Architect for color, texture and pattern only. Compliance with other specified requirements is exclusive responsibility of the Contractor.
- C. Shop Drawings: Submit shop drawings for millwork, showings plans, elevations, cross-sections, service run spaces. Show details and location of anchorages and fitting to floors, walls and base. Include layout of installations with relation to surrounding walls, doors, soffits, windows, and other building components.

1.06 QUALITY ASSURANCE

- A. Single Source Responsibility: Provide manufactured millwork with all components all manufactured or furnished by same millwork company for single responsibility.
 - 1. Manufacturer will show evidence of a minimum of five (5) years' experience in providing millwork for similar types of projects, produce evidence of financial stability, and adequate facilities and personnel required to perform this project.
- B. Quality Standards: Unless otherwise indicated, comply with the following standards:
 - 1. Work in this section shall comply with the specified grades of work written herein and Sections 400 and 1600 of the 8th Edition of the Architectural Woodwork Institute Quality Standards.
 - 2. Compliance shall be evidenced by the firm through the application of AWI Quality Certification labels on the work according to AWI/QCP labeling guidelines.

1.07 PRODUCT HANDLING

- A. Deliver millwork only after wet operations in building are complete.
- B. Store completed millwork in a ventilated place, protected from the weather, with relative humidity therein of 50-degrees or less at 70-degrees F.
- C. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering.

1.08 WARRANTY

- A. Millwork products, to provide a 1 year Guarantee and Warranty to the Owner against defective material and workmanship. This is a warranty of replacement and repair only, whereby millwork shop will correct defects in material and/or workmanship without charge.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers. Subject to compliance with requirements, provide products by one of the following:
1. Any of the listed plastic laminate casework manufacturers.
 2. TMI Systems Design Corporation
 4. Stevens Industries / LSI
 5. Precision Millwork & Plastics
 6. Chris's Creations, Bardstown KY
 7. Atlas Casework, Louisville KY
 8. McCammish Manufacturing, Winchester KY
 9. Louisville Lumber, Louisville KY
 10. Lyndon Millwork, Louisville KY
- B. Equal products of other manufacturers will be acceptable if they are pre-qualified by the Architect 10 days prior to the bid date. Such approvals will be incorporated by Addendum.

2.02 PLASTIC LAMINATE or WOOD VENEER MILLWORK

- A. Definition of millwork components by surface visibility. Reference to the following locations will be made in Section 2.03 when describing surface materials:
1. Exposed Surfaces
 - a. Surface visible when any drawers and doors are closed.
 - b. Portion visible when fixed appliances, devices, or equipment are installed.
 2. Concealed Surfaces
 - a. Surfaces not normally visible after installation.
 - b. Bottoms of millwork assemblies less than 30" above floor.
 - c. Top of millwork assemblies more than 78" above floor and not visible from above after installation.
- B. Lumber: Graded in accordance with AWI; maximum moisture content of 8%.
 1. Lumber scheduled for transparent finish: Maple, plain-sliced, Grade A1.
- C. Vertical Exterior Laminate: GP28 vertical surface grade, high pressure laminate for exposed cabinet and table frame surfaces. Color as selected from millwork manufacturer's full range of colors from WilsonArt, Formica, Nevamar or Pionite.
 1. Basis of Design manufacturer: Formica, Infiniti line.
- C. Particleboard: Grade 1-M-3, 45-50 lb. density, 3/4-inch (except for 1-inch shelves).
- D. Backing Sheet: White thermofused melamine cabinet liner for millwork interior surfaces.

- E. Plywood: Seven-ply, 3/4-inch veneer core plywood with cross and face plies bonded with Type II water resistant glue; drawers are nine-ply, 1/2-inch.
 - 1. Exposed wood veneer: Grade A1, maple, with little to no figure
 - a. Plain-Sliced.
 - b. Slip-Matched.
 - c. Grain-direction: Vertical
- F. Glue: Laminating glue – Type II water resistant glue. Assembly glue – Type III glue.
- G. Banding: PVC thickness for cabinet body edge to be 3mm from manufacturer's standard color offering; door and drawer edges to have 3mm. Edge banding shall be hardwood when wood veneers are selected. T-molding is not acceptable.
- H. Metal Finish: Chemical resistant urethane powder paint.
- I. All millwork shall be fabricated with balanced construction.
- J. Anchors:
 - 1. Provide non-ferrous metal or hot-dipped galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance.
 - 2. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.
 - 3. Concealed Joint Fasteners: Threaded steel.
- K. Hardware: See Section 12 32 00 – Plastic Laminate Casework for hardware to match.

2.03 MILLWORK FABRICATION

- A. General fabrication requirements:
 - 2. Apply edge banding with hot melt adhesive.
 - 3. Unfinished ends to have balanced surfaces.
 - 4. At all millwork installed next to walls, scribe to close off any voids.
- B. Assembly generally to follow AWI guidelines.
- C. Shop Finishing:
 - 1. Sand work smooth and set exposed fasteners.
 - 2. Apply wood filler in exposed fastener indentations, to match so invisible/barely visible.
 - 3. Finish work in accordance with AWI, color and sheen as selected.
 - a. Transparent finish: catalyzed polyurethane with stain.

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. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.

3.03 MILLWORK INSTALLATION

- A. Set and secure millwork in place; rigid, plumb, and level.
- B. Use fixture attachments in concealed locations for wall mounted components.
- C. Use concealed joint fasteners to align and secure adjoining millwork units.
- D. Carefully scribe millwork abutting other components, with maximum gaps of 1/32". Do not use additional overlay trim for this purpose.
- E. Secure millwork and bases to floor using appropriate angles and anchorages.
- F. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.
- G. Where millwork abuts other finished work, scribe for accurate fit with fasteners concealed where practicable.
- H. Adjust millwork and hardware so that moving elements operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.03 INSTALLATION OF ACCESSORIES

- A. Install in a precise manner in accordance with manufacturer's directions. Turn screws to a flat seat; do not drive. Adjust moving parts to operate freely without excessive bind.

3.04 CLEANING AND PROTECTION

- A. Repair or remove and replace defective work as directed upon completion of installation.
- B. Clean shop-finished surfaces, touch-up as required and remove or refinish damaged or soiled areas, as acceptable to the Architect. Wipe down all millwork inside and out to remove dust, construction debris and layout marks.
- C. Protection: Advise Contractor of procedures and precautions for protection of materials and installed millwork from damage by work of other trades.

END OF SECTION 06 30 00

SECTION 06 61 16 – SOLID SURFACE FABRICATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Window stools where horizontal sill surface is drywall, all locations.
 - 2. Wall caps, where shown.
 - 3. Counters and backsplash where shown.
 - 4. As indicated on drawings.
- B. Solid Surface Sheet: Homogenous sheet material composed of acrylic resins, fire-retardant filler materials, and coloring agents.

1.03 REFERENCES

- A. ASTM International:
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. ADA (ATBCB ADAAG): Americans with Disabilities Act Accessibility Guidelines.
- C. Architectural Woodwork Institute (AWI): Quality Standards.

1.04 SUBMITTALS

- A. Shop Drawings: Indicate dimensions, thicknesses, required clearances, tolerances, materials, colors, finishes, fabrication details, field jointing, adjacent construction, methods of support, integration of plumbing and electrical components, and anchorages.
- B. Product Data: Provide data on specified component products.
 - 1. Detailed specification of construction and fabrication.
 - 2. Manufacturer's installation instructions.
 - 3. Manufacturer's detailed recommendations for handling, storage, installation, protection, and maintenance.
- C. Samples: Submit two samples of each color and each texture selected.
 - 1. Size: 12-inch x 12-inch, illustrating color, texture, and finish.

- D. Manufacturer's Installation Instructions: Indicate preparation of opening required, rough-in sizes; provide templates for cast-in or placed frames or anchors; tolerances for item placement, and temporary bracing of components.
- E. Maintenance Data: Indicate list of approved cleaning materials and procedures required; list of substances that are harmful to the component materials.
 - 1. Include instructions for stain removal, and surface and gloss restoration.

1.05 QUALITY ASSURANCE

- A. Surface Burning Characteristics: ASTM E84.
 - 1. Flame Spread Index: 25, maximum.
 - 2. Smoke Developed Index: 450, maximum.
- B. Supplier/Installer Qualifications:
 - 1. Fabricator Qualifications: Manufacturer-certified solid surface fabricator/installer.
 - 2. Installer Qualifications: Firm experienced in installation or application of systems similar in complexity to those required for this Project, including specific requirements indicated.
 - a. Acceptable to or licensed by manufacturer.
 - 3. Source Limitations: Obtain materials and products from single source.

1.06 WARRANTY

- A. Furnish 10-year manufacturer's warranty.
- B. Warranty: Include coverage for failure from manufacturing, fabrication and installation failure.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Manufacturers:
 - 1. Du Pont Corian (Basis of Design)
 - 2. Avonite Surfaces
 - 3. Formica
 - 4. LG HiMacs
- B. Resin: Polyester type, with integral coloring, stain resistant to domestic chemicals and cleaners.
 - 1. Nominal sheet thickness: 0.50 inch or 0.75, based on need of installation.
 - 2. Surface burning characteristics in accordance with ASTM E 84: Class I or A, and as follows:
 - 3. Flame spread: < 25.
 - 4. Smoke developed: <25.
 - 5. Liquid Absorption, ASTM D-570: 0.04 percent after 24 hour period.
 - 6. Notched Izod Impact, ASTM D 256: 0.14 foot pounds per inch.
 - 7. Tensile Modulus, ASTM D 638 Nominal: 1.1 million pounds per square inch.
 - 8. Thermal Expansion, ASTM D 696: 2.3 X 10⁻⁵ in./in.°F

9. Hardness, ASTM D 2583, Barcol Impressor: 60.
10. Flexural Strength, ASTM D 790: 8,000 psi
11. Flexural Modulus, ASTM D 790: 1,100,000 psi
12. Deflection Temperature under load, ASTM D 648: 200 degrees F.
13. Stain Resistance, ANSI Z-124.3 Modified; 3.4: Pass
14. Boiling Water Resistance, ISSFA SST 8.1-00: No effect.
15. High Temperature Resistance, ISSFA SST 9.1-00: No effect.
16. Radiant Heat Resistance, NEMA LD 3-3.10: No effect.
17. Light Resistance, ISSFA SST 7.1-00: No effect.
18. Ball Impact Resistance, NEMA LD 3-3.08, one half pound ball, unsupported: 150 inches.
19. Specific Gravity (Density ASTM D792): 1.60 grams per cubic centimeter.
20. Approximate weight: 4.20 pounds per square foot.
21. Weatherability, ASTM D 2565: Pass.
22. Fungus Resistance, ASTM G 21: Pass.
23. Bacterial Resistance, ASTM G 22: Pass.
24. Pittsburgh Protocol Toxicity: 66.9 grams.
25. Patterns and Finishes: Selected from manufacturer's full range of available selections.
26. See Finish index/drawings/finish plan

C. Adhesive: Manufacturer's standard type, cartridge dispensed.

2.02 FABRICATION

- A. Fabricate components by mold to achieve shape and configuration.
- B. Radius corners and edges.
- C. Cure components prior to shipment.
- D. Fabrication to be performed by a manufacturer-certified solid surface fabricator/installer.
- E. Fabricate components in shop to greatest extent practical to size and shape indicated, in accordance with approved shop drawing and manufacturer's published requirements.
- F. Form joints between components using manufacture's standard joint adhesive. Joints shall be inconspicuous in appearance and without voids. Attach reinforcing strip under joints as required by manufacturer's installation instructions.
- G. Rout and finish component edges to a smooth, uniform finish. Rout all cutouts then sand all edges smooth. Repair or reject defective or inaccurate work.
- H. Finish: Surfaces shall have a uniform finish.
 1. Matte: Standard finish for high traffic areas, requires the least amount of maintenance.

2.03 FINISH

- A. Color and Exposed to View Surface Visual Texture: Refer to Finish Schedule, or to be determined during shop drawing process.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated on shop drawings.
- B. Verify that joint preparation and affected dimensions are acceptable.

3.02 PREPARATION

- A. Provide anchoring devices for installation and embedding.
- B. Precondition solid surfacing in accordance with manufacturer's printed installation instructions.

3.03 INSTALLATION

- A. Install components in accordance with shop drawings and manufacturer's instructions.
- B. Align work plumb and level.
- C. Rigidly anchor to substrate to prevent misalignment.
- D. Seal perimeter of fabrication to adjacent construction in accordance with Division 07 Section "Joint Sealants".
- E. Install in as large a section as possible, minimizing seams. Ease front edge to take off sharp corner.

3.04 INSTALLATION OF TOPS

- A. Field jointing: Where practicable, make in same manner as factory jointing, using dowels, splines, adhesives and fasteners as recommended by manufacturer. Locate field joints as shown on accepted shop drawings, factory prepared so there is no job site processing of top and edge surfaces.
- B. Fastenings: Use concealed clamping devices for field joints located within 6-inches of front and at back edges, and at intervals not exceeding 24-inches. Tighten in accordance with manufacturer's instructions to exert a constant, heavy clamping pressure at joints. Secure tops to cabinets with "z"-type fasteners or equivalent, using (2) or more fasteners at each front, end and back.
 - 1. Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop. Apply sealant to space between backsplash and wall or countertop with sealant specified in Division 07 Section "Joint Sealants".
- C. Workmanship: Abut top and edge surfaces in one true plane, with internal supports placed to prevent any deflection. Provide flush hairline joints to top units using clamping devices.
- D. After installation, carefully dress joints smooth, remove any surface scratches, clean and polish entire surface.
- E. Provide holes and cutouts as required for mechanical and electrical service fixtures.

- F. Provide scribe moldings for closures at junctures of top, curb and splash with walls as recommended by manufacturer for material involved. Use chemical resistant, permanently elastic sealing compound where recommended by manufacturer.

3.04 TOLERANCES

- A. Maximum Variation from True Dimension: 1/8 inch.
- B. Maximum Offset from True Position: 1/8 inch.
- C. Seams shall be flush.

3.05 CLEANING

- A. Clean and polish fabrication surfaces in accordance with manufacturer's instructions.

3.06 PROTECTION OF FINISHED WORK

- A. Do not permit construction near unprotected surfaces.

END OF SECTION 06 61 16

SECTION 07 11 13 – BITUMINOUS DAMPPROOFING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Drawings for locations of work to be performed.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Cold-applied, emulsified-asphalt dampproofing on exterior CMU construction.

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated. Include recommendations for method of application, primer, number of coats and coverage or thickness.
- B. Material Certificates: For each product, signed by manufacturers.

1.04 QUALITY ASSURANCE

- A. Manufacturer: Obtain primary dampproofing materials of each type required from single manufacturer with not less than (3) years of successful experience in supplying principal materials for dampproofing work. Provide secondary materials recommended by manufacturer of primary materials.
- B. Installer: A firm which has specialized in the installation of types of dampproofing required for project, for not less than (3) years and is acceptable to manufacturer of primary materials.
 - 1. As applicable, assign work closely associated with dampproofing including (but not limited to) dampproofing accessories, flashings in connection with waterproofing, expansion joints in membrane, insulation (except cementitious cast-in-place type) and protection course on membrane, to installer of dampproofing, for individual responsibility.

1.05 PROJECT CONDITIONS

- A. Substrate: Proceed with work of this section only after substrate conditions and penetrating work has been completed.
- B. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit dampproofing to be performed according to manufacturers' written instructions.

- C. Ventilation: Provide adequate ventilation during application of dampproofing in enclosed spaces. Maintain ventilation until dampproofing has cured.

PART 2 PRODUCTS

2.01 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

- A. Basis of Design Product: Sonneborn, Sonoshield Hydrocide 600 & 700B.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
 - 1. ChemMasters Corp.
 - 2. Degussa Building Systems; Sonneborn Brand Products.
 - 3. Karnak Corporation.
 - 4. Koppers Inc.
 - 5. Meadows, W. R., Inc.
 - 6. Flintkote Division / Genstar Corporation
- C. Cold-Applied, Emulsified-Asphalt Dampproofing; provide one of the following:
 - 1. Fibered Brush and Spray Coats: ASTM D 1227, Type II, Class 1.
 - 2. Brush and Spray Coats: ASTM D 1227, Type III, Class 1.
- D. VOC Content: 0.25 lb / gal. or less.

2.02 MISCELLANEOUS MATERIALS

- A. Emulsified-Asphalt Primer: ASTM D 1227, Type III, Class 1, except diluted with water as recommended by manufacturer.
- B. Asphalt-Coated Glass Fabric: ASTM D 1668, Type I.
- C. Patching Compound: Manufacturer's fibered mastic of type recommended by dampproofing manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for surface smoothness and other conditions affecting performance of work.
 - 1. Proceed with dampproofing application only after substrate construction and penetrating work have been completed and unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection of Other Work: Mask, or otherwise protect, adjoining exposed surfaces from being stained, spotted, or coated with dampproofing. Prevent dampproofing materials from entering and clogging weep holes and drains.
- B. Clean substrates of projections and substances detrimental to work; fill voids, seal joints, and apply bond breakers if any, as recommended by material manufacturer.
- C. Apply patching compound for filling and patching tie holes, honeycombs, reveals, and other imperfections.
- D. Fill voids, seal joints and apply bond breakers as recommended by materials manufacturer, with particular attention at construction joints.
- E. Prime Substrate as recommended by materials manufacturer.

3.03 APPLICATION, GENERAL

- A. General: Comply with manufacturer's written recommendations unless more stringent requirements are indicated or required by Project conditions to ensure satisfactory performance of dampproofing.
 - 1. Apply additional coats if recommended by manufacturer or if required to achieve coverage indicated or if rained on before cure.
 - 2. Allow each coat of dampproofing to cure 24-hours before applying subsequent coats.
 - 3. Allow 48-hours drying time.
 - 4. Permit membrane to cure under conditions which will not contaminate or deteriorate fluid applied waterproofing material. Block off traffic and protect membrane from physical damage.
- B. Mix separately packaged components in accordance with manufacturer's instructions.
- C. Apply uniform coating of dampproofing to substrate and adjoining surfaces indicated to receive membrane.
 - 1. Apply coating either by hand or by machine spray, complying with manufacturer's recommendations regarding horizontal and vertical surfaces.
 - 2. On exterior face of inner wythe of cavity walls behind rigid insulation: Apply primer and (1) brush or spray coat at not less than 1 gal. / 50 sq. ft.
 - a. Provide continuous plane of protection on exterior face of inner wythe of exterior masonry cavity walls.
 - b. Lap dampproofing at least 1/4 inch onto flashing, masonry reinforcement, veneer ties, and other items that penetrate inner wythe.

- c. Extend dampproofing over outer face of structural members and concrete slabs that interrupt inner wythe, and lap dampproofing at least 1/4-inch onto shelf angles supporting veneer.

3.04 CLEANING

- A. Remove dampproofing materials from surfaces not intended to receive dampproofing.

END OF SECTION 07 11 13

SECTION 07 17 00 – SELF-ADHERING SHEET WATERPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Application of rolled, self-adhering waterproofing membrane system.
- C. Installation of a combination sodium bentonite/hydrophilic bentonite waterstop.

1.02 RELATED SECTIONS

- A. Section 03 30 00 – Cast-in-Place Concrete.
- B. Section 07 20 00 – Building Insulation.
- C. Section 07 62 00 – Sheet Metal Flashing and Trim
- D. Section 07 92 00 – Joint Sealants.
- E. Section 33 41 00 – Storm Drainage and Piping

1.03 REFERENCES

- A. ASTM D146 - Standard Test Methods for Sampling and Testing Bitumen-Saturated Felts and Fabrics Used in Roofing and Waterproofing.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
- C. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
- D. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
- E. ASTM D1876 – Standard Test Method for Peel Resistance of Adhesives. (T-Peel Test).
- F. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
- G. ASTM E96 (Method B) - Standard Test Methods for Water Vapor Transmission of Materials.
- H. ASTM E154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.

1.04 SUBMITTALS

- A. Comply with Section 01 34 00 – Shop Drawings, Product Data, and Samples.
- B. Submit manufacturer's product data and application instructions.

1.05 QUALITY ASSURANCE

- A. Contractor will provide the proper equipment, manpower, and supervision at the jobsite to install the waterstop in compliance with the project plans and specifications.
- B. Installation must be carried out by an experienced contractor with an adequate number of skilled personnel, experienced in the application of waterproofing and bentonite waterstop materials according to manufacturer's current written installation instructions.
- C. Sodium bentonite/hydrophilic waterstop is not designed to be installed into expansion joints.
- D. Sodium bentonite/hydrophilic waterstop is designed to seal structural concrete joints with a minimum 3,000 psi (20.7 MPa) compressive concrete strength.

- E. Maintain a record of the batch numbers of all materials supplied for this project.

1.06 PREINSTALLATION CONFERENCE

- A. Convene a pre-installation conference prior to commencing work of this section, in accordance with Divisions 01 Section "Quality Control", meeting with manufacturer's technical representative, General Contractor, site contractor, Architect, and Special Inspector to review the installation procedures.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in a clean dry area in accordance with manufacturer's instructions.
- C. Store adhesives and primers at temperatures of 40°F (5°C) and above to facilitate handling.
- D. Store membrane cartons on pallets.
- E. Do not store at temperatures above 90°F (32°C) for extended periods.
- F. Keep away from sparks and flames.
- G. Completely cover when stored outside. Protect from rain.
- H. Protect materials during handling and application to prevent damage or contamination.
- I. Avoid use of products which contain tars, solvents, pitches, polysulfide polymers, or PVC materials that may come into contact with waterproofing membrane system.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Product not intended for uses subject to abuse or permanent exposure to the elements.
- B. Protect rolls from direct sunlight until ready for use
- C. Do not apply membrane when air or surface temperatures are below 40°F (4°C).
- D. Do not apply to frozen concrete.

1.09 WARRANTY

- A. Sheet Membrane Waterproofing: Provide written 5 year material warranty issued by the membrane manufacturer upon completion of the work.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Basis of Design: W.R. MEADOWS, Inc (Mel-Rol)
 - 1. Could include Mel-Rol LT or Mel-Rol XLT. Select product based on air and surface temperatures during time of application.
- B. Acceptable Manufacturers:
 - 1. Carlisle (860)
 - 2. Grace (Bituthene 3000)

2.02 MATERIALS

- A. Rolled, Self-Adhering Waterproofing Membrane: Polymeric waterproofing membrane protected by release paper on cross-laminated polyethylene carrier film with exposed polymeric membrane strips on both sides protected by pull-off release strips.
1. Performance Based Specification: Waterproofing membrane shall have the following characteristics:
 - a. Compliance: AREMA Specification Chapter 29 - Waterproofing.
 - b. Thickness:
 - 1) Carrier Film: 4 mils.
 - 2) Polymeric Membrane: 56 mils.
 - c. Tensile Strength, ASTM D412, Die C:
 - 1) Carrier Film: 5,900 psi (40.71 MPa) minimum.
 - 2) Polymeric Membrane: 460 psi (3.23 MPa) minimum.
 - d. Elongation, ASTM D412, Die C: Polymeric Membrane: 971 % minimum.
 - e. Peel Adhesion, ASTM D903: 11.8 lbf/in. (2068 N/m).
 - f. Lap Adhesion, ASTM D1876: 8.62 lbf/in. (1508 N/m)
 - g. Water Vapor Permeability, ASTM E96, Method B: 0.036 perms.
 - h. Water Absorption, ASTM D570: 0.1 percent, 72 hours maximum.
 - i. Resistance to Hydrostatic Head: Equivalent to 230.9 feet (70.3 m) of water.
 - j. Puncture Resistance, ASTM E154: 48.2 lbf (214.6 N).
 - k. Exposure to Fungi, Soil Test: Pass, 16 weeks.
 - l. Color:
 - 1) Carrier Film: White.
 - 2) Polymeric Membrane: Black.

2.03 ACCESSORIES

- A. The following are aligned with the Basis of Design and shall be used as part of an integrated, coordinated system protected by the required warranty. Similar/equivalent products by other listed manufacturers shall be provided, similarly making up an integrated, warranted system.
- B. Surface Conditioner:
1. Temperatures Above 40°F (4°C): Mel-Prime Water Base Primer.
 2. Temperatures Above 0°F (-18°C): Mel-Prime VOC Compliant Solvent Base Primer or Standard Solvent Base Primer.
- C. Waterstop: a rolled type material consisting of a combination of sodium bentonite and hydrophilic rubber for use in concrete construction joints and around waterproofing membrane penetrations: Waterstop EC Plus
1. Water-Based Adhesive: Adhesive containing 15 - 20% emulsified bentonite. To be used when above the water table and temperatures are above 40° F (4°C). CLAY-TITE ADHESIVE by W. R. MEADOWS.
 2. Bentonite Mastic: Pliable yet expandable mastic containing bentonite. To be used below the water table or when temperatures are going to be below 40° F (4° C). CLAY-TITE MASTIC by W. R. MEADOWS.

- D. Flashing and Fillets: MEL-ROL LIQUID MEMBRANE.
- E. Pointing Mastic: POINTING MASTIC.
- F. Termination Bar: TERMINATION BAR.
- G. Corner Tape: DETAIL STRIP.
- H. Waterproofing Protection Course: PROTECTION COURSE
- I. Rolled Matrix Drainage System: MEL-DRAIN Rolled Matrix Drainage System.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive self-adhering membrane. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

- A. Protect adjacent surfaces not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.
- C. Do not apply waterproofing to surfaces unacceptable to manufacturer.
- D. Concrete surfaces must be clean, smooth and free of standing water.
- E. Patch all holes and voids and smooth out any surface misalignments.
- F. Apply surface conditioner to surfaces that will be covered within one working day according to manufacturer's recommended coverage rates.
- G. Install corner tape on all inside and outside corners, including the footing.
- H. Apply a 9" (229 mm) strip of self-adhering membrane over construction, control and expansion joints and over cracks greater than 1/16" (1.59 mm) wide.
- I. Seal all terminations with pointing mastic.

3.03 APPLICATION

- A. Vertical Application
 1. Apply waterproofing membrane system in accordance with manufacturer's instructions.
 2. Ensure accessory materials are compatible with membrane and approved by membrane manufacturer.
 3. Remove release paper on edge and position the membrane.
 4. Pull balance of release paper off, running the roll vertically over the top of the corner tape at the footing.
 5. Immediately hand-rub the membrane firmly to the surface, removing any bubbles or wrinkles, then pressure roll the complete surface to assure positive adhesion.
 6. Overlap all seams and stagger end laps at least 2 ½" (63.5 mm).
 7. Seal all terminations with pointing mastic.
 8. Inspect membrane before covering and repair as necessary. Cover tears and inadequate overlaps with membrane. Seal edges of patches with pointing mastic.

3.04 INSTALLATION OF WATERSTOP IN CONSTRUCTION JOINTS

- A. Install waterstop in all applicable vertical and horizontal construction joints and around any applicable waterproofing membrane penetrations.
- B. Apply a continuous bead of bentonite mastic in all areas to receive bentonite waterstop.
- C. Remove thin release paper to expose adhesive on the bentonite waterstop.
- D. Install bentonite waterstop a minimum of 2" (50 mm) from face of wall and firmly press into place allowing the mastic to fully coat the bottom of the waterstop.
- E. Install standard masonry nails at 12" (300 mm) o.c., if required, for additional fastening.
- F. Tightly butt ends of the waterstop together for subsequent applications.
- G. Remove thick release paper on top prior to concrete placement.

3.05 INSTALLATION AROUND PENETRATIONS

- A. Fill voids with concrete grout or bentonite mastic and trowel around penetration, ensuring all areas are completely filled.
- B. Cut strips of the bentonite waterproofing membrane 6" (150 mm) wide and cut flanges across this strip to aid in wrapping the strip around the penetration.
- C. Install this strip according to manufacturer's installation instructions and fasten into place.
- D. Apply a continuous bead of bentonite mastic in all areas to receive bentonite waterstop.
- E. Remove release paper to expose adhesive on the bentonite waterstop.
- F. Install bentonite waterstop around the penetration, firmly pressing into the bentonite mastic, allowing the mastic to fully coat the bottom of the waterstop.
- G. Remove thick release paper on top prior to concrete placement.

3.06 PROTECTION

- A. Protect membrane on vertical and horizontal applications with immediate application of waterproofing protection course, rolled matrix drainage board.
- B. Backfill immediately using care to avoid damaging waterproofing membrane system.

END OF SECTION 07 17 00

SECTION 07 20 00 – BUILDING INSULATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 DESCRIPTION OF WORK

- A. Extent of building insulation work is shown on the Drawings and indicated by the provisions of this Section.
- B. Applications of building insulation specified in this Section include the following:
 - 1. Foundation perimeter insulation (supporting backfill)
 - 2. Polyisocyanurate rigid insulation board.
 - 3. Spray-applied light density open celled foam insulation.
 - 4. Mineral wool sound barrier around openings thru walls.
 - 5. Mineral wool fire barrier at top of fire-rated walls.
 - 6. Spray foam insulation, for small voids.
- C. Insulation for masonry cavity walls is specified under Division 04 Section "Unit Masonry Assemblies".
- D. Roofing insulation for both the Standing Seam Metal Roof system and the Modified Bitumen Roof system is specified under Division 07 Section "Roof Insulation".
- E. Sound attenuation, blankets shall be specified under Division 09 Section "Gypsum Board Assemblies".
- F. Low expansion spray foam around windows and doors is specified in their respective Specification Sections.

1.03 QUALITY ASSURANCE

- A. Thermal Conductivity: Thickness indicated are for thermal conductivity (k-value at 75-degrees F) specified for each material. Provide adjusted thickness as directed for equivalent use of material having a different thermal conductivity. Where insulation is identified by "R" value, provide thickness required to achieve indicated value.
- B. Fire and Insurance Ratings: Comply with fire-resistance flammability and insurance ratings indicated, and comply with regulations as interpreted by governing authorities.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product specifications and installation instructions for each type of insulating and vapor barrier material required.
- B. Product test reports: For foam insulation, from tests performed by a qualified agency.
- C. Evaluation reports: For foam insulation, from ICC-ES.

1.05 PRODUCT HANDLING

- A. General Protection: Protect insulations for physical damage and from becoming wet, soiled, or covered with ice or snow.
- B. Protection for Plastic Insulation:
 - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 - 2. Protect against ignition at all times. Do not deliver plastic insulating materials to Project Site ahead of installation time. Complete installation and concealment of insulation materials as rapidly as possible in each area of the Work.
 - 3. Cover stored insulation on pallets with canvas tarps.
- C. Storage of Rigid Insulation Board:
 - 1. Insulation stored on job must be raised above ground level on wood pallets and covered with waterproof tarpaulins protected against blowing off.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Extruded Polystyrene Board Insulation (Perimeter Insulation):
 - 1. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
 - a. The Dow Chemical Company
 - b. Owens Corning
 - c. Pactiv Building Products Division
 - 2. Rigid, closed-cell, extruded, polystyrene insulation board with integral high-density skin.
 - a. Comply with ASTM C-578, Type IV
 - b. min. 20 psi compressive strength
 - c. k-value of 0.20
 - d. .3% maximum water absorption
 - e. 1.1 perm-inch max. water vapor transmission
 - f. Manufacturer's standard length and widths

g. Provide minimum thickness of 2" unless otherwise indicated.

B. Open celled foam insulation:

1. Basis of Design Product: Subject to compliance with requirements, provide Icynene Classis Plus (LD-C-70) by Icynene Inc, or provide a comparable product by one of the following manufacturers:
 - a. Accella Corporation
 - b. BASF Corporation
 - c. Johns Manville
 - d. RHH Foam Systems Inc.
2. Insulation: Spray applied, low density, open celled, flexible, 100 percent water-blown polyurethane foam insulation.
 - a. Core Density: ASTM D 1622, 0.7 lbs per cu ft.
 - b. Thermal Resistance: ASTM C 518; 4.0 hr/sq ft/degree F/BTU (R-Value/inch at 75 deg F).
 - c. Air Permeance: ASTM E 2178; less than 0.019 L/s.m2 at 75 Pa for 2" of material.
 - d. Water Vapor Transmission: ASTM E 96; 20.7 perms (for 2" of material).
 - e. Flame Spread: Less than 450, ASTM E 84.
 - f. Bacterial and Fungal Growth and Food Value: ASTM C 1338: no growth.

C. Rigid Insulation Board:

1. Polyisocyanurate rigid, closed cell, foam insulation.: ASTM C591-15, of type and density indicated below, Class 1 flame spread and smoke development requirements per ASTM E84, respectively:
 - a. Available Manufacturers:
 1. Dow Chemical Company.
 2. Owens Corning.
 3. Dyplast.
 - b. R-Value: R-5 to R-6 per inch thickness.

D. Spray foam insulation for filling small voids / holes:

1. Manufacturers:
 - a. Handi-Form Spray Foam as manufactured by Fomo Products.
 - b. Great Stuff Pro by Dow Chemical or equivalent by Hilti
 - c. Froth Pak Foam Insulation by Dow Chemical or equivalent by Hilti
2. Flame Spread: 25 max per ASTM E84
3. Smoke Development: 350 max per ASTM E84

E. Miscellaneous Materials:

1. Mineral wool sound / fire barrier (at top of fire-rated walls)

- a) Equal to Thermafiber SAFB, Standard Fiber.
2. Adhesive for Bonding Insulation: Type recommended by insulation manufacturer, and complying with fire-resistance requirements.
3. Mechanical Anchors: Type and size shown or, if not shown, as recommended by insulation manufacturer for type of application and condition of substrate.
4. Provide UL rated sealant system over insulation at top of fire-rated walls.

PART 3 EXECUTION

3.01 INSPECTION AND PREPARATION

- A. Installer must examine substrates and conditions under which insulation work is to be performed, and must notify Contractor in writing of unsatisfactory conditions. Do not proceed with insulation work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.
 1. Review placement area for foam insulation to determine that final location will not be within 3" of any heat source where the temperature will exceed 200 deg F per ASTM C 411, but not less than requirements of authorities having jurisdiction.
- B. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

3.02 INSTALLATION

- A. General:
 1. Comply with manufacturer's instruction for particular conditions of installation in each case. If printed instructions are not available or do not apply to the Project conditions, consult with manufacturer's technical representative for specific recommendations before proceeding with work.
 2. Extend insulation full thickness shown over entire area to be insulated. Cut and fit tightly around obstructions and fill all voids with insulation. Remove projections which interfere with placement.
 3. Apply single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.
- B. Perimeter and Under-Slab Insulation:
 1. On vertical surfaces, set units in adhesive applied in accordance with manufacturer's instructions. Use type adhesive recommended by manufacturer of insulation.

C. General Building Insulation:

1. Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
2. Seal joints between closed-cell non-breathing insulation units by applying mastic or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with mastic or sealant.

C. Spray Foam, Open Cell:

1. Comply with insulation manufacturer's written instructions.
2. Site mix liquid components according to manufacturer's direction.
3. Apply insulation to produce minimum of thickness required. Where notes indicate filling stud cavity, fill minimum 3 1/2" of 3 5/8" stud cavity or 5 1/2" of 6" stud cavity. Where note indicates filling a void, fill complete. The intention is to extend insulation thickness indicated to envelop entire area to be insulated.
 - a. Fit tightly around obstructions and fill voids.
 - b. Remove projections that interfere with placement.
4. Water piping coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.
5. Miscellaneous voids: Apply insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation.

E. Spray Foam Insulation for small voids:

1. Filling of small voids and holes around structural bearing areas.

3.03 PROTECTION

- A. General: Protect installed insulation from harmful weather exposures and from possible physical abuses, where possible by non-delayed installation of concealing work or, where that is not possible, by temporary covering or enclosure. Installed shall advise Contractor of exposure hazards, including possible sources of deterioration and fire hazards.

END OF SECTION 07 20 00

SECTION 07 22 00 – ROOF INSULATION

PART 1 – GENERAL REQUIREMENTS

1.01 GENERAL

Applicable provisions of "Conditions of the Contract" and "General Requirements" govern work under this Section.

1.02 WORK INCLUDED

- A. Furnish labor and materials to complete roof insulation work indicated, as specified herein, or both.
- B. Roof insulation is part of the warranty in "Membrane Roofing System", Section 07 50 00, and that of the "Standing Seam Metal Roofing", Section 07 41 13.

1.03 SHOP DRAWINGS

- A. Product Data: Provide manufacturer's specification data sheets for each product in accordance with Division 01 Section Submittal Procedures.
- B. Provide approval letters from insulation manufacturer for use of their insulation within this particular roofing system type.
- C. Provide a sample of each insulation type.
- D. Shop Drawings
 - 1. Submit manufacturer's shop drawings indicating complete installation details of tapered insulation system, including identification of each insulation block, sequence of installation, layout, drain locations, roof slopes, thicknesses, crickets and saddles.
 - 2. Shop drawing shall include: Outline of roof, location of drains, complete board layout of tapered insulation components, thickness and the average "R" value for the completed insulation system.
- E. Certification
 - 1. Submit roof manufacturer's certification that insulation fasteners furnished are acceptable to roof manufacturer.
 - 2. Submit roof manufacturer's certification that insulation furnished is acceptable to roofing manufacturer as a component of roofing system and is eligible for roof manufacturer's system warranty.

1.04 REQUIREMENTS

- A. Fire Classification, ASTM E-108..
- B. Pre-installation meeting: Refer to Division 07 roofing specifications for pre-installation meeting requirements.

- C. Apply only as much roof insulation in one day as can be covered by completed roofing system the same day.
- D. Insulation must be kept dry at all times, in storage and during application on roof. In addition to manufacturer's shipping bags, contractor must completely tarp.
- E. Temporary water cut-offs installed at completion of each day's work must be removed upon resumption of work.
- F. Insulation must meet Kentucky Building Code, current edition. Minimum LTTR R25.0.

1.05 MATERIAL STORAGE

- A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.
- B. Store all insulation materials in a manner to protect them from the wind, sun and moisture damage prior to and during installation. Any insulation that has been exposed to any moisture shall be removed from the project site.
- C. Insulation stored on job must be raised above deck or ground level on wood pallets and covered with waterproof tarpaulins. Any warped, broken or wet insulation boards shall be removed from the site.

PART 2 – PRODUCTS

2.01 INSULATION MATERIALS

- A. Thermal Insulation Properties and Approved Insulation Boards.
 - 1. Rigid Polyisocyanurate Roof Insulation; ASTM C1289:
 - a. Qualities: Rigid, closed cell polyisocyanurate foam core bonded to heavy duty glass fiber mat facers.
 - b. R-Value Average: 25.
 - c. Compliances: UL, WH or FM listed under Roofing Systems Federal Specification HH-I-1972, Class 1.
 - 2. Tapered Polyisocyanurate Roof Insulation; ASTM C1289:
 - a. Qualities: Factory Tapered, closed cell polyisocyanurate foam core bonded to heavy duty glass fiber mat facers.
 - b. Thickness: Minimum 1 inch
 - c. Tapered Slope: ¼ inch
 - d. Compliances: UL, WH or FM listed under Roofing Systems Federal Specification HH-I-1972, Class 1
 - 3. Dens-Deck Prime Roof Board
 - a. Qualities: Nonstructural glass mat faced, noncombustible, water-resistant treated gypsum core panel.
 - b. Board Size: Four feet by four feet (4'x4').

- c. Thickness: One half (1/2) inch.
- d. R-Value: 0.70
- e. Compliances: UL, WH or FM listed under Roofing Systems.
- f. Acceptable manufacturers: Providers of similar products recommended by roof system manufacturer, provided the requirements herein are met.

2.02 RELATED MATERIALS

- A. Wood Insulation and Membrane Nailers Stops: Pressure treated wood as specified in the "Rough Carpentry" section of specification.
- B. Fiber Cant and Tapered Edge Strips: Performed rigid insulation units of sizes/shapes indicated, matching insulation board or of perlite or organic fiberboard, as per the approved manufacturer.
- C. Roof Board Joint Tape: Six (6) inches wide glass fiber mat with adhesive compatible with insulation board facers.
- D. Roof Deck Insulation Adhesive: - Dual-component, high rise foam adhesive as recommended by insulation manufacturer and approved by FM indicated ratings.
 - 1. Tensile Strength (ASTM D412).....250 psi
 - 2. Density (ASTM D1875).....8.5 lbs./gal.
 - 3. Viscosity (ASTM D2556).....22,000 to 60,000 cP.
 - 4. Peel Strength (ASTM D903).....17 lb/in.
 - 5. Flexibility (ASTM D816).....Pass @ -70°F
- E. Fasteners: Corrosion resistant screw fastener as recommended by roof membrane manufacturer.
 - 1. Factory Mutual Tested and Approved with three (3) inches coated disc for I-90 rating, length required to penetrate metal deck one inch.

PART 3 – EXECUTION

3.01 INSPECTION OF SURFACES

- A. Roofing contractor shall be responsible for preparing an adequate substrate to receive insulation.
 - 1. Verify that work which penetrates roof deck has been completed.
 - 2. Verify that wood nailers are properly and securely installed.
 - 3. Examine surfaces for defects, rough spots, ridges, depressions, foreign material, moisture, and unevenness.
 - 4. Do not proceed until defects are corrected.
 - 5. Do not apply insulation until substrate is sufficiently dry.
 - 6. Broom clean substrate immediately prior to application.
 - 7. Use additional insulation to fill depressions and low spots that would otherwise cause ponding water.
 - 8. Verify that temporary roof has been completed.

3.02 INSTALLATION

- A. Attachment with Mechanical Fasteners
 1. Approved insulation board shall be fully attached to the deck with an approved mechanical fastening system. As a minimum, the amount of fasteners shall be in accordance with manufacturer's recommendation for FM I-90 system. Otherwise, a minimum of one fastener per two square feet shall be installed.
 2. Filler pieces of insulation require at least two fasteners per piece if size of insulation is less than four square feet.
 3. Spacing pattern of fasteners shall be as per manufacturer's recommendations to meet the FM requirements. Placement of any fastener from edge of insulation board shall be a minimum of three inches, and a maximum of six (6) inches.
 4. Minimum penetration into deck shall be as recommended by the fastener manufacturer. There is a one (1) inch minimum for metal, wood and structural concrete decks where not specified by the manufacturer.
 5. Tape joints of insulation as per manufacturer's requirements.

- B. Attachment with Insulation Adhesive Approved by Factory Mutual (FM).
 1. Ensure all surfaces are clean, dry, free of dirt, debris, oils, loose ore embedded gravel, unadhered coatings, deteriorated membrane and other contaminants that may inhibit adhesion.
 2. Apply insulation adhesive directly to the substrate using a ribbon pattern with one quarter to one half (1/4-1/2) inch wide beads 12 inches o.c., using either the manual applicator or an automatic applicator, at a rate of one (1) gallon per one hundred (150) square feet per cartridge.
 3. Immediately place insulation boards into wet adhesive. Do not slide boards into place. Do not allow the adhesive to skin over before installing insulation boards.
 4. Briefly step each board into place to ensure contact with the adhesive. Substrates with irregular surfaces may prevent the insulation board from making positive contact with the adhesive. Relief cuts or temporary weights may be required to ensure proper contact.
 5. All boards shall be cut and fitted where the roof deck intersects a vertical surface. The boards shall be cut to fit a minimum of one quarter (1/4) inch away from the vertical surface.
 6. Tape joints of insulation as per manufacturer's requirements.

- C. Install insulation as per standard specifications of manufacturer, details indicated, methods specified, as may be required by field conditions or manufacturer's system warranty as specified in Sections 07 50 00 and 07 41 13.

- D. If more than one layer is required, stagger layers minimum of 12" in each direction; set parallel, break joints. Bring insulation units into moderate contact with one another without forcing; cut to fit neatly around roof projections.

- E. Wood insulation stops: Treated wood of same thickness as insulation; mechanically fastened around projections and extensions through deck. Stops: 6" wide or 1" wider than flanges being nailed to them.

- F. All voids/gaps in rigid insulation shall be filled with same material prior to covering.

- G. Tapered Insulation.
 1. Install tapered insulation around roof drains to ensure positive drainage.

2. Install tapered insulation as per standard specification of material manufacturer.
3. Roofing contractor shall verify dimensions, drain heights and drain locations in field prior to installation of tapered roof insulation system.
4. Starting at low points lay tapered roof insulation in uniform mopping of hot, steep asphalt at rate of 25 lbs. per 100 sq. ft. Insulation shall be firmly adhered to deck and/or between layers.
5. Fill insulation of rigid insulation shall be utilized in 1" increments as necessary to achieve specified thickness and required "R" value.
6. Locate valleys by snapping chalk lines. Adjacent valleys should form 90 degree right angles. Lacing of tapered panels at valleys, in lieu of mitering, is unacceptable.
7. Install crickets at all roof penetrations to assure drainage and as required in accordance with Standard Cricket Detail.
8. Finished tapered insulation installation shall pitch in even planes to gutters or roof drains.

3.03 CLEANING

- A. Remove debris and cartons from roof deck. Leave insulation clean and dry, ready to receive roofing membrane.

3.04 CONSTRUCTION WASTE MANAGEMENT

- A. Remove and properly dispose of waste products generated during installation. Comply with requirements of authorities having jurisdiction.

END OF SECTION 07 22 00

SECTION 07 27 26 – FLUID-APPLIED MEMBRANE AIR AND MOISTURE BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Air and water-resistive barrier membrane system, flashing at openings, and accessory materials for application to exterior building envelope substrates indicated on the drawings.

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Meeting: Convene before the start of installation of air and water-resistive barrier system.
 - 1. Require attendance of parties directly affecting work of this Section, including the Owner's Representative, Contractor, Architect, installing subcontractor, membrane system manufacturer's representative, roofing and foundation waterproofing subcontractors, and all subcontractors who have materials penetrating membrane system or finishes covering membrane system.
 - 2. Contractor shall notify Architect at least seven days prior to time for conference.
 - 3. Contractor shall record minutes of meeting and distribute to attending parties.
 - 4. Review the following:
 - a. Surface preparation.
 - b. Substrate condition and pretreatment.
 - c. Minimum curing period.
 - d. Special details and sheet flashing.
 - e. Sequence of construction, responsibilities, and schedule for subsequent operations.
 - f. Installation procedures.
 - g. Inspection procedures.
 - h. Protection and repair procedures.
 - i. Review and approval of all glazing applications.

1.3 PERFORMANCE REQUIREMENTS

- A. Performance requirements: Comply with the specified performance requirements and characteristics as herein specified.
- B. Performance description:
 - 1. The building envelope shall be constructed with a continuous air and water-resistive barrier to control air leakage, avoid condensation in the interior wall assembly, and prevent water intrusion.
 - 2. Joints, penetrations, and paths of water and air infiltration shall be made watertight and airtight.
 - 3. System shall be capable of withstanding positive and negative combined wind, stack and HVAC pressures on the envelope without damage or displacement.
 - 4. System shall be installed in an airtight and flexible manner, allowing for the relative movement of systems due to thermal and moisture variations.

1.4 SUBMITTALS

- A. Product data:
 - 1. Submit manufacturer's product data and installation guidelines, including membrane and accessory material types, technical and test data, composition, descriptions and properties, installation instructions, and substrate preparation requirements.

- B. Certificates:
 - 1. Certificates by manufacturer stating that manufacturer and installer meet qualifications as herein specified.
- C. VOC Certification: Submit certification that products furnished comply with regulations controlling use of volatile organic compounds (VOC).

1.5 QUALITY ASSURANCE

- A. Applicable standards, as referenced herein: ASTM International (ASTM).
- B. Manufacturer's qualifications: Air and water-resistive barrier systems shall be manufactured and marketed by a company with a minimum of five (5) years' experience in the production and sales of air and water-resistive barrier system. Manufacturers proposed for use, but not named in these specifications, shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past five years.
- C. Installer's qualifications: The installer shall demonstrate qualifications to perform the work of this section by submitting the following:
 - 1. Verification that the installer completed SWR Institute's Validated Air Barrier Training and is approved to perform work as herein specified by air and water-resistive barrier system manufacturer.
 - 2. List of at least three (3) projects completed of similar scope and complexity to this project carried out by the firm and site supervisor.
- D. Inspection and testing: Cooperate and coordinate with the Owner's inspection and testing agency. Do not cover installed products or assemblies until they have been inspected, tested and approved.
- E. Sole source: Obtain materials within the scope of this specification from a single manufacturer.
- F. Regulations: Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOC).
- G. Mock-up:
 - 1. Prior to installation of the weather and air barrier system a field-constructed mock-up shall be applied to verify details and tie-ins, to demonstrate the required installation.
 - a. Construct a typical exterior wall section, 8 feet long and 8 feet wide, incorporating back-up wall, cladding, window, door frame, sill, penetrations, insulation, flashing, and any other critical junction.
 - b. Allow 72 hours for inspection and testing of mock-up before proceeding with weather and air barrier work.
 - c. Coordinate construction of mockups to permit inspection of air barrier by Architect and Owner's Representative before beginning installation.
 - d. Approved, undamaged mock-up must remain as part of the work.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage, weather, excessive temperatures, and construction operations. Remove damaged material from site and dispose of in accordance with applicable regulations.

- B. Protect air and water-resistive barrier components from freezing and extreme heat.
- C. Sequence deliveries to avoid delays, and to minimize on-site storage.

1.7 FIELD CONDITIONS

- A. Environmental limitations:
 - 1. Comply with manufacturer's written instructions for substrate temperature and moisture content and other conditions affecting performance requirements.
- B. Weather conditions:
 - 1. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials used.
- C. Proceed with installation only when the substrate construction and preparation work are complete and in condition to receive the membrane system.
- D. Do not apply to frozen substrate. Allow adequate time for substrate to thaw, if freezing conditions exist before application.

1.8 WARRANTY

- A. Manufacturer's warranty requirements:
 - 1. Submit manufacturer's 5 year limited warranty stating:
 - a. The products have been tested in accordance with national standards for air and water-resistive barrier systems and passed those tests with effectiveness and durability indicating their suitability for performance as an air and water-resistive barrier system when properly applied.
 - b. The products shall be free from defects in material for a period of five years after the substantial completion of the material application.
 - c. That the products will not disintegrate and will maintain their integrity over the life of the warranty.
- B. Warranty period: Five (5) years from Date of Substantial Completion.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Substitutions: In accordance with Division 01 description of substitution procedures.

2.2 MATERIALS

- A. Fluid-applied air and water-resistive vapor barrier system that stops air and water leakage in cavity wall, rainscreen, and most other building wall assemblies.
 - 1. Basis of Design Product: PROSOCO R-Guard VB, manufactured by PROSOCO Inc.
 - 2. Additional manufacturers, acceptable subject to their ability to provide fluid applied systems which meet the requirements of this specification:
 - a. Imetco
 - b. WR Meadows (SealTight)
 - c. Dupont (Tyvek)
 - d. Tremco (ExoAir)
 - e. Dow Corning (DefendAir)

- f. Henry Company (Air-Bloc 31 MR)
 - g. Carlisle Coatings & Waterproofing Inc (Fire Resist Barritech VP)
- B. Subject to compliance with the following physical and performance requirements:
1. Comply with national, state and district AIM VOC: less than 50 grams per Liter
 2. Air Leakage of Air Barrier Assemblies: Less than or equal to 0.04 cfm per square foot at 1.57 psf (less than or equal to 0.2 liters s-sq.m. at 75 Pa) when tested in accordance with ASTM E2357.
 3. Air permeance: Less than or equal to 0.004 cfm per square foot (Less than or equal to 0.02 L/s/sq m) when tested in accordance with ASTM E2178.
 4. Water vapor transmission: 0.063 perms when tested in accordance with ASTM E96 (Dry Cup).
 5. Surface Burning Characteristics: Class A Building Material, when tested in accordance with ASTM E84. Flame Spread: Equal or less than 25, Smoke Developed: Equal or less than 450.
 6. Water resistance: No water infiltration after exposure to 55 cm head of water for 5 (five) hours when tested in accordance with ICC-ES AC 212 AATCC 127.
 7. Fastener sealability: No water infiltration when tested in accordance with ASTM D1970.
 8. Total solids: 62.5 percent.]

2.3 WATER BASED PRIMER FOR RAW GYPSUM BOARD EDGES

- A. Primer to seal the cut edges of gypsum wall boards or other porous substrate materials where they are exposed in rough openings. The sealed edge makes a compatible surface for easy application of liquid applied fiber-reinforced fill coat and seam treatment for through-wall components.
1. Basis of Design Product: PROSOCO R-Guard PorousPrep, manufactured by PROSOCO Inc
 2. Similar product by system manufacturer.
- B. Subject to compliance with the following physical and performance requirements:
1. Breathable liquid primer.
 2. Comply with national, state and district AIM VOC regulations and be 100 g/L or less.
 3. Total solids: 16 percent.]

2.4 LIQUID APPLIED FILL COAT AND SEAM FILLER

- A. High modulus, gun-grade, crack and joint filler, adhesive and detailing compound that combines the best silicone and polyurethane properties. The single-component, Silyl-Terminated-Polymer (STP) prepares open joints, seams and cracks before installing primary water and air barrier system to prevent the movement of water and air through building envelopes.
1. Basis of Design Product: PROSOCO R-Guard Joint & Seam Filler, manufactured by PROSOCO Inc.
 2. Similar product by system manufacturer.
- B. Subject to compliance with the following physical and performance requirements:
1. Living Building Challenge 2.0/2.1/3.0/3.1 Red List.
 2. Comply with national, state and district AIM VOC regulations and be 30 g/L or less.
 3. Water vapor transmission: Minimum 19 perms at 20 mils when tested in accordance with ASTM E-96.
 4. Tensile strength: 70 psi when tested in accordance with ASTM D412.
 5. Elongation at break: Greater than 180 percent when tested in accordance with ASTM D412.
 6. Peel strength: Greater than 25 pli when tested in accordance with ASTM D1781.
 7. Total solids: 99 percent.

2.5 LIQUID-APPLIED FLASHING AND DETAILING MEMBRANE

- A. Gun-grade, spread and tool or roller apply waterproofing, adhesive and detailing compound that combines the best of silicone and polyurethane properties. The single component, Silyl-Terminated-Polymer (STP) produces a highly durable, seamless, elastomeric should treat joints, seams, cracks and provide the flashing membrane in rough openings of structural walls and to counter-flash waterproofing and air barrier components.
 - 1. Basis of Design Product: PROSOCO R-Guard FastFlash manufactured by PROSOCO Inc.
 - 2. Similar product by system manufacturer.

- B. Subject to compliance with the following physical and performance requirements:
 - 1. AAMA 714-12 Voluntary Specification for Liquid-Applied Flashing Used to Create a Water-Resistive Seal Around Exterior Wall Openings in Buildings.
 - 2. ICC-ES AC 212 Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers Over Exterior Sheathing.
 - 3. Comply with national, state and district AIM VOC regulations and be 30 g/L or less.
 - 4. Water vapor transmission: 21 perms when tested in accordance with ASTM E96.
 - 5. Tensile strength: Greater than 150 psi when tested in accordance with ASTM D412.
 - 6. Elongation at break: Greater than 350 percent when tested in accordance with ASTM D412.
 - 7. Total Solids: 99 percent.

2.6 INTERIOR SEALANT FOR WINDOWS AND DOORS

- A. High performance, gun-grade waterproofing sealant that combines the silicone and polyurethane properties. Single component, Silyl-Terminated-Polymer (STP) that is that is durable, and stops the movement of moist air through cracks surrounding windows and doors.
 - 1. Basis of Design Product: PROSOCO R-Guard AirDam, manufactured by PROSOCO Inc.
 - 2. Similar product by system manufacturer.

- B. Subject to compliance with the following physical and performance requirements:
 - 1. Living Building Challenge 2.0/2.1/3.0/3.1 Red List.
 - 2. Comply with national, state and district AIM VOC: less than 30 grams per Liter.
 - 3. Sealant Validation from Sealant Waterproofing & Restoration Institute (SWRI).
 - 4. Elongation at break: Greater than 1000% when tested in accordance with ASTM D412.
 - 5. Peel strength: 25 pli when tested in accordance with ASTM C794
 - 6. Total solids: 98 percent.

- C. Backer rod: In deep joints, control sealant depth by installing closed cell backer rod. Diameter of the soft-backer rod should be 25 percent greater than the joint width. Do not puncture backer rod.

2.7 PREFORMED SILICONE SEALANT EXTRUSION

- A. Manufacturer's standard system consisting of pre-cured low modulus elastomeric extrusion that provides a continuous transition and bridges windows and doors frames at curtain wall, storefront, skylights, and roof to air barrier materials. Provide continuous Preformed Silicone Sealant Extrusion System that is flexible, durable, designed for high dynamic and thermal movement which is resistant to ultraviolet exposure and weathering.
 - 1. Basis of Design Product: PROSOCO R-Guard SureSpan EX, manufactured by PROSOCO Inc
 - 2. Similar product by system manufacturer.

- B. Subject to compliance with the following physical and performance requirements:
 - 1. Elongation: Minimum 400 percent when tested in accordance to ASTM D412.
 - 2. Joint Movement Capacity: Minimum 200 percent elongation and minimum 75% compression per ASTM C1518 (ASTM C1523).
 - 3. Tensile Strength: Minimum 700 psi when tested in accordance with ASTM D412.
 - 4. Tear Strength: Minimum 200 lb/in when tested in accordance with ASTM D624.
 - 5. Tear Propagation: Pass testing requirements of ASTM C1518 (ASTM C1523). Movement Class shall exceed 200 percent Elongation and a Tear Class of PT (Knotty Tear).
 - 6. Shore Hardness A: 50 to 65 when tested in accordance with ASTM D2240.
 - 7. UV Resistance: No degradation of material when exposed to UV.

PART 3 - EXECUTION

3.1 EXAMINATION AND SURFACE PREPARATION

- A. Examine conditions for compliance with system manufacturer's requirements for installation, and other specific conditions affecting performance of air barrier system.
- B. All surfaces must be sound, clean and free of grease, dirt, excess mortar or other contaminants. Fill or bridge damaged surfaces, voids or gaps larger than one- inch. Fill voids and gaps measuring one inch or less with liquid applied fill coat and seam filler as necessary to ensure continuity.
 - 1. Surfaces to receive primary fluid applied air and water barrier must be dry or damp, unless approved by air barrier manufacturer. Surfaces to receive (STP) fluid applied accessories must be dry, damp or wet to the touch. Brush away any standing water present before application. STP products will tolerate rain immediately after application.
- C. Refer to manufacturer's product data sheets for requirements for condition of and preparation of substrates.
 - 1. Surfaces shall be sound and free of voids, spalled areas, loose aggregate and sharp protrusions.
 - 2. Remove contaminants such as grease, oil and wax from exposed surfaces.
 - 3. Remove dust, dirt, loose stone and debris.
 - 4. Use repair materials and methods that are acceptable to manufacturer of the air and water-resistive barrier system.
 - 5. Refer to manufacturer's product data sheets and manufacturer's installation guidelines for additional information on preparing structural walls to receive the primary air and water resistive barrier.
- D. Exterior sheathing:
 - 1. Ensure that sheathing is properly installed with ends, corners and edges properly fastened. Remove and replace damaged sheathing.
 - 2. Mechanical fasteners used to secure sheathing boards or penetrate sheathing boards shall be set flush with sheathing, and spot overdriven fasteners with liquid applied fill coat and seam filler.
 - 3. Seal the cut edges of gypsum wall boards exposed in rough openings for windows and doors at corners, as recommended by manufacturer.
- E. Masonry and concrete substrates:
 - 1. Masonry head and bed joints should be fully filled and tooled.
 - 2. Mechanically remove loose mortar fins, mortar accumulations and protrusions, and debris.
 - 3. Fill cracks, joints and gaps with liquid applied fill coat and seam filler as herein specified.

3.2 FIBER REINFORCED FILL COAT AND SEAM FILLER

- A. General: Comply with weather and air barrier manufacturer's installation instructions, temperature limitations, product data and shop drawings.
- B. Apply liquid applied fill coat and seam filler for seams, joints, cracks, gaps, primed rough gypsum edges at sheathing, rough openings per manufacturer's written instructions.

3.3 LIQUID APPLIED FLASHING AT WINDOWS, DOORS, OPENINGS, AND PENETRATIONS

- A. General: Comply with weather and air barrier manufacturer's installation instructions, temperature limitations, product data and shop drawings.
- B. Apply liquid flashing membrane over surfaces to seal and waterproof rough openings per manufacturer's written instructions. Spread the wet product to create an opaque, monolithic flashing membrane which surrounds the rough opening and extends 4 to 6 inches over the face of the structural wall. Apply additional coats as needed to achieve void- and pinhole-free surface.

3.4 FLUID-APPLIED AIR & WATER-RESISTIVE BARRIER INSTALLATION

- A. General: Comply with weather and air barrier manufacturer's installation instructions, temperature limitations, product data and shop drawings.
- B. Apply air and water-resistive barrier to a clean, dry substrate within temperature and weather limitations per manufacturer's written instructions.
 - 1. Apply to recommended thickness.
 - 2. Allow product to cure and dry.
 - 3. Inspect membrane before covering. Repair any punctures or damaged areas by applying additional material.
 - 4. Back roll as necessary to ensure there are no pinholes, voids or gaps in the membrane. Apply fluid applied air and water-resistive barrier per manufacturer's recommendations.
 - 5. Apply additional coats per manufacturer's written instructions.

3.5 FLUID-APPLIED FLASHING TRANSITIONS

- A. General: Comply with weather and air barrier manufacturer's installation instructions, temperature limitations, product data and shop drawings.
- B. Apply fiber reinforced fill coat and seam filler and liquid flashing membrane as a liquid flashing membrane to waterproof the transitions in rough opening and between dissimilar materials per manufacturer's written instructions.
 - 1. Fill any voids between the top of the flashing leg and the vertical wall with fiber reinforced fill coat and seam filler.
 - 2. Spread the wet liquid flashing membrane to create a monolithic "cap-flash" flashing membrane per manufacturer's written instructions.
 - 3. Apply additional coats as needed to achieve void- and pinhole-free surface.
 - 4. Allow treated surfaces to skin before installing other wall assembly, waterproofing or air barrier components.
- C. Apply preformed silicone sealant extrusion to provide a continuous airtight and water-tight seal between material frame and substrate per manufacturer's written instructions.
 - 1. Embed material in bead of liquid flashing membrane per manufacturer's written instructions.

3.6 INTERIOR SEALANT FOR WINDOWS AND DOORS INSTALLATION

- A. General: Comply with weather and air barrier manufacturer's installation instructions, temperature limitations, product data and shop drawings.
- B. Apply interior waterproofing sealant per manufacturer's written instructions.
 - 1. Install Backer rod: Compressible, closed cell rod stock as recommended by manufacturer for compatibility with sealant. Install Backer Rod as necessary per manufacturer's written instructions.
 - 2. Apply interior waterproofing sealant in continuous beads without gaps or air pockets.

END OF SECTION 07 27 26

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Spray-applied, polyurethane foam insulation.
- 2. Elastomeric roof coatings.
- 3. Mineral granules.
- 4. Walkways.

- B. Related Sections:

- 1. Division 1 Section "Alternates"
- 2. Division 6 Section "Rough Carpentry" for wood blocking, curbs, cants, and nailers.
- 3. Division 7 Section "Sheet Metal Flashing and Trim" for foam stops, roof penetration flashings, and counterflashings.
- 4. Division 7 Section "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.3 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. FMG Listing: Provide roofing system and component materials that comply with requirements in MG 4450 for steel roof decks and FMG 4470 for roof covers as part of a foamed roofing system and that are listed in FMG's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FMG markings.
 - 1. Fire/Windstorm Classification:
 - a. UL 790, Class A Fire Hazard
 - b. I-60 PSF in the field.
 - c. 1-90 PSF around the perimeters

- d. 1-120 PSF on the corners.
2. Hail-Resistance Classification: MH.
3. Uplift Resistance: UL 1987 with an uplift pressure resistance of 1-90 PSF in the field.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties.
- B. Samples for Verification: For coated foamed roofing, prepared on Samples of size indicated below:
 1. Samples, 24 by 24 inches on rigid backing, showing polyurethane foam of thickness required and stepped coatings in colors required to illustrate buildup of coated foamed roofing.
- C. Qualification Data: Certificates for the following:
 1. Product certificates signed by the manufacturer for material compliance with specified performance characteristics and criteria, including physical requirements.
 2. Spray Polyurethane Foam Alliance accreditation documentation for materials.
 3. Roof Installer to provide certificate indicating full accreditation by Spray Polyurethane Foam Alliance for a minimum of the past five (5) years.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for coated foamed roofing.
- E. Research/Evaluation Reports: For coated foamed roofing.
- F. Field quality-control reports.
- G. Maintenance Data: For coated foamed roofing to include in maintenance manuals.
- H. Warranty: Sample of special warranty.

1.5 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 SPFA Accreditation Program for company accreditation and individual applicator accreditation for personnel assigned to work on Project.

- B. Testing Agency Qualifications: Qualified according to Division 1 Section "Quality Requirements" for testing indicated.
- C. Source Limitations: Obtain polyurethane foam materials from single source or producer and coating products from single, coated foamed roofing 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 indexes 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 foam roofing as part of a roof assembly.
- E. Comply with recommendations in NRCA's "Quality Control Guidelines for the Application of Spray Polyurethane Foam Roofing."
- F. Comply with recommendations in SPFA AY 104, "Spray Polyurethane Foam Systems for New and Remedial Roofing."
- G. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to coated foamed roofing including, but not limited to, the following:
 - a. Structural load limitations.
 - b. Construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - c. Certifying procedures.
 - d. Surface preparation specified in other Sections.
 - e. Substrate condition and pretreatment.
 - f. Minimum curing period.
 - g. Forecasted weather conditions.
 - h. Special details and sheet flashings.
 - i. Installation procedures.
 - j. Testing and inspection procedures.
 - k. Protection and repairs.

1.6 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 manufacturer. Protect stored materials from direct sunlight.

- C. Remove and replace material that cannot be applied within its stated shelf life.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install coated foamed roofing until roof openings, curbs, and parapets, if any, are complete and roof drains, vents, and other roof penetrations are in place.
- B. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing work to be performed according to coated foamed roofing manufacturer's written instructions and warranty requirements.
 - 1. Apply materials within the range of ambient and substrate temperatures recommended by roofing material manufacturers, but not below 50 deg F or above 110 deg F.
 - 2. Apply materials within range of relative humidity recommended by manufacturer of each component, but not when relative humidity exceeds 85 percent, nor when temperatures are less than 5 deg F above dew point.
 - 3. Do not apply materials to damp or wet surfaces.
 - 4. Do not apply primers, polyurethane foam, or coatings in snow, rain, fog, or mist, or when such weather conditions are imminent during the application and curing period.
 - 5. Do not apply polyurethane foam when wind conditions result in surface finish textures not complying with requirements. Installer to have wind screen on site when needed.
 - 6. Do not apply coatings when wind conditions prevent uniform coating application.

1.8 WARRANTY

- A. Special Warranty: Coated foamed roofing manufacturer's No Dollar Limit (NDL) warranty 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: Twenty (20) years from date of Substantial Completion.
 - 2. Repair Services: In the event of a roof leak, the installer will be required to provide repair services within 24 hours of notification, unless other arrangements are made with the Owner or his Representative.

PART 2 - PRODUCTS

2.1 POLYURETHANE FOAM

- A. Polyurethane Foam: Rigid cellular polyurethane, spray applied, produced by the catalyzed chemical reaction of polyisocyanates with polyhydroxyls, with stabilizers, fire retardants, and blowing agents added; and complying with ASTM C 1029, Type III, as certified by a qualified independent testing agency.

1. Acceptable Manufacturers: Subject to compliance with requirements, acceptable manufacturers offering products that may be incorporated into the Work include the following:
 - a. Bayer Chemical: 3400 Series silicone coated foam roofing system.
 - b. BASF Corporation: S-5000 Series silicone coated foam roofing system.
 - c. Gaco Western Roof Foam System 273 Series silicone coated foam roofing system.
 - d. Neogard, Div of Jones-Blair Company: 7860 Series silicone coated foam roofing system.
2. Subject to compliance with requirements, upon approval, a comparable product by one of the following:
 - a. Conklin Company Inc.
 - b. ERSystems, Inc.
 - c. Foam Enterprises LLC.
 - d. HydroSeal Polymers, Inc.
 - e. National Coatings Corporation.
 - f. North Carolina Foam Industries; Div. of Barnhardt Mfg. Co.
 - g. Polythane Systems, Inc.
 - h. SWD Urethane Company.
 - i. UCSC.
 - j. Volatile Free, Inc.
 - k. West Development Group.
3. Thickness: 1.5"(38.1 mm) minimum thickness.
4. In-Place Density: 2.8 to 3.0 lb/cu. ft.; ASTM D 1622.
5. Surface-Burning Characteristic: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 75 or less.

2.2 SILICONE COATINGS

- A. Silicone Coatings: Liquid silicone elastomeric coating system, complying with ASTM D 6694 and specifically formulated for coating spray polyurethane roofing.
 1. Acceptable Manufacturers: Subject to compliance with requirements, acceptable manufacturers offering products that may be incorporated into the Work include the following:
 - a. Bayer Chemical; 3400 Series silicone coated foam roofing system.
 - b. BASF Corporation; S-5000 Series silicone coated foam roofing system.
 - c. Gaco Western Roof Foam System 273 Series silicone coated foam roofing system.
 - d. Neogard, Div of Jones-Blair Company; 7860 Series silicone coated foam roofing system.

2. Subject to compliance with requirements, upon approval, a comparable product by one of the following:
 - a. ER Systems, Inc.
 - b. Everest Coatings, Inc.
 - c. Foam Enterprises LLC
 - d. North Carolina Foam Industries; Div. of Barnhardt Mfg. Co.
 - e. UCSC
 - f. United Coatings
 - g. West Development Group
3. Base-Coat and Topcoat Composition: Two-component silicone, closed-cell, rigid-class urethane foam, sprayed in place.
4. Topcoat Color: White.
5. Permeance: Minimum 5.0 perms at 25 mils thick per ASTM E 96.

2.3 SUBSTRATE BOARD

- A. Thermal Barrier: Glass-mat, water-resistant gypsum board, ASTM C 1177/C 1177M, 5/8 inch, Type X.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. G-P Gypsum Corporation - Dens-Deck
 - b. Certainteed – Glasroc
 - c. USG - Securock

2.4 ROOF BOARD INSULATION

- A. Polyisocyanurate insulation board: ASTM C1289, Type II, felt or glass-fiber mat on both major faces; minimum 20 PSI compressive strength. R-value of Polyisocyanurate insulation shall be based on LTTR 6 per inch of thickness. Thickness to be 3 inch (76 mm).
 1. Insulation Tapers: Polyisocyanurate insulation factory cut to ¼" minimum slopes, refer to Roof Plan for locations.
- B. Recovery Board and Fasteners: ½" (12.7 mm) wood fiber board (Celotex, or approved equal).
- C. Thermal-Barrier Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FMG 4470, and designed and sized for fastening thermal barrier to substrate.

2.5 AUXILIARY MATERIALS

- A. Primer: Polyurethane foam manufacturer's standard factory-formulated primer.

- B. Mineral Granules: Ceramic-coated roofing granules, No. 11 screen size with 100 percent passing No. 8 sieve and 98 percent of mass retained by No. 40 sieve.
 - 1. Color: White.
- C. Reinforcement: Flexible polyester or fiberglass mat of weight, type, and composition recommended by roof coating manufacturer for embedment in liquid coating.
- D. Sealant: ASTM C 920, Class 25, Use NT, Grade NS, Type M, multicomponent urethane or Type S, one-component, neutral- or acid-curing silicone, and as recommended by coated foamed roofing manufacturer for substrate and joint conditions and for compatibility with roofing materials.
- E. Sheet Flashing and Accessories: Types recommended by coated foamed roofing manufacturer, provided at locations indicated and as recommended by coated foamed roofing manufacturer.

PART 3 - EXECUTION

3.1 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.

3.2 SUBSTRATE BOARD

- A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.
 - 1. Fasten thermal barrier to top flanges of steel deck according to recommendations in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
 - 2. Fasten thermal barrier to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to coated foamed roofing manufacturer's written instructions.
 - 3. Install recovery board according to coated foamed roofing manufacturer's written instructions and the requirements of Division 7 Section "Membrane Reroofing Preparation." Fasten through existing roofing to roof structure as indicated. Space fasteners as indicated.

3.3 SURFACE PREPARATION

- A. Clean and prepare substrate according to coated foamed roofing manufacturer's written instructions. Provide clean, dust-free, dew-free, and dry substrate for coated foamed roofing application. Remove all loose ballast stone as required with vacuum system.
- B. Remove grease, oil, form-release agents, curing compounds, and other contaminants from substrate.

- C. Prepare substrate for recovering according to Division 7 Section "Membrane Reroofing Preparation" and to coated foamed roofing manufacturer's written instructions.
- D. 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.
- E. Prime substrate if recommended by coated foamed roofing manufacturer.
- F. Fill, cover, or tape joints and cracks in substrate that exceed a width of 1/4 inch. Remove dust and dirt from joints and cracks before applying polyurethane foam.

3.4 POLYURETHANE FOAM APPLICATION

- A. General: Mix and apply polyurethane foam according to ASTM D 5469 and coated foamed roofing manufacturer's written instructions.
 - 1. Fill irregularities and areas of ponding.
 - 2. Apply the required full thickness of polyurethane foam in any specific area on same day.
 - 3. Apply only the area of polyurethane foam that can be covered on same day with required base coating.
 - 4. Apply polyurethane foam to avoid overspray beyond immediate area of work.
- B. Apply polyurethane foam in lift thicknesses not less than 1/2 inch and not more than 1 inch.
- C. Uniformly apply total thickness of polyurethane foam indicated, but not less than 1 1/2 inch, to a surface tolerance of plus 1/4 inch 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 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. Remove defective thickness and prepare and reapply polyurethane foam with acceptable, uniform results.

3.5 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 coating.

- B. Apply coating system to polyurethane foam, in two or more coats and according to roof coating manufacturer's written instructions, by spray, roller, or other suitable application method.
- C. Apply base coat and one or more topcoats 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 on same day as polyurethane foam is applied and allow it to cure.
 - 2. Apply topcoat(s) after removing dust, dirt, water, and other contaminants from base coat.
 - 3. Silicone Coating: Apply base coat and topcoat to a minimum dry film thickness of 26 mils.
- D. Apply coating system at wall terminations and vertical surfaces to extend beyond polyurethane foam by 4 inches minimum.
- E. Mineral Granules: Apply mineral granules over wet topcoat using pressure equipment at the rate of 0.5 lb/sq. ft.. 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.
- G. Aggregate: Apply aggregate uniformly over coated polyurethane foam at coated foamed roofing manufacturer's recommended rate, but not less than 6 lb/sq. ft. and a minimum thickness of 3/4 inch. Spread with care to prevent puncturing coating and to minimize damage to substrate foam.

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
 - 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 coated foamed roofing manufacturer's product data.
 - a. 2 core samples will be required for roof areas up to 10,000 sq. ft., and 1 core sample will be required for each additional 10,000 sq. ft. or part thereof.
 - b. 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.

- D. Refill cores, repair slits, and recoat test areas.

3.7 REPAIR AND RECOATING

- A. Repair and recoat coated foamed roofing according to ASTM D 6705 and coated foamed roofing manufacturer's written instructions.

3.8 CURING, PROTECTING, AND CLEANING

- A. Cure coatings according to coated foamed roofing 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 07 57 00

SECTION 07 61 13 – MODULAR METAL WALL PANELS

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. Work described in this section includes single-skin, labyrinth-joint metal cladding panels for rainscreen-principle wall system, complete with sub-structural metal framing, perimeter and penetration flashing, and closures.
- B. Related work specified elsewhere:
 - 1. Division 05: Steel studs, girts, and furring.
 - 2. Division 06: Gypsum sheathing, wood sheathing, rough carpentry.
 - 3. Division 07: Flashing and sheet metal, water resistive air barriers, thermal insulation, joint sealants.

1.3 DEFINITIONS

- A. American Architectural Manufacturer Association (AAMA):
 - 1. AAMA 509-09: Voluntary Test and Classification Method for Drained and Back Ventilated Rain Screen Wall Cladding Systems.
 - 2. AAMA 508-07: Voluntary Test and Specification for Pressure Equalized Rain Screen Wall Cladding Systems.
 - 3. AAMA 621-96: Voluntary/Standard Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates
 - 4. AAMA 2605-11: Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- B. American Iron and Steel Institute (AISI):
 - 1. S100-07: 2007 Edition of the North American Specification for the Design of Cold-Formed Steel Structural Members.
- C. American Society for Testing and Materials (ASTM):
 - 1. A240-12: Standard Specification for Chromium and Chromium Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and for General Applications.
 - 2. A653-03: Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

3. A755-03: Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
 4. A792-03: Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 5. B69-08: Standard Specification for Rolled Zinc.
 6. B209-02a: Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 7. B370-11e1: Standard Specification for Copper Sheet and Strip for Building Construction.
 8. D968-05e1: Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasion.
 9. E330-02(2010): Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 10. E1886-02: Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
 11. E1996-09 Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
- D. European Norm (EN):
1. EN988 (1996): Specifications for Zinc and Zinc Alloy Rolled Flat Products for Building.
- E. National Association of Architectural Metal Manufacturers (NAAMM)
1. Metal Finishes Manual for Architectural and Metal Products.
- F. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
1. Architectural Sheet Metal Manual, 6th edition.

1.4 DESIGN AND PERFORMANCE CRITERIA

- A. General Performance: Metal wall panel assemblies shall be furnished and installed without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Rainscreen Wall System Performance Rating. The metal wall panel assemblies, and the substructural furring/framing system supporting the panels shall be tested in accordance with AAMA 509 and achieve the following performance results:
 1. Water Infiltration: The water infiltration performance of the metal wall panel assembly shall not exceed the classification of W-1.
 2. Back Ventilation: The air ventilation performance of the rainscreen cavity air space shall have a minimum classification of V-4.
- C. Rainscreen Wall System Performance Rating. The metal wall panel assemblies, and the substructural furring/framing system supporting the panels shall be tested in accordance with AAMA 508-07 and achieve the following performance results: PASS.
- D. Abrasion Resistance of Underside Coating for Zinc Wall Panels

1. The underside of all zinc roof panel and flashing materials shall be coated with a high performance abrasion resistant coating to prevent corrosion from the underside due to condensation and/or water vapor.
 2. The underside coating shall provide a minimum abrasion resistance equal to 250 liters of falling sand, as testing in accordance with ASTM D968, Method A.
- E. Thermal Expansion and Contraction
1. Completed metal wall panel and flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, or reducing performance ability.
 2. The design temperature differential shall be not less than 220 degrees Fahrenheit.
 3. Interface between panel and clip shall provide for unlimited thermal movement in each direction along the longitudinal direction.
- F. Uniform Wind Load Capacity
1. Installed wall system shall withstand negative wind pressures complying with the following criteria.
 - a. Design Code: ASCE 7-05, Method 2 for Components and Cladding.
 - b. Safety Factor: The metal panel system shall be tested to proof load of 1.5 times the design service load condition, as required by the ASTM E330 method.
 - c. Category III Building with an Importance Factor of 1.00.
 - d. Wind Speed: 120 mph.
 - e. Exposure Category: B.
 2. The ultimate capacity of the panel system shall be determined based on performance testing in accordance with ASTM E330. The system shall be tested to a proof load that shall be 1.5 times the allowable design service load.

1.5 SUBMITTALS

- A. General, Rainscreen Wall Assembly Components: Complete submittals shall be made jointly and simultaneously for all components of the Rainscreen wall assembly, including:
1. Exterior wall sheathing board, if applicable;
 2. Air and water resistive barrier;
 3. Vapor retarders and/or barriers, if applicable;
 4. Rainscreen wall continuous exterior insulation;
 5. Metal rainscreen wall cladding panels and subframing components;
 6. All other trim, flashing, sealants, and components necessary for a complete rainscreen wall assembly as required by these specifications.

- B. Shop drawings:
 - 1. All components shall be integrated into a single comprehensive and complete shop drawing set prepared by the metal cladding system manufacturer.
 - 2. Shop drawings shall identify each product and component by manufacturer, product name, and thickness, size, style, or other uniquely distinguishing characteristics.
 - 3. Shop drawings shall be signed and sealed by a Professional Engineer or Registered Architect authorized to practice in the jurisdiction of the project location.
- C. Warranty: Provide unexecuted specimen warranty documents for each warranty as required in specification article 1.10.
- D. Design Test Reports.
 - 1. Submit copies of design test reports for each of the performance testing standards listed in specification article 1.4.
 - 2. Test reports shall be performed by independent, accredited testing laboratories, and shall bear the seal of a registered professional engineer.
- E. Samples.
 - 1. Submit sample of panel section, at least 6" x 6" showing seam profile, and also a sample of color selected.
 - 2. Submit sample field applied sealants and all other system components.

1.6 QUALITY CRITERIA/INSTALLER QUALIFICATIONS.

- A. Engage an experienced metal wall panel contractor (erector) to install wall panel system who has a minimum of three (3) years' experience specializing in the installation of Rainscreen metal wall systems.
- B. Contractor must be certified by manufacturer specified as a supplier of the metal wall system and obtain written certification from manufacturer that installer is approved for installation of the specified system.
- C. Successful contractor must obtain all components of Rainscreen wall system from a single manufacturer. Any secondary products that are required which cannot be supplied by the specified manufacturer must be recommended and approved in writing by primary manufacturer prior to bidding.
- D. Fabricator/Installer shall submit work experience and evidence of adequate financial responsibility. Architect reserves the right to inspect fabrication facilities in determining qualifications.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Inspect materials upon delivery.
- B. Handle materials to prevent damage.
- C. Store materials off ground providing for drainage; under cover providing for air circulation and preventing direct UV exposure; and protected from any debris.

1.8 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal wall panel work to be performed according to manufacturer's written instructions and warranty requirements.
 - 1. For natural (unpainted) panel materials, remove any protective films from the exposed surface of panels only after a complete elevation has been full installed.
 - 2. Rolled zinc materials may only be formed and installed in weather conditions that insure that the primary metal temperature (PMT) is 50 degrees Fahrenheit or greater.
- B. Field Measurements: Verify actual dimensions of construction contiguous with metal wall panels by field measurements before fabrication.

1.9 COORDINATION

- A. Coordinate sizes and locations of windows, doors, and wall penetrations with actual equipment provided.
- B. Coordinate metal wall cladding system with wall sheathing, masonry, air and water resistive barriers, thermal insulation, rain drainage work, flashing, trim, and construction of other adjoining work to provide a leak proof, secure, and noncorrosive installation.

1.10 WARRANTIES

- A. Special Manufacturer's Rainscreen Wall Assembly Warranty: The metal wall cladding system must be approved for use in the Rainscreen wall assembly in conjunction with the air and water resistive barrier and exterior continuous insulation system; the use of specified metal wall cladding system shall not nullify any manufacturers' warranties required elsewhere in this specification. In particular, the use of the specified, substitute, or alternate metal wall cladding panel system shall be certified prior to bid by the air and water resistive barrier manufacturer as acceptable for furnishing the warranty required of the air and water resistive barrier manufacturer.
- B. The Manufacturer shall furnish the following warranties for materials and finishes:
 - 1. Exterior metal cladding system Manufacturer's 10 year warranty against defective materials and fabrication.
 - 2. Exterior metal cladding system Manufacturer's 20 year warranty for performance of prefinished finishes. The finish warranty shall provide coverage for the following:
 - a. Fade Resistance: For a period of 20-years from date of first exposure to UV or weathering, the post-painted material finishes shall exhibit no more than a 5 "delta E" rating for color change from original color standard.
 - b. Chalk Resistance: For a period of 20-years from date of first exposure to UV or weathering, the post-painted material finishes shall exhibit a chalk rating of 8 or less, in accordance with ASTM D4214, Method A.
 - c. Film Integrity: For a period of 20-years from date of first exposure to UV or weathering, the post-painted material finishes shall not chip, peel, crack, or blister as a result of defective

coatings, improper preparation of the substrate, improper application of the coatings, or improper curing of the coating system.

3. Exterior metal cladding system Manufacturer's warranty for performance of Post-painted aluminum finishes. The finish warranty shall provide coverage for the following:
 - a. Fade Resistance: For a period of 10-years from date of first exposure to UV or weathering, the post-painted material finishes shall exhibit no more than a 5 "delta E" rating for color change from original color standard.
 - b. Chalk Resistance: For a period of 10-years from date of first exposure to UV or weathering, the post-painted material finishes shall exhibit a chalk rating of 8 or less, in accordance with ASTM D4214, Method A.
 - c. Gloss Retention: For a period of 10-years from date of first exposure to UV or weathering, the post-painted material finishes shall retain at least 50% of original Specular Gloss, as measured in accordance with ASTM D523.
 - d. Film Integrity: For a period of 20-years from date of first exposure to UV or weathering, the post-painted material finishes shall not chip, peel, crack, or blister as a result of defective coatings, improper preparation of the substrate, improper application of the coatings, or improper curing of the coating system.
- C. Installer's 3 year warranty covering wall panel system installation and watertightness.
- D. Warranties shall commence on date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PANEL MATERIALS

- A. Painted, metallic-Coated Steel Sheet: Restricted flatness steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A755/A755M.
 1. Recycled Content: Provide steel sheet with average recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content is at least 70 percent.
 2. 20 gauge, Zinc-Coated (Galvanized) Steel Sheet, as per ASTM A653: G90 (Z275) coating designation; structural quality, grade 40 ksi (275 MPa).
 3. Texture: Smooth surface.
 4. Exposed Coil-Coated Finish:
 - a. 2-Coat Fluoropolymer finish in accordance with AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Manufacturers' approved applicator to prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - b. Coating system shall provide nominal 1.0 mil (0.025 mm) dry film thickness, consisting of primer and color coat.

- c. Color shall be: Bright Copper (Premium).
5. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).
- B. Clear acrylic coated, metallic-Coated Steel Sheet: Restricted flatness steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A755/A755M.
 1. Recycled Content: Provide steel sheet with average recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content is at least 70 percent.
 2. 20 gauge, 55% Aluminum-Zinc alloy coated Steel Sheet, as per ASTM A792: AZ55 (AZ165) coating designation; with a nominal .04 mil (0.010 mm) dry film thickness of a clear organic polymer top film; structural quality, grade 50 ksi (340 MPa).
 3. Texture: Smooth surface.
- C. Sealants:
 1. Sealant Tape: Non-curing, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1-inch- (13-mm-) wide and 1/16-inch- (3-mm-) thick.
 2. Exposed Sealant: ASTM C 920; elastomeric tripolymer, polyurethane, or other advanced polymer sealant; of type, grade, class, and use classifications required to seal joints in metal wall panels and remain weathertight; and as recommended in writing by metal wall panel manufacturer.
 3. Concealed Sealant: ASTM C 1311: Butyl-Based, Solvent-Release, One-Part Sealant.

2.2 METAL SUBFRAMING

- A. Miscellaneous Metal Framing, General: ASTM C 645, cold-formed metallic-coated steel sheet, ASTM A 653, G90 (Z275) hot-dip galvanized
- B. Horizontal Hat-shaped Vented Girts:
 1. Dimensions:
 - a. Nominal Thickness: 0.043-inch (18 gauge) (1.1-mm) nominal thickness.
 - b. Depth: 1-inch (22 mm) nominal.
 - c. Top flange: 2-1/2 inches (63.5 mm) nominal.
 - d. Bottom Flanges: 1-3/8 inches (35 mm) nominal with 1/4 inch (6 mm) holes punched at 8" on center in each flange.
 2. Free air flow: The vented girt shall not restrict chimney effect air convection in the vertical direction. The vented girt webs shall have slotted holes providing for 31% free air flow and weep holes for water drainage.
 3. Drainage: Web segments of vented girt shall be formed such that when installed in the horizontal orientation the web segments are inclined at least 15 degrees from horizontal to promote drainage and prevent retention of standing water.

4. Provide certified testing report by 3rd party independent testing lab showing the loading of the subgirt attached directly through the insulation. The max deflection of such test should be no more than 1/16".
- C. Vertical **Channel**-shaped Strut:
1. Dimensions:
 - a. Nominal Thickness: 0.054-inch (16 gauge) (1.4-mm) nominal thickness.
 - b. Depth: 1-1/2 inches (38 mm) nominal.
 - c. Front Flange: 1-13/16 inches (46 mm) nominal, with 1-1/2 inches (38 mm) diameter holes punched at 8" on center.
 - d. Rear Flange: 4 inches (102 mm) nominal with 1/4 inch (6 mm) holes punched at 8" on center and aligned with holes in the front flange.
- D. Fasteners for Metal Subraming: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten miscellaneous metal subframing members through insulation and sheathing boards into structural wall framing or substrates.

2.3 CONCEALED CLIP – REVEAL JOINT METAL WALL PANELS

- A. General: Provide factory-formed metal wall panels designed to be field assembled by interlocking seams and incorporating concealed fasteners.
- B. Concealed clip, longitudinal lap-seam panel with labyrinth-joint and reveal on four sides.
1. Basis of Design: IMETCO ELEMENT Wall system as manufactured by Innovative Metals Company, Inc. (IMETCO)
 2. Acceptable Manufacturers:
 - a. Xx
 - b. Xx
 3. Alternate manufacturers are subject to full compliance with specification requirements, and shall be submitted for approval as follows.
 - a. Manufacturers not listed above must follow process outlined in Division 01 "Substitutions" to be eligible.
 - b. No substitutions will be permitted after the bid date of this project.
 4. Material: Metallic-coated Steel sheet, 20 gauge (0.89 mm) thick. See 2.1 for finishes and color selection.
 5. Material: Aluminum sheet, 0.063 inch (1.60 mm) thick. See 2.1 for finishes and color selection.
 6. Characteristics.
 - a. Fabrication: Panels shall be factory formed from specified metal.
 - b. The standard profile shall be flat pans with reveal joints on all four sides.
 - c. Panel orientation: Horizontal.

- d. Configuration (Horizontal): Panel shall be 20" high nominal by up to 144" (3658-mm-) long nominal, as indicated on elevation drawings, with interlocking seams incorporating concealed fasteners.
- e. Panel Depth (Concealed Leg Height): 1 1/4 inch (32 mm), nominal.
- f. Reveal Joint: Panel seams shall join such that adjacent panels form vertical and horizontal reveal joints 3/4-inch- (19-mm-) wide.
 - 1) Horizontal reveal joints shall be aligned from panel to panel, as shown on drawings.
 - 2) Vertical reveal joints shall be aligned from panel to panel, as shown on drawings.
- g. End Folds: Panel ends shall be factory notched by automatic mechanical press equipment to form end tabs of 1 inch (25 mm) nominal length. The end tabs shall be factory folded 90 degrees to produce a "box pan" effect and allow for reveal joints on all four sides of the panel. Vertically oriented panels to have a double end fold.
- h. Backer Board: Factory adhere a 5/8-inch- (15-mm-) thick extruded polystyrene foam backer board in the panel cavity for improved panel flatness.

2.4 ACCESSORIES

- A. Wall Panel Accessories: Provide components approved by panel manufacturer and as required for a complete metal wall panel assembly including trim, corner units, closures, clips, flashings, sealants, gaskets, fillers, and similar items. Match material and finish of metal wall panels unless otherwise indicated.
 - 1. Anchor Clips: Clips shall be 18 gauge stainless steel designed to allow thermal movement of the panel in each direction along the longitudinal dimension.
 - 2. Gutter Splice at Vertical Reveal: At the vertical reveal joint, a sheet metal gutter splice shall be provided in the same material type and finish as the metal cladding panels for all visible space at the reveal joint. Gutter splice material thickness shall be as recommended by manufacturer based on panel height.
 - 3. Corner Units: Provide factory fabricated mitered corner units of the same profile(s) as specified. Corner units shall be furnished for outside and inside corner conditions.
 - 4. Ventilation strips shall be provided at top of wall panels, window sills, and transitions between metal panels and other exterior finish materials to allow for air exhaust at top of wall cavity. Vent strips shall be internally baffled to prevent wind driven rain from freely entering the wall cavity.
 - 5. Ventilation strips shall be provided at base of wall panels, window head, and transitions between metal panels and other exterior finish materials to allow for air intake and water weep holes at bottom of wall cavity.
- B. Flashing and Trim: Formed from same material, finish, and gauge as wall panels. Provide flashing and trim as required to provide finished appearance. Locations include, but are not limited to, head, sill, corners, jambs, framed openings, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal wall panels.

2.5 FABRICATION

- A. Fabricate and finish metal wall panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Form flashing components from full single width sheet in minimum 10'-0" (3 m) sections. Provide mitered trim corners, joined using closed end pop rivets and butyl-based, solvent released one-part sealant.
- D. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.
 - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 - 2. Sealed Joints: Form nonexpanding but movable joints in metal to accommodate butyl-based sealant to comply with SMACNA standards.
 - 3. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 - 4. Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA's "Architectural Sheet Metal Manual" or by metal wall panel manufacturer for application, but not less than thickness of metal being secured.

2.6 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Prevent unpainted metals from contact with oils or solvents, including fingerprints, which may cause staining of the natural finishes.
- D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast. Note that some variation is anticipated and acceptable when natural (unpainted) material finishes are specified.

PART 3 - PREPARATION & EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal wall panel supports, and other conditions affecting performance of the Work.
- B. Examine primary and secondary wall framing to verify that girts, studs, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal wall panel manufacturer.
- C. Examine solid wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.
- D. Examine roughing-in for components and systems penetrating metal wall panels to verify actual locations of penetrations relative to seam locations of metal wall panels before metal wall panel installation.
- E. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.
- B. Establish straight, side and crosswise benchmarks
- C. All walls shall be checked for square and straightness. Inside and outside corners may not be plumb; set a true line for the corner flashing with string line.
- D. Measure the wall lengthwise to confirm panel lengths and verify clearances for thermal movement.

3.3 METAL SUBFRAMING INSTALLATION

- A. Install metal subframing directly over continuous thermal insulation. Metal subframing shall attach to the structural wall elements with screw fasteners. Metal subframing shall be spaced as necessary to accommodate the required clip spacing for the metal cladding panels.
- B. Attachments shall be as recommended by the metal claddings system manufacturer's approved shop drawings.

3.4 METAL WALL PANEL INSTALLATION

- A. All details will be shown on in accordance with approved shop drawings and manufacturer's product data, within specified erection tolerances.

- B. Directly over the completed wall substrate, fasten the top flange of the panel to the metal subframing using panel clips. All panels clips will be fastened into the metal subframing as indicated on the metal cladding panel manufacturer's approved shop drawings.
- C. Installation of Wall Panels: Wall panels can be installed by starting from one end and working towards the opposite end (vertical orientation), or from the bottom of wall working towards the top of the wall (horizontal orientation).
- D. Metal wall panels and trim must be installed only in accordance with the manufacturer's recommendation for acceptable temperature range.
- E. Isolate dissimilar metals and masonry or concrete from metals with bituminous coating. Use gasketed fasteners where required to prevent corrosive action between fastener, substrate, and panels.
- F. Limit exposed fasteners to extent indicated on contract drawings.
- G. Seal laps and joints in accordance with metal cladding panel system manufacturer's product data.
- H. Coordinate flashing and sheet metal work to provide weathertight conditions at wall terminations. Fabricate and install in accordance with standards of SMACNA Manual.
- I. Provide for temperature expansion/contraction movement of panels at wall penetrations and wall mounted equipment in accordance with system manufacturer's product data and design calculations.
- J. Installed system shall be true to line and plane and free of dents, and physical defects. In light gauge panels with wide flat surfaces, some oil canning may be present. Oil canning does not affect the finish or structural integrity of the panel and is therefore not cause for rejection.
- K. At joints in linear sheet metal items, other than metal cladding panels which are intended to provide ventilation, set sheet metal items in two 1/4-inch- (6-mm-) beads of butyl sealant. Extend sealant over all metal surfaces. Mate components for positive seal. Allow no sealant to migrate onto exposed surfaces.
- L. Remove damaged work and replace with new, undamaged components.
- M. Touch up exposed fasteners using paint furnished by the panel manufacturer and matching exposed panel surface finish.
- N. Clean exposed surfaces of wall panels and accessories after completion of installation. Leave in clean condition at date of substantial completion. Touch up minor abrasions and scratches in finish.

3.5 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align metal wall panel units within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) at location lines as indicated and within 1/16-inch (1.5-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect metal wall panel installation, including accessories. Report results in writing.

- B. Remove and replace applications of metal wall panels where inspections indicate that they do not comply with specified requirements.
- C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.7 CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as metal wall panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal wall panel installation, clean finished surfaces as recommended by metal wall panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal wall panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 61 13

SECTION 07 62 00 – SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Drawings for locations of work to be performed.

1.02 SUMMARY

- A. This Section includes the following sheet metal flashing and trim:
 - 1. Formed roof drainage system: gutters, downspouts, scuppers and conductor heads.
 - 2. Formed low-slope roof flashings and trim.
 - 3. Formed roof expansion assemblies.
 - 4. Formed wall flashing and trim, not including storefront system flashing or aluminum window flashing.
- B. Related Sections include the following:
 - 1. Division 04 Section "Unit Masonry Assemblies" for installing through-wall flashing, reglets, and other sheet metal flashing and trim.
 - 2. Division 06 Section "Rough Carpentry" for wood nailers and blocking.
 - 3. Division 07 Section "Modified Bituminous Sheet Roofing (SBS)" for installing sheet metal flashing and trim integral with roofing membrane.
 - 4. Division 07 Section "Joint Sealants" for field-applied sheet metal flashing and trim sealants.
 - 5. Division 08 Section "Aluminum Windows" for flashing of window systems.

1.03 PERFORMANCE REQUIREMENTS

- A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.
- B. Fabricate and install roof edge flashing capable of resisting the forces according to requirements of "The Kentucky Building Code":
- C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base

design on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120-degrees F, ambient; 180-degrees F, material surfaces.
- D. Water Infiltration: Provide sheet metal flashing and trim that does not allow water infiltration to building interior.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Show layouts of sheet metal flashing and trim, including plans and elevations. Distinguish between shop- and field-assembled work. Include the following:
1. Material, thickness, weight, and finish for each item and location in Project.
 2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
 3. Details for fastening, joining, supporting, and anchoring sheet metal flashing and trim; including fasteners, clips, cleats, and attachments to adjoining work.
 4. Details of expansion-joint covers, including showing direction of expansion and contraction.
- C. Samples for Initial Selection: For each type of sheet metal flashing and trim indicated with factory-applied color finishes.
1. Include similar Samples of trim and accessories involving color selection.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
1. Sheet Metal Flashing: 12-inches long. Include fasteners, cleats, closures, and other attachments.
 2. Trim: 12-inches long. Include fasteners and other exposed accessories.
 3. Accessories: Full-size Sample.

1.05 QUALITY ASSURANCE

- A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual, Latest Edition." Conform to dimensions, minimum thickness or gauge requirements, and profiles shown unless more stringent requirements are indicated.
- B. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Sections.

1. Meet with Owner, Architect, Owner's insurer if applicable, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, and roof-mounted equipment.
2. Review methods and procedures related to sheet metal flashing and trim.
3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
4. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.
- B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.07 COORDINATION

- A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leak-proof, secure, and noncorrosive installation.

1.08 WARRANTY

- A. Special Warranties: Contractor will repair or replace sheet metal flashing that fails in materials or workmanship within the specified warranty period. Warranty is in conjunction with the pre-finished metal roofing and modified bituminous roofing (NDL) warranty.
 1. Warranty Period: Three (3) Years from date of Substantial Completion. Failures include, but are not limited to, the following:
 - a. Failure to meet performance requirements.
 - b. Structural failures including excessive deflection or water leakage.
 - c. Deterioration of metals and other materials beyond normal weathering.
 2. Painted Metal Finish Warranty Period: Twenty (20) Years from date of Substantial Completion. Failures include the following:
 - a. Peeling, checking, cracking or crazing beyond that which is normal during forming.
 - b. Chalking in excess of numerical rating 8 as tested per ASTM D-4214-89 (Method D-659).
 - c. Fading in excess of 5 delta units (Hunter Color Difference), per ASTM D-2244-85, after removal of dirt and chalk.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include products specified.
 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the manufacturers specified.

2.02 SHEET METALS

- A. Galvanized sheet metal: Standard galvanized steel sheet, meeting requirements of ASTM A-653 / A-653M and ASTM A-924 / A-924M, as applicable, with minimum zinc coating of 1.25 ounces per square foot and 0.2 percent copper bearing, and mill phosphatized for maximum paint adherence. Where sheet metal gauge is not indicated, provide 22-gauge. Factory finish as indicated:
1. Sheet metal flashing and trim material shall be provided by the same manufacturer as the pre-finished metal roofing and pre-finished metal siding.
- B. Provide Stainless steel for through-wall Scuppers
- C. Lead Sheet: ASTM B-749, Type L51121, copper-bearing lead sheet.

2.03 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.
- B. Fasteners and Accessories: Furnish anchors and fasteners, washers, straps, and accessories required for a complete and finished installation. Fasteners and accessories shall conform with the following requirements:
1. Nails shall be stainless steel, hard copper, bronze, or brass. Where sheet metal is built-in over roofing materials or other sheet metal, use nails or screws with 1 inch matching nonferrous washers. Screws shall be standard stainless steel, brass, or bronze wood screws, as required. Sheet metal screws shall be self-drilling, self-tapping stainless steel or tempered non-corrodible steel of proper size and length to suit conditions.
 2. Screw head shall be furnished with neoprene, or EPDM, washers and painted to match material being fastened.

3. Straps: Straps and miscellaneous fastenings, where required shall be stainless steel, half-hard copper, or half-hard 70-30 brass of size indicated or required. Where not indicated, provide straps of 1/16 inch thick by 1-inch-wide size.
- C. Solder for Lead: ASTM B-32, Grade Sn50, 50 percent tin and 50 percent lead.
- D. Elastomeric Sealant: ASTM C-920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- E. Butyl Sealant: ASTM C-1311, single-component, solvent-release butyl rubber sealant, polyisobutylene plasticized, heavy bodied for hooked-type expansion joints with limited movement.
- F. Isolating Material / Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
- G. EPDM - 60-mil.

2.04 MANUFACTURED SHEET METAL FLASHING AND TRIM

- A. Flashing and Trim: All flashing shall be of the same material, finish and color as the pre-finished roof and / or siding panels, unless otherwise indicated. Construct with 22-gauge material.
- B. Reglets: Units of type, material, and profile indicated, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated.
 1. Available Manufacturers:
 - a. Cheney Flashing Company, Inc.
 - b. Fry Reglet Corporation.
 - c. Heckmann Building Products Inc.
 - d. Hickman, W. P. Company.
 - e. Keystone Flashing Company, Inc.
 - f. Sandell Manufacturing Company, Inc.
 2. Material: Galvanized steel, 26-gauge thick.
 3. Masonry Type: Provide with offset top flange for embedment in masonry mortar joint.
 4. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.

2.05 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and

other characteristics of item indicated. Shop-fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.

- B. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
- C. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
- D. Sealed Joints: Form non-expansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.
- E. Expansion Provisions: Where lapped or bayonet-type expansion provisions in the Work cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with butyl sealant concealed within joints.
- F. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.
- G. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
 - 1. Thickness: As recommended by SMACNA's "Architectural Sheet Metal Manual" for application but not less than thickness of metal being secured.

2.06 ROOF DRAINAGE SHEET METAL FABRICATIONS

- A. Conductor Head and Scupper: Fabricate to cross-section indicated, complete with outlet tubes, and other accessories as required.
 - 1. Conductor Head and Scupper: Fabricate from the following material:
 - a. Pre-finished Galvanized Steel: 22-gauge.
 - b. Stainless Steel: 0.031-inches for through wall scupper.
- B. Downspouts: Fabricate rectangular downspouts complete with mitered elbows. Fabricate watertight. Furnish with metal brackets, 2" wide x 1/16" thick pre-finished galvanized steel.
 - 1. Fabricate gutters and downspouts from 22-gauge pre-finished metal.
 - 2. Provide shop-fabricated round-to-rectangular transition for neatly resolved interface with downspout boots provided. Field cuts and fitting will not be accepted.
- C. Downspout boots: Cast iron, with light gray rust inhibitive primer, prepared for final paint.
 - 1. Acceptable Manufacturers include JR Hoe and Zurn.
 - 2. Extend above grade a consistent height (with top bells aligned), minimum / approximately 2' above finished grade.

3. Top bell dimensions to be coordinated to downspout sizes indicated, to provide tight fit with minimal space around exterior face of downspout.
 - a. Gap to be filled with sealant or grout after completion of work.
4. Provide necessary mounting hardware from same manufacturer.

2.07 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Pre-finished Metal Wall Caps: Fabricate in minimum 8-foot long, but not exceeding 10-foot long, sections. Miter corners and seal watertight.
 1. Joint Style: Drive slide, including mitered corners.
 2. Fabricate metal wall caps from the following material:
 - a. Pre-finished Galvanized Steel: 22-gauge.
- B. Roof Expansion Assemblies: Fabricate in minimum 8-foot long, but not exceeding 10-foot long, sections. Miter corners and seal watertight.
 1. Joint Style: Drive slide joints and standing seam mitered corners.
 2. Fabricate roof expansion assemblies from the following material:
 - a. Pre-finished Galvanized Steel: 22-gauge.
- C. Counterflashing: Fabricate from the following material:
 1. Prefinished Galvanized Steel: 22-gauge.
- D. Flashing Receivers: Fabricate from the following material:
 1. Prefinished Galvanized Steel: 22-gauge.
- E. Roof-Penetration Flashing: Fabricate from the following material:
 1. Lead: 4.0 lb/sq. ft., hard tempered.

2.09 FINISHES

- A. General: Apply coatings either before or after forming and fabricating panels, as required by coating process and as required for maximum coating performance capability. Protect coating promptly after application and cure, by application of strippable film or removable adhesive cover and retain until installation has been completed.
 1. Color and finish shall be selected by the Architect.

- B. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- C. Protect mechanical and painted 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.
- F. Provide reverse side coating on interior side of sheet metal consisting of primer and washcoat. Washcoat to consist of PVDF coating, 0.5 mil total dry film thickness.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.
 - 1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing, trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, sealants, protective coatings, separators, and other miscellaneous items as required to complete sheet metal flashing and trim system.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.
 - 1. Coat side of sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, other ferrous metal, pressure-treated lumber, or cementitious construction.
- C. Install exposed sheet metal flashing and trim, without excessive oil canning, buckling, and tool marks.
- D. Install sheet metal flashing and trim true to line and levels indicated with miters and joints accurately fitted. Provide uniform, neat waterproof seams with minimum exposure of

elastomeric or butyl sealant. Corners shall be reinforced and edges of sheet metal shall be hemmed.

- E. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal. Continuous cleats shall be anchored with fasteners at 6" o.c.
- F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with butyl sealant concealed within joints.
- G. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4-inches for nails and not less than 3/4-inch for wood screws.
 - 1. Provide neoprene washers wherever required fasteners penetrate sheet metal. Exposed fasteners will not be permitted for any portion of this work unless specifically shown in the details.
- H. Seal joints with butyl sealant as required for watertight construction.
 - 1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1-inch into sealant. Form joints to completely conceal sealant. (Beads of sealant which will be concealed in the finished work shall be continuous, with no voids of material.) When ambient temperature at time of installation is moderate, between 40- and 70-degrees F, set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40-degrees F.
 - 2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."
 - 3. Seal seams, joints, and/or laps at all flashings watertight. **Dam ends of flashings at openings or off-set conditions.**

3.03 ROOF DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.
- B. Downspouts: Join sections with 1-1/2-inch telescoping joints, sealed as not to leak. Provide wall brackets designed to hold downspouts securely 1-inch away from walls; locate brackets at top and bottom and at approximately 60-inches o.c. in between. Connect downspouts to underground drainage system indicated.
- C. Scuppers shall be stainless steel with welded corners and joints.

- D. Downspout boots: After installation of downspouts, gap between outside of downspout and boot to be filled with sealant or grout.

3.04 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal roof flashing and trim to comply with performance requirements and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight.
- B. Pipe, vent thru-roof: Construct pitch pans of stainless steel to flash penetrations through roof, where indicated or necessary. Pan to be 2" greater in length and width than object it is flashing. Flange to extend minimum 4" onto roof. Set in trowel coating of plastic cement over plies of built-up roofing. Nail 3" o.c. at 3/4" from edge of flange. Provide cover flange with one ply of felt stripping set in cement, extending 8", and one ply, mopped, extending 12" on deck beyond edge of flange. Sides shall extend up from roof minimum of 4". Joints to be seamed and sealed. Pitch pan to be filled by Roofer. Construct counterflashing cap or bonnet of metal with draw band and caulking over pitch pocket wherever possible.
- C. Pipe Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending a minimum of 4-inches over base flashing. Install stainless steel draw band and tighten.
- D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4-inches over base flashing. Lap counterflashing joints a minimum of 4-inches and bed with butyl sealant.
 - 1. Secure in a waterproof manner by means of snap-in installation and sealant or lead wedges and sealant.
- E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install flashing as follows:
 - 1. Flashing shall be accurately formed to conform with roofing contours and configurations and as required to assure a watertight installation. Flashing shall be built in as roofing work progresses.
 - 2. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.
 - 3. Seal with elastomeric sealant and clamp flashing to pipes penetrating roof except for lead flashing on vent piping.
 - 4. Provide sheet metal umbrella above pitch-pan on pipe / conduit.

3.05 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.
- B. Through-Wall Flashing: Installation of formed through-wall flashing is specified in Division 04 Section "Unit Masonry Assemblies."
- C. Pre-finished Metal Wall Cap: Install wall cap with continuous cleat on exposed face and neoprene washer and fastener at 24" o.c. on roof side.

3.06 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean all flashing and remove sealants. To prevent rust staining on finished surfaces, immediately remove fillings caused by drilling or cutting.
- C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.
- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated shall be replaced. Spray paint finish touch-up is NOT acceptable.

END OF SECTION 07 62 00

SECTION 07 72 00 - ROOF ACCESSORIES

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. **Preformed flashings.**
- B. Related Sections include the following:
 - 1. Division 06 Section "Rough Carpentry" for wood nailers.
 - 2. Division 07 Section "Sheet Metal Flashing and Trim" for shop- and field-fabricated metal flashing and counterflashing, and miscellaneous sheet metal trim and accessories.

1.3 SUBMITTALS

- A. Product Data: For each type of roof accessory indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Show fabrication and installation details for roof accessories. Show layouts of roof accessories including plans and elevations. Indicate dimensions, weights, loadings, required clearances, method of field assembly, and components. Include plans, elevations, sections, details, and attachments to other work. Coordinate with other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.
- C. Samples: For each type of exposed factory-applied finish required and for each type of roof accessory indicated, prepared on Samples of size to adequately show color.
- D. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

- A. Sheet Metal Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" details for fabrication of units, including flanges and cap flashing to coordinate with type of roofing indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Pack, handle, and ship roof accessories properly labeled in heavy-duty packaging to prevent damage.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify required openings for each type of roof accessory by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

- A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leak-proof, weathertight, secure, and non-corrosive installation.

1.8 WARRANTY

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers listed in other Part 2 articles.

2.2 METAL MATERIALS

- A. Galvanized Steel Sheet: ASTM A 653/A 653M, G90 coated.
- B. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, AZ50 coated.
- C. Aluminum Sheet: ASTM B 209, alloy and temper recommended by manufacturer for type of use and mill finish.
- D. Aluminum Extrusions and Tubes: ASTM B 221, alloy and temper recommended by manufacturer for type of use, mill finished.
- E. Steel Shapes: ASTM A 36/A 36M, hot-dip galvanized to comply with ASTM A 123/A 123M, unless otherwise indicated.

2.3 MISCELLANEOUS MATERIALS

- A. Cellulosic-Fiber Board Insulation: ASTM C 208, Type II, Grade 1, 1 inch thick.
- B. Glass-Fiber Board Insulation: ASTM C 726, 1 inch thick.

- C. Fasteners: Same metal as metals being fastened, or nonmagnetic stainless steel or other non-corrosive metal as recommended by roof accessory manufacturer. Match finish of exposed fasteners with finish of material being fastened. Provide non-removable fastener heads to exterior exposed fasteners.

2.4 PREFORMED FLASHINGS

- A. Exhaust Vent Flashings: Double-wall metal flashing sleeve, urethane insulation filled, with integral deck flange, 12 inches high, with removable metal hood and slotted or perforated metal collar, and as follows:
 - 1. Available Manufacturers:
 - a. Thaler Metal Industries Ltd.
 - 2. Metal: Aluminum sheet, 0.064-inch thick, mill finished.
 - 3. Diameter: As indicated.
- B. Vent Stack Flashing: Metal flashing sleeve, with integral deck flange, uninsulated, and as follows:
 - 1. Available Manufacturers:
 - a. Thaler Metal Industries Ltd.
 - 2. Metal: Aluminum sheet, 0.064-inch thick, mill finished.
 - 3. Height: 12 inches.
 - 4. Diameter: As indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of work.
 - 1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored and is ready to receive roof accessories.
 - 2. Verify dimensions of roof openings for roof accessories.
 - 3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install roof accessories according to manufacturer's written instructions. Anchor roof accessories securely in place and capable of resisting forces specified. Use fasteners, separators, sealants, and other miscellaneous items as required for completing roof accessory installation. Install roof accessories to resist exposure to weather without failing, rattling, leaking, and fastener disengagement.

- B. Install roof accessories to fit substrates and to result in watertight performance.
- C. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
 - 1. Coat concealed side of uncoated aluminum roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
 - 2. Underlayment: Where installing exposed-to-view components of roof accessories directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip-sheet, or install a course of polyethylene underlayment.
 - 3. Bed flanges in thick coat of asphalt roofing cement where required by roof accessory manufacturers for waterproof performance.
- D. Install roof accessories level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling, or tool marks.
- E. Preformed Flashing Installation:
 - 1. Secure to roof membrane according to roofing manufacturer's written instructions.

3.3 CLEANING

- A. Clean exposed surfaces according to manufacturer's written instructions.

END OF SECTION 07 72 00

SECTION 07 92 00 – JOINT SEALANTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Drawings for locations of work to be performed.

1.02 SUMMARY

- A. This Section includes joint sealants for the following applications, including those specified by reference to this Section:
 - 1. Exterior joints in vertical surfaces and horizontal non-traffic surfaces.
 - 2. Exterior joints in horizontal traffic surfaces, including joints between slabs and building walls.
 - 3. Interior joints in vertical surfaces and horizontal non-traffic surfaces.
 - 4. Interior joints in horizontal traffic surfaces.
 - 5. Perimeter insulation at window and door openings.
- B. See Division 07 Section "Pre-Finished Metal Siding" for sealant to be used in conjunction with metal siding.
- C. See Division 08 Section "Glazing" for glazing sealants.
- D. See Division 32 Section "Concrete Paving" for sealing joints in pavements, walkways, and curbing.

1.03 WORK INCLUDED

- A. Furnish labor and materials to complete caulking work indicated, as specified herein, or both, including but not limited to:
 - 1. Clean out and caulk exterior and interior joints around door frames, entrances, louvers, windows and other wall openings with urethane base caulking.
 - 2. Clean out and caulk control and expansion joints in masonry with urethane base caulking.
 - 3. Caulk cabinets at top and bottom of splash, all joints at walls, other cabinets and beneath inset sinks with silicone caulk.
 - 4. Caulk edges of gypsum board where it meets dissimilar material with urethane base caulking.
 - 5. Caulk joints between dissimilar materials.

1.04 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.
- C. Install sealants when temperature is within the range recommended by the manufacturer. Do not proceed with sealants in unfavorable weather conditions.

1.05 SUBMITTALS

- A. Product Data: For each joint sealant product indicated.
- B. Samples: For each type and color of joint sealant required.
 - 1. Color: As selected by Architect from manufacturer's full range.
 - 2. Install 12-inch long sample of selected colors for approval prior to proceeding with caulking work.
- C. Preconstruction field test reports.
- D. Compatibility and adhesion test reports.
- E. Product certificates and test reports.

1.06 QUALITY ASSURANCE

- A. Preconstruction Compatibility and Adhesion Testing: Submit samples of materials that will contact or affect joint sealants to joint sealant manufacturers for testing according to manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
- B. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to Project joint substrates according to the method in ASTM C 1193 that is appropriate for the types of Project joints.
- C. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:
 - 1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.

2. Install 12" long sample (min. of 3-colors) of selected colors for approval prior to proceeding with caulking work.

D. Single Source: Joint sealants within each type to be one product from a single manufacturer.

1.07 DELIVERY AND STORAGE

- A. Deliver, store, and handle materials to prevent inclusion of foreign materials, damage of materials by water and breakage. Deliver and store packaged materials in original packages until ready for use. Do not use packages or materials showing evidence of water or other damage.

1.08 GUARANTEE

- A. Guarantee that specified work will be free from defects of materials, workmanship for one year from date of Substantial Completion.
- B. Repair and replace such defective work and other work damaged thereby, which becomes defective during guarantee term, without extra cost to the Owner.
- C. The following types of failures are considered defective work: leakage, hardening, cracking, crumbling, melting, shrinking or running of caulking; or staining of adjacent work joint sealant.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.
- C. **Acrylic caulking materials are not acceptable.**

2.02 MATERIALS

- A. Bond Breaker Tape:
 1. 3M's 470 or 481 tape, as applicable.
- B. Joint Sealant Backing:
 1. General:

- a. Backer Rod: Resilient closed cell polyethylene foam backer rod designed for use with cold applied joint sealants.
 - b. Provide sealant backings of material and type that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
2. Available Products:
- a. Sonneborn Building Products: Sonofoam Backer Rod
 - b. Dow Chemical Company: Ethafoam
 - c. Tremco
3. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), O (open-cell material), B (bi-cellular material with a surface skin), or any of the preceding types, as approved in writing by joint sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
4. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.
- C. Urethane Base Caulking (typical at interior and exterior joints):
1. One-component urethane non-sag grade sealant, including perimeter of gypsum board / hard surfaced ceilings.
 2. Available Products:
 - a. Sonneborn Building Products: Sonolastic NP-1
 - b. Sika Corporation: Sikaflex 1A
 - c. Tremco, Inc.: Vulkem 921 or 931
 3. Type: S (single component)
 4. Grade: NS (nonsag)
 5. Class: 25
 6. Use Related to Exposure: NT (non-traffic)
 7. Uses Related to Joint Substrates: M, A, and, as applicable to joint substrates indicated, O.
- D. Silicone Base Caulking (typical at perimeter of countertops):
1. Available Products:
 - a. Pecora 860 Clear Architectural Silicone Sealant, or equal manufactured by:
 - 1) General Electric

2) Dow Corning

3. Type: S (single component)
4. Grade: NS (nonsag)
5. Class: 25
6. Use Related to Exposure: NT (non-traffic)
7. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

E. Self-Leveling, Traffic Grade Sealant (typical at exterior concrete joints):

1. Polyurethane, slope grade, traffic grade, urethane sealant.
2. Available Products:
 - a. Pecora Corporation: Dynatrol II-SG
 - b. Sonneborn Building Products: SL 2
 - c. Sika Corporation, Inc.: Sikaflex-2c SL
3. Type: M (multi-component)
4. Grade: P (pourable / self-leveling)
5. Class: 25
6. Uses Related to Exposure: T (traffic) and NT (non-traffic)
7. Uses Related to Joint Substrates: M, A, and, as applicable to joint substrates indicated, O.

F. Insulating Foam for window and door openings.

1. For full perimeter of all window and door openings at exterior building envelope.
2. Minimal-expanding polyurethane foam with low pressure build that forms a durable, airtight and water-resistant seal between a window or door frame and its rough opening.
3. Available Products:
 - a. Great Stuff Window and Door Insulating Foam Sealant
 - b. OSI Quad Foam
 - c. Dupont

G. Primers: As required and recommended by sealant manufacturer.

H. Sand: To match mortar for joints in brick work.

2.04 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

- C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.
- D. Masonry Sand for control joints in brick masonry.

PART 3 EXECUTION

3.01 PREPARATION

- A. Preparation of surfaces, joint packing and application shall be by workers trained in preparation and application of materials proposed for use.
- B. Examine joints and areas to be sealed. Do not proceed until unsatisfactory conditions are corrected. Masonry, mortar joints and concrete shall be dry and fully cured in areas to be sealed.
- C. Surfaces to be sealed shall be clean, dry and dust free. Surface and air temperature shall be greater than 30-degrees F and less than-100 degrees F.
- D. Pack deep joints with back-up material specified. Shallow joints shall use non-bonding tape at bottom of joint. Joint shall be approximately 1/2 depth to width when ready for caulking. Generally, minimum depth shall be 1/4" and maximum depth 1/2", unless otherwise indicated.
- E. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants.
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant.
 - a. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
 - 2. Remove laitance and form-release agents from concrete.
 - a. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- F. Joint Priming: Prime joint substrates, where recommended in writing by joint sealant manufacturer, based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.
- G. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.02 APPLICATION

- A. Prime surfaces and install materials in strict accordance with manufacturer's written directions. Backer rods shall be compression fit.
- B. Compound shall not adhere to back of joints.
- C. Gun sealant from bottom of joint to prevent air bubbles from forming below surface.

3.03 INSTALLATION

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- B. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. **Tooling of Nonsag Sealants:** Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- G. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.04 JOINTS

- A. Neatly point finish of caulking joints on flush surfaces with tool; remove excess material. Leave joints uniform and slightly concave.
- B. Neatly point finish of caulking joints in internal corners with coving tool; remove excess material.
- C. Install insulating foam at full perimeter of all window and door openings in the exterior envelope, including entrances, clerestories, and translucent panel installations.
- D. Caulking where exposed: Free of wrinkles and uniformly smooth. Make caulk joints watertight.
- E. While still sticky, apply sand to exterior control joints to match mortar joints in brick work.

3.05 CLEANING

- A. Immediately clean adjacent materials which have been soiled; leave work in neat, clean condition.

END OF SECTION 07 92 00

SECTION 07 95 00 – FIRE AND SMOKE SEALANTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Drawings for locations of work to be performed.

1.02 DESCRIPTION OF WORK

- A. In general this Section covers fire and smoke sealants as indicated. Refer to this Section for fire and smoke sealants not provided by Mechanical and Electrical Contractors (see also Divisions 20, 21, 22, 23, 26, 27 and 28), under their scope of work and other devices for penetrations thru smoke or rated walls.
- B. All joints and penetrations in rated walls shall be sealed so that the fire protection rating will be maintained.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product specifications, including handling, installation, curing instructions and fire performance tested data sheets.

1.04 JOB CONDITIONS

- A. Weather Conditions: Do not proceed with installation of liquid sealants under unfavorable weather conditions. Install elastomeric sealants when temperature is within the range recommended by manufacturer for installation.

PART 2 PRODUCTS

2.01 FIRE-RESISTANT JOINT SEALERS

- A. General: Provide manufacturer's standard sealant and accessory materials with fire-resistance rating indicated which are identical to those of assemblies whose fire endurance has been determined by testing per ASTM E 814 by Underwriters Laboratory, Inc. or other testing and inspecting agency acceptable to authorities having jurisdiction.
- B. Sealant: One-part sealant as follows:
 - 1. One-Part-Fire-Stopping Sealant: One-part sealant formulated for use as part of a through-penetration fire-stop system for sealing openings and penetration through walls and floors.

- C. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Isolatek, International: Cafco TFS Caulk
 - 2. General Electric Silicone: Pensil Fire Stop Systems
 - 3. Tremco: Fyre-Shield
- D. Mineral fiber board, mineral fiber matting and mineral fiber putty:
 - 1. Forming and damming materials used to contain the liquid sealant mixture prior to and during foam-filling penetrations. Fire tested and functionally approved forming materials may be left in place to become an integrally part of the foamed penetration seal.
- E. Plywood sheet, particle board or other combustible forming materials:
 - 1. Forming and damming materials used for containment during foaming only must be removed from the final completed penetration seal system.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's printed instruction except where more stringent requirements are shown or specified, and except where manufacturer's technical representative directs otherwise.

3.02 PREPARATION

- A. Clean surfaces immediately before installation of sealant compound. Remove dirt, insecure coatings, moisture and other substances which could interfere with bond or sealant of compound. Roughen vitreous and glazed joint surfaces as recommended by sealant manufacturer.

3.03 INSTALLATION

- A. Install fire-resistant sealant in openings where indicated and at thicknesses indicated. Dam bottom of vertical openings and one side of horizontal openings with temporary containment forms or, where required to achieve fire-resistance ratings, provide permanent mineral composition board forms. **On horizontal penetrations, provide partial face containment forms where required for sealant placement.** Allow installed sealant to cure 24 hours; remove temporary forms; trim ragged edged with sharp knife; inspect and fill voids with additional filler to form uniform thickness of sealant.
- B. Spillage: Do not allow sealants to overflow or spill onto adjoining surfaces or to migrate into voids of adjoining surfaces. Clean adjoining surface by whatever means necessary to eliminate evidence of spillage.

- C. Recess exposed edges of gaskets and exposed joint sealant slightly behind adjoining surfaces, unless otherwise shown, so that compressed units will not protrude from joints.

3.04 CURE AND PROTECTION

- A. Cure sealants in compliance with manufacturer's instructions and recommendations. Advise the Contractor of procedures required for cure and protection of sealants during construction period, so they will be without deterioration or damage at time of Substantial Completion.

END OF SECTION 07 95 00

SECTION 08 11 00 – STEEL DOORS AND FRAMES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Standard hollow metal doors, frames and view windows.
 - 2. Thermally broken steel frames.
- B. Related Sections
 - 1. Division 04 Section "Unit Masonry Assemblies" for embedding anchors for hollow metal work into masonry construction.
 - 2. Division 08 Section "Door Hardware" for door hardware for hollow metal doors.
 - 3. Division 08 Section "Glazing" for glazing for hollow metal doors and hollow metal windows.
 - 4. Division 09 Section "Painting" for field painting hollow metal doors, frames and windows.

1.03 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings.
- B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance rating and finishes.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each door design.
 - 2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
 - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 - 4. Locations of reinforcement and preparations for hardware.
 - 5. Details of each different wall opening condition.
 - 6. Details of anchorages, joints, field splices, and connections.
 - 7. Details of accessories.
 - 8. Fire ratings for fire doors.
- C. Samples for Verification:
 - 1. For the following items, prepared on Samples about 12 by 12-inches to demonstrate compliance with requirements for quality of materials and construction:

- a. Doors: Show vertical-edge, top, and bottom construction; core construction; and hinge and other applied hardware reinforcement. Include separate section showing glazing if applicable.
 - b. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow metal panels and glazing if applicable.
- D. Other Action Submittals:
- 1. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal door and frame assembly.

1.05 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.
- B. Provide doors and frames complying with Steel Door Institute “Recommended Specifications: Standard Steel Doors and Frames” (SDI-100) and as herein specified.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 - 1. Provide additional protection to prevent damage to finish of factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project Site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.
 - 1. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.07 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.08 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
1. Amweld Building Products, LLC.
 2. Ceco Door Products; an Assa Abloy Group company.
 3. Curries Company; an Assa Abloy Group company.
 4. Fleming Door Products Ltd.; an Assa Abloy Group company.
 5. Metal Products, Inc.
 6. Steelcraft; an Ingersoll-Rand company.
 7. Republic

2.02 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A-1008 / A-1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A-1011 / A-1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Galvanized Steel Sheets: Zinc coated carbon steel sheets of commercial quality, complying with ASTM A-526, with ASTM A-525, G 60 zinc coating, mill phosphatized.
- D. Frame Anchors: ASTM A-591 / A-591M, Commercial Steel (CS), 40Z (12G) coating designation; mill phosphatized.
1. For anchors built into exterior walls, steel sheet complying with ASTM A-1008 / A-1008M (cold-rolled) or ASTM A-1011 / A-1011M (hot-rolled), and hot-dip galvanized according to ASTM A-153 / A-153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A-153 / A-153M.
- F. Glazing: Comply with requirements in Division 08 Section "Glazing."
- G. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
- H. Finish Hardware Preparation:
1. Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Builders Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A 115 series specification for door and frame preparation for hardware.

2. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at Project Site.
3. Locate finish hardware as shown on final shop drawings or, if not shown, in accordance with "Recommended Locations for Builder's Hardware," published by Door and Hardware Institute.
4. All interior and exterior door frames shall be prepared to receive butts, closers and locksets.
5. **Doors and frames shall be prepared to receive all electrified hardware as specified.**

2.03 STANDARD HOLLOW METAL DOORS

- A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI / SDI A250.8.
1. Tolerances: Comply with SDI 100, "Manufacturing Tolerances for Standard Steel Doors and Frames."
 2. Design: Flush panel, with openings as indicated on the Drawings.
 3. Vertical Edges for Single-Acting Doors: Beveled edge, seamless and fully welded.
 - a. Beveled Edge: 1/8-inch in 2-inches.
 4. Top and Bottom Edges: Closed with flush or inverted 0.042-inch thick, end closures or channels of same material as face sheets.
 5. Exterior Doors: SDI-100, Level 4, maximum duty, Model 2, minimum **14-gauge**, vertical steel stiffeners. Form panels and doors from galvanized sheet steel. Close top and bottom edges of exterior doors as an integral part of door construction; top closures to be metal. Doors to have continuous welded seamless vertical edges, dressed smooth.
 - a. Exterior Core Construction: Manufacturer's standard polystyrene, polyurethane or polyisocyanurate core.
 - b. Thermal-Rated (Insulated) Exterior Doors: Where indicated, provide doors fabricated with thermal-resistance value (R-value) of not less than 4.0 degrees F x h x sq. ft. / Btu when tested according to ASTM C-1363.
 6. Interior Doors: SDI-100, Level 3, extra heavy duty, Model 1, minimum **16-gauge** faces. Doors to have continuous welded seamless vertical edges, dressed smooth.
 - a. Interior Core Construction: Manufacturer's honeycomb core.
 7. Rated Doors: Comply with UL labeling requirements.
 8. Coordinate undercut at each door with floor finish and threshold conditions. Undercut may vary depending on location and conditions. Exterior doors shall contact threshold seal to prevent air infiltration.
- B. Hardware Reinforcement: Fabricate according to ANSI / SDI A250.6 with reinforcing plates from same material as door face sheets.

- C. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

2.04 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI / SDI A250.8 and with details indicated for type and profile.
- B. Exterior Frames: Fabricated from hot-dip galvanized steel sheet.
 - 1. Fabricate frames with mitered, continuously welded corners.
 - 2. Fabricate frames as full profile welded unless otherwise indicated.
 - 3. Frames for Level 3 Steel Doors: **14-gauge** thick steel sheet.
- C. Interior Frames: Fabricated from cold-rolled steel sheet.
 - 1. Fabricate frames with mitered or coped corners.
 - 2. Fabricate frames as face welded unless otherwise indicated.
 - 3. Frames for Level 2 Steel Doors: **16-gauge** thick steel sheet.
 - 4. Frames for Wood Doors: 16-gauge thick steel sheet.
 - 5. Frames for View Windows: 16-gauge thick steel sheet.
- D. Hardware Reinforcement: Fabricate according to ANSI / SDI A250.6 with reinforcement plates from same material as frames.
- E. Pre-drill glass stops to correspond with the appropriate glass thickness. Install glass stops on the secure side of the frame.

2.05 THERMALLY BROKEN METAL FRAMES

- A. General: Comply with ANSI / SDI A250.8 and with details indicated for type and profile.
- B. Exterior Frames: Fabricated from hot-dip galvanized steel sheet.
 - 1. Fabricate frames with mitered, continuously welded corners.
 - 2. Fabricate frames as full profile welded.
 - 3. Thermal Break: Factory-installed 1/16" thick thermal barrier integrated into frame.
 - a. Basis of Design: Ceco/Assa Abloy Mercury TQB/TRB
 - 3. Frames for Level 3 Steel Doors: **14-gauge** thick steel sheet.
- D. Hardware Reinforcement: Fabricate according to ANSI / SDI A250.6 with reinforcement plates from same material as frames.
- E. Pre-drill glass stops to correspond with the appropriate glass thickness. Install glass stops on the secure side of the frame.

2.05 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042-inch thick, with corrugated or perforated straps not less than 2-inches wide by 10-inches long; or wire anchors not less than 0.177-inch thick.
 - 2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042-inch thick.
- B. Floor Anchors: Formed from same material as frames, not less than 0.042-inch thick, and as follows:
 - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.06 STOPS AND MOLDINGS

- A. Moldings for Glazed Lites in Doors: Minimum 16-gauge thick, fabricated from same material as door face sheet in which they are installed.
- B. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8-inch high unless otherwise indicated.
- C. Loose Stops for Glazed Lites in Frames: Minimum 16-gauge thick, fabricated from same material as frames in which they are installed.
- D. Metal Lite Openings: Install metal frames with through-bolted sex bolts. Face sheet of door may not be used as a window / glass stop. The head of the fastener shall be on the secure side of the door.

2.07 ACCESSORIES

- A. Grout Guards: Formed from same material as frames, not less than 26-gauge thick.

2.08 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 100.
- C. Hollow Metal Doors:
 - 1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
 - 2. Glazed Lites: Factory cut openings in doors.

- D. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. Welded Frames: Weld joints as noted in paragraph 2.04; grind, fill, dress, and make smooth, flush, and invisible.
 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 4. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 5. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Masonry Type: Locate anchors not more than 18-inches from top and bottom of frame. Space anchors not more than 32-inches o.c. and as follows:
 - 1) Three anchors per jamb from 60 to 90-inches high.
 - b. Stud-Wall Type: Locate anchors not more than 18-inches from top and bottom of frame. Space anchors not more than 32-inches o.c. and as follows:
 - 1) Four anchors per jamb from 60 to 90-inches high.
 6. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- E. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.
- F. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
1. Locate hardware as indicated, or if not indicated, according to ANSI / SDI A250.8.
 2. Reinforce doors and frames to receive non-templated, mortised and surface-mounted door hardware.
 3. Comply with applicable requirements in ANSI / SDI A250.6 and ANSI / DHI A115 Series specifications for preparation of hollow metal work for hardware.
 4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

- G. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
 - 1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow metal work.
 - 2. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 - 3. Provide loose stops and moldings on inside of hollow metal work.
 - 4. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

2.09 STEEL FINISHES

- A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
 - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:
 - 1. Squareness: Plus or minus 1/16-inch, measured at door rabbet on a line 90-degrees from jamb perpendicular to frame head.
 - 2. Alignment: Plus or minus 1/16-inch, measured at jambs on a horizontal line parallel to plane of wall.

3. Twist: Plus or minus 1/16-inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 4. Plumbness: Plus or minus 1/16-inch, measured at jambs on a perpendicular line from head to floor.
- C. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

3.03 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Placing Frames:
1. Comply with provisions of SDI-105 "Recommended Erection Instructions For Steel Frames", unless otherwise indicated.
 2. Except for frames located at in-place concrete or masonry and at drywall installations, place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
 3. In masonry construction, locate (3) wall anchors per jamb at hinge and strike levels. Building-in of anchors and grouting of frames is specified in Division 04 Sections.
 4. At in-place concrete or masonry construction, set frames and secure to adjacent construction with machine screws and masonry anchorage devices. Grout all frames solid.
- C. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI / SDI A250.11.
1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - b. Install frames with removable glazing stops located on secure side of opening.
 - c. Install door silencers in frames before grouting.
 - d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - e. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - f. Field apply bituminous coating to backs of frames that are filled with grout containing anti-freezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on Shop Drawings.
 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
 5. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16-inch, measured at door rabbet on a line 90- degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16-inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16-inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16-inch, measured at jambs at floor.
- D. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
1. Non-Fire-Rated Standard Steel Doors:
 - a. Jambs and Head: 1/8-inch plus or minus 1/16-inch.
 - b. Between Edges of Pairs of Doors: 1/8-inch plus or minus 1/16-inch.
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8-inch.
 - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4-inch.
 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
- E. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.
1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9-inches o.c. and not more than 2-inches o.c. from each corner.

3.04 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating finish hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.

- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- D. Galvanized Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 08 11 00

SECTION 08 14 16 – WOOD DOORS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:

1. Solid-core doors with wood-veneer faces.
2. Factory finishing wood doors.
3. Factory fitting wood doors to frames and factory machining for hardware.

- B. Related Sections:

1. Division 08 Section "Glazing" for glass view panels in flush wood doors.
2. Division 06 Section "Finish Carpentry" for barn-style sliding doors fabricated to complement standard wood doors described in this section.

1.03 SUBMITTALS

- A. Product Data: For each type of door indicated. Include details of core and edge construction and trim for openings. Include factory-finishing specifications.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
1. Indicate dimensions and locations of mortises and/or holes for hardware.
 2. Indicate dimensions and locations of cutouts.
 3. Indicate requirements for veneer matching.
 4. Indicate doors to be factory finished and finish requirements.
 5. Indicate fire-protection ratings for fire-rated doors.
- C. Samples for Verification:
1. Factory finishes applied to actual door face materials, approximately 4 by 4-inches, for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.
- D. Warranty: Sample of special warranty

1.04 QUALITY ASSURANCE

- A. Source Limitations: Obtain flush wood doors from single manufacturer.
- B. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, "Architectural Wood Flush Doors."

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in plastic bags or cardboard cartons.
- C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.06 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.07 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Warping (bow, cup, or twist) more than 1/4-inch in a 42-by-84-inch section.
 - b. Telegraphing of core construction in face veneers exceeding 0.01-inch in a 3-inch span.
 - 2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
 - 3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Algoma Hardwoods, Inc.
 - 2. Eggers Industries.
 - 3. Graham

4. Marshfield Door Systems, Inc.
5. Mohawk Flush Doors, Inc.; a Masonite company.
6. Ohio Valley Doors
7. Oshkosh Architectural Door Company.

2.02 DOOR CONSTRUCTION, GENERAL

- A. WDMA I.S.1-A Performance Grade:
1. Heavy Duty unless otherwise indicated.
 2. Extra Heavy Duty: Classrooms, assembly spaces and where indicated.
- B. General: Provide wood doors complying with applicable requirements of referenced standards for kinds and types of doors indicated and as specified.
1. Face Panels: Manufacturer's standard 2-ply hot pressed face panels, unless otherwise indicated.
 2. Exposed Surfaces: Provide kind shown or scheduled and as further specified. Provide same exposed surface materials on both faces of each door, unless otherwise indicated.
- C. Structural Composite Lumber Core Doors:
1. Structural Composite Lumber: WDMA I.S.10.
 - a. Screw Withdrawal, Face: 700 lbf .
 - b. Screw Withdrawal, Edge: 400 lbf.
 - c. 5-inch top-rail blocking.
 - d. 5-inch bottom-rail blocking, in doors indicated to have protection plates.
 - e. 2-1/2" side rail blocking (minimum), both sides.
 2. Edge Construction: At edge stiles, provide minimum 1/4" solid wood construction (to match face veneer) with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
- D. Fire-Protection-Rated Doors: Provide core specified as needed to provide fire-protection rating indicated.
1. Edge Construction: Provide Category "A" (positive pressure) edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed edges and require no additional installation of intumescent strips.

2.03 VENEERED-FACED DOORS FOR TRANSPARENT FINISH

- A. Interior Solid-Core Doors:
1. Grade: Premium, with Grade A faces.

2. Species: Maple
3. Cut: Rotary Cut
4. Match between Veneer Leaves: Book match.
5. Assembly of Veneer Leaves on Door Faces: Balance match.
6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
7. Exposed Vertical Edges: Same species as faces or a compatible species.
8. Core: Structural Composite Lumber.
9. Construction: Five plies. Stiles and rails are bonded to core, then entire unit abrasive planed before veneering.

2.05 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
 1. Comply with requirements in NFPA 80 for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.
- C. Openings: Cut and trim openings through doors in factory.
 1. Wood Lite Openings: Cut openings with the profile indicated. Provide beveled wood trim stop to match door finish.
 2. Glazing: Field install glazing in doors indicated to be factory finished. Comply with applicable requirements in Division 08 Section "Glazing."

2.06 FACTORY FINISHING

- A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
 1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises but top and bottom edges must be sealed.
- B. Transparent Finish:
 1. Grade: Premium.
 2. Finish: WDMA TR-6 catalyzed polyurethane.
 3. Staining: As selected by Architect.
 4. Effect: Semi-filled finish, produced by applying an additional finish coat to partially fill the wood pores.
 5. Sheen: Semi-gloss.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine doors and installed door / frames before hanging doors.
 - 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 - 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Hardware: For installation, see Division 08 Section "Door Hardware."
- B. Installation Instructions: Install doors to comply with manufacturer's written instructions and the referenced quality standard, and as indicated.
 - 1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.
- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.
- E. Clearance: For non-rated doors, provide clearances of 1/8" at jambs and heads; 1/8" at meeting stiles for pairs of doors; and 1/2" from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide clearance from bottom of door to top of threshold.
 - 1. For rated doors, comply with NFPA requirements.

3.03 ADJUSTING

- A. Operation: Re-hang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 08 14 16

SECTION 08 41 13 – ALUMINUM FRAMED ENTRANCES AND STOREFRONTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
1. Exterior and interior aluminum-framed storefronts.
 - a. Glazing is retained mechanically with gaskets on four sides.
 2. Exterior and interior manual-swing aluminum doors.
 3. Flashing of storefront framing.
 4. Spandrel panels, where visible from 2 sides. (See spandrel visible from 1 side only in 'Related' below.)
- B. Related Sections include the following:
1. Division 07 Section "Joint Sealants".
 2. Division 07 Section "Building Insulation" for foam insulation for use at small voids.
 2. Division 07 Section "Sheet Metal Flashing and Trim".
 3. Division 08 Section "Door Hardware".
 4. Division 08 Section "Glazing", including spandrel visible from one side only.

1.03 PERFORMANCE REQUIREMENTS

- A. General: Provide aluminum-framed systems, including anchorage, capable of withstanding, without failure, the effects of the following:
1. Structural loads.
 2. Thermal movements.
 3. Movements of supporting structure indicated on Drawings including, but not limited to, deflection from uniformly distributed and concentrated live loads.
 4. Dimensional tolerances of building frame and other adjacent construction.
 5. Failure includes the following:
 - a. Deflection exceeding specified limits.
 - b. Thermal stresses transferred to building structure.
 - c. Framing members transferring stresses, including those caused by thermal and structural movements, to glazing.
 - d. Noise or vibration created by wind and thermal and structural movements.

- e. Loosening or weakening of fasteners, attachments, and other components.
- f. Sealant failure.
- g. Failure of operating units to function properly.

B. Structural Loads:

1. Design Wind Loads: Determine design wind loads applicable to Project from basic wind speed indicated in miles per hour at 33-feet above grade, Importance Factor, and Exposure Category indicated on Drawings; according to ASCE 7, Section 6.5, "Method 2-Analytical Procedure" and "The Kentucky Building Code"; based on mean roof heights above grade.
2. Seismic Loads: As required by "The Kentucky Building Code".

C. Deflection of Framing Members:

1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13-feet, 6-inches and to 1/240 of clear span plus 1/4-inch for spans greater than 13-feet, 6-inches or an amount that restricts edge deflection of individual glazing lites to 3/4-inch, whichever is less.
2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75-percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components directly below to less than 1/8-inch and clearance between members and operable units directly below to less than 1/16-inch.

D. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:

1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
2. When tested at 150-percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2-percent of span.
3. Test Durations: As required by design wind velocity but not less than 10-seconds.

E. Thermal Movements: Provide aluminum-framed systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120-degrees F, ambient; 180-degrees F, material surfaces.
2. Test Performance: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5.
 - a. Test High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180-degrees F.
 - b. Test Low Exterior Ambient-Air Temperature: 0-degrees F.

- c. Test Interior Ambient-Air Temperature: 75-degrees F.
- F. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 6.24 lbf/sq. ft.
- G. Water Penetration Under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20- percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.
- H. Average Thermal Conductance: Provide aluminum-framed systems with fixed glazing and framing areas having average U-factor of not more than 0.63 Btu/sq. ft. x h x degrees F when tested according to AAMA 1503.

1.04 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, installation data / requirements, and finishes for each type of product indicated.
- B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 2. Include details of provisions for system expansion and contraction and for draining moisture occurring within the system to the exterior.
 - 3. Include flashing details.
 - 4. For entrances, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.
- C. Samples for Initial Selection: For units with factory-applied colored anodized finishes.
- D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.
- E. Fabrication Sample: Of each vertical-to-horizontal intersection of systems, made from 12-inch lengths of full-size components and showing details of the following:
 - 1. Joinery.
 - 2. Anchorage.
 - 3. Expansion provisions.
 - 4. Glazing.
 - 5. Flashing and drainage.

- F. Welding certificates.
- G. Qualification Data: For Installer.
- H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems.
- I. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.
- J. Warranties: Special warranties specified in this Section.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Capable of assuming engineering responsibility and performing work of this Section and who is acceptable to manufacturer.
 - 1. Engineering Responsibility: Preparation of data for aluminum-framed systems including Shop Drawings based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project and submission of reports of tests performed on manufacturer's standard assemblies.
- B. Source Quality Control: Provide aluminum framing specified herein from a single source.
 - 1. Fabrication Tolerances: Fabricate aluminum framing in accordance with framing manufacturer's prescribed tolerances.
- C. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- D. Accessible Entrances: Comply with FED-STD-795, "Uniform Federal Accessibility Standards."
- E. Welding: Qualify procedures and personnel according to AWS D1.2, "Structural Welding Code--Aluminum."

1.06 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems 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 aluminum-framed systems without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.07 WARRANTY

- A. Special Assembly Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that deteriorate as defined in this Section within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Noise or vibration caused by thermal movements.
 - c. Deterioration of metals, metal finishes, flashing, and other materials beyond normal weathering.
 - d. Adhesive or cohesive sealant failures.
 - e. Water leakage through fixed glazing, framing, and flashing areas.
 - f. Failure of operating components to function properly.
 2. Warranty Period: Five years from date of Substantial Completion.
- B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes fail within specified warranty period. Warranty does not include normal weathering.
 1. Warranty Period: 20 years from date of Substantial Completion.

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 the following:
 1. EFCO Corporation.
 2. Kawneer.
 3. Tubelite Inc.
 4. Vistawall Architectural Products.

2.02 MATERIALS

- A. Aluminum: 6063 T6 alloy and temper.
 1. Sheet and Plate: ASTM B 209 (ASTM B 209M).

2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
 3. Extruded Structural Pipe and Tubes: ASTM B 429.
 4. Structural Profiles: ASTM B 308/B 308M.
 5. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.
- B. Steel Reinforcement: With manufacturer's standard corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
 2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
 3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.03 FRAMING SYSTEMS

- A. Basis-of-Design Product:
1. Interior Storefront System: Kawneer North America, Trifab 400.
 2. Exterior Storefront System: Kawneer North America, Trifab VG 451T and Trifab VG 601T (center glazed from inside).
- B. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.
- C. Thermal Barrier (Trifab VG 451T/601T):
1. Kawneer IsoLock Thermal Break with a 1/4" separation consisting of a two-part chemically curing, high-density polyurethane which is mechanically and adhesively joined to aluminum storefront sections.
 2. Thermal Break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.
- D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with non-staining, nonferrous shims for aligning system components.
- E. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.
1. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
 2. Reinforce members as required to receive fastener threads.
 3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

- F. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123/A 123M or ASTM A 153/A 153M requirements.
- G. Flashing: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding flashing compatible with adjacent materials. Form exposed flashing from sheet aluminum finished to match framing and of sufficient thickness to maintain a flat appearance without visible deflection.
- H. Framing System Gaskets and Sealants: Manufacturer's standard recommended by manufacturer for joint type.

2.04 GLAZING SYSTEMS

- A. Glazing: As specified in Division 08 Section "Glazing."
- B. Gaskets: Glazing gaskets shall be extruded EPDM rubber.
- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric types.

2.05 DOORS

- A. Basis-of-Design Product: The design for aluminum doors is based on Kawneer Company, Inc.; Series 500 Wide Stile.
- B. Doors: Manufacturer's standard glazed doors, for manual swing operation.
 - 1. Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deep penetration and fillet welded or that incorporate concealed tie rods.
 - 2. Stile Width: 6-inches nominal.
 - 3. Center Bar: Install 8-inch horizontal center cross rail, separating door into two lites, as indicated on the Drawings. Center of cross rail to be aligned with center of exit devices.
 - 4. Bottom rail shall be 12-inches.
 - 5. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
 - a. Provide non-removable glazing stops on outside of door.
- C. Door Hardware: As specified in Division 08 Section "Door Hardware."
 - 1. Coordinate hardware that is to be supplied by aluminum door manufacturer.
 - 2. Hinges, closers, panic bars and cylinders by the Hardware Supplier.
 - 3. **Provide stainless steel reinforcement plates, to be installed in storefront framing at hinges.**
 - 4. Provide all necessary cut-outs and rough-ins required for electronic hardware.

2.04 ALUMINUM SUB-SILL

- A. Provide extruded, one-piece sub-sill with end dams at all windows / louvers. Sub-sills shall be set in a bed of sealant.

2.05 SPANDREL PANEL

- A. Where spandrel will be visible from two sides, no glazing shall be used. Provide sandwich panel with aluminum sheet both sides, finish to match storefront system into which it is installed. Core material to be insulated with manufacturer's recommended rigid insulation material and sealed to maintain same performance values as the rest of the window system.
- B. Install into storefront system using same gasketing and sealants used for installation of insulated glass panels.

2.06 ACCESSORY MATERIALS

- A. Insulating Materials: As specified in Division 07 Section "Building Insulation."
- B. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 07 Section "Joint Sealants."
- C. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.
- D. Snap-On Covers: Snap-on covers applied to exterior frame glazing legs to show a sharp, uninterrupted exterior profile between expansion joints. To match material and finish of frame system.
- E. Low expansion spray foam insulation for filling perimeter of storefront system and aluminum door frames:
1. Great Stuff Window & Door by Dow Chemical or approved equal.
 2. Low-pressure foam designed not to bow or bend window and door frames.

2.07 FABRICATION

- A. Form aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by de-scaling or grinding.
- C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
 2. Accurately fitted joints with ends coped or mitered.
 3. Means to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
 4. Physical and thermal isolation of glazing from framing members.
 5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 6. Provisions for field replacement of glazing from interior.
 7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Door Frames: Reinforce as required to support loads imposed by door operation and for installing hardware.
1. At exterior doors, provide compression weather stripping at fixed stops.
 2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.
- E. Doors: Reinforce doors as required for installing hardware.
1. At pairs of exterior doors, provide sliding weather stripping retained in adjustable strip mortised into door edge.
 2. At exterior doors, provide weather sweeps applied to door bottoms.
- F. Hardware Installation: Factory install hardware to the greatest extent possible. Cut, drill, and tap for factory-installed hardware before applying finishes.
- G. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.08 ALUMINUM FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- C. Colored Anodized:
 1. Finish all exposed areas of aluminum windows and components with electrolytically deposited color in accordance with Aluminum Association Designation AA-M10-C22.
 2. To be selected from manufacturer's anodized finishes, including light bronze (tentative selection).

2.09 ACCESSORIES

- A. Fasteners and perimeter anchors shall be stainless steel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.
 - 2. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 INSTALLATION

- A. General:
 - 1. Comply with manufacturer's written instructions.
 - 2. Do not install damaged components.
 - 3. Fit joints to produce hairline joints free of burrs and distortion.
 - 4. Rigidly secure non-movement joints.
 - 5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
 - 6. Seal joints watertight, unless otherwise indicated.
- B. Metal Protection:
 - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
 - 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
- D. Set continuous sill members and flashing in full sealant bed as specified in Division 7 Section "Joint Sealants" and to produce weathertight installation.
- E. Install components plumb and true in alignment with established lines and grades, without warp or rack.

- F. Install such that joints are tight, with no visible opening between components. Open joints will not be accepted.
- G. Install glazing as specified in Division 08 Section "Glazing."
- H. Entrances: Install to produce smooth operation and tight fit at contact points.
 - 1. Exterior Entrances: Install to produce tight fit at weather stripping and weathertight closure.
 - 2. Field-Installed Hardware: Install surface-mounted hardware according to hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.
- I. Install low expansion spray foam in accordance with manufacturer's recommendations in gaps between aluminum frames and substrate.
- J. Install perimeter joint sealants as specified in Division 07 Section "Joint Sealants" and to produce weathertight installation.
- K. Erection Tolerances: Install aluminum-framed systems to comply with the following maximum tolerances:
 - 1. Location and Plane: Limit variation from true location and plane to 1/8-inch in 12-feet; 1/4-inch over total length.
 - 2. Alignment:
 - a. Where surfaces abut in line, limit offset from true alignment to 1/16-inch.
 - b. Where surfaces meet at corners, limit offset from true alignment to 1/32-inch.
 - 3. Diagonal Measurements: Limit difference between diagonal measurement to 1/8-inch.

3.03 FIELD QUALITY CONTROL

- A. Testing: At the Owner's option, Owner shall retain a qualified independent testing agency to perform field tests. The Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount. Testing Standard shall be per AAMA 503 and the following:
 - 1. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², whichever is greater.
 - 2. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.24 psf.

- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 PROTECTION AND CLEANING

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance.

3.05 ADJUSTING

- A. Entrances: Adjust operating hardware for smooth operation according to hardware manufacturers' written instructions.
 - 1. For doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3-inches from the latch measured to the leading door edge.

END OF SECTION 08 41 13

SECTION 08 44 13 – GLAZED ALUMINUM CURTAIN WALLS

Part 1 General

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes:
 - 1. Aluminum tube framing system with vision glass.
 - 2. Perimeter sealant.
- B. Related Sections:
 - 1. Division 07 Section “Building Insulation” for foam to fill small voids.
 - 2. Division 08 Section “Glazing” for curtain wall glazing.
 - 3. Division 08 Section “Aluminum-Framed Entrances and Storefronts” for complementary system.

1.03 SYSTEM DESCRIPTION

- A. Curtain Wall System: Tubular aluminum sections with self-supporting framing, factory prefinished, insulated vision glass, related flashings, anchorage, and attachment devices.

1.04 PERFORMANCE REQUIREMENTS

- A. Structural Performance:
 - 1. Design pressure as calculated in accordance with applicable code and ASCE 7 for curtain wall sizes and configurations indicated on Drawings.
 - 2. Withstand maximum positive and negative wind pressures acting normal to plane of wall, including building corners determined from design criteria indicated on Drawings.
 - 3. Member Deflection: Maximum 1/175 of span measured at design pressure.
- B. Air Infiltration: Maximum 0.06 cfm/sf of curtain wall area.
 - 1. Test Method: ASTM E283.
 - 2. Test Pressure Differential: 6.24 psf.
- C. Water Leakage: None, with 12 psf minimum test pressure difference.
 - 1. Test Method: ASTM E331.
- D. System Assembly: Accommodate without damage to system, components or deterioration of seals, movement within system, movement between system and perimeter framing components, dynamic loading and release of loads, deflection of structural support framing, and tolerance of supporting components.

- E. Condensation Resistance Factor: When tested in accordance with AAMA 1503.
 - 1. Frame: Not less than 73.
- F. Expansion / Contraction: System to provide for expansion and contraction within system components caused by a cycling temperature range of 170-degrees F over a 12-hour period without causing detrimental effect to system components.
- G. System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.
- H. Not Permitted: Vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system.

1.05 SUBMITTALS

- A. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details and water flow drainage diagrams.
 - 1. Finish: Finish options to include manufacturer's full range of anodized finishes for selection, including at least one light bronze option.
- B. Design Data: Provide framing member structural and physical characteristics, calculations, and dimensional limitations.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.
 - 1. Include shop and field sealants by manufacture and product name, and locate on drawings. Show sealant joint sizes, including tolerances and maximum/minimum joint sizes required.
- D. Samples: Submit (2) frame samples indicating pre-finished aluminum surface, illustrating edge and corner construction details.
- E. Test Reports: Submit substantiating engineering data, test results of previous tests by independent laboratory which purport to meet performance criteria, and other supportive data.
- F. Manufacturer's Certificate: Certify installer is approved by manufacturer.
- G. Manufacturer's Field Services Report:
 - 1. Submit report of observations.
 - 2. Certify installation is complete in accordance with manufacturer's instructions.
 - 3. Indicate supplementary instructions provided for Project specific conditions.

- H. Professional Seal: Provide seal and signature on shop drawings and manual and computer calculations of Professional Engineer responsible for submittal.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with AAMA - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual. AAMA - Aluminum Curtain Wall Design Guide Manual.
- B. Surface Burning Characteristics:
 - 1. Foam Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
- C. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation board.
- D. Source Limitations for Glazed Aluminum Curtain Walls: Obtain from single source from single manufacturer.

1.07 QUALIFICATIONS

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.
- C. Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed where the project is located.

1.08 DELIVERY, STORAGE, AND PROTECTION

- A. Handle Work of this Section in accordance with AAMA - Curtain Wall Manual #10.
- B. Protect prefinished aluminum surfaces with protective wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather. Puncture wrappings at ends for ventilation.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Do not install sealants when ambient temperature is less than 40-degrees F during and 48-hours after installation.

1.10 COORDINATION

- A. Coordinate the Work with installation of Work affecting or adjacent to curtain wall materials including firestopping, vapor retarder placement, custom doors, exterior wall panels, roofing, flashing, skylights, joint sealants and other finishes and building components.

1.11 WARRANTY

- A. System Warranty: Include coverage for complete system for failure to meet specified requirements and failure of operational parts to function normally.
 - 1. Provide five year manufacturer's labor and material warranty.
- B. Glass Warranty: As specified in Section 08 80 00.
- C. Finish Warranty:
 - 1. Anodized Finish: Provide five year manufacturer's warranty.

PART 2 PRODUCTS

2.01 CURTAIN WALL SYSTEM

- A. Manufacturers:
 - 1. Kawneer Co., Inc., Series 1600.
 - 2. Tubelite, Series 400.
 - 3. Vistawall Architectural Products, Series CW-250.
 - 4. EFCO Corp.; Series 5500.
 - 5. United States Aluminum; Series 3250.
- B. Product Description: Glazed aluminum curtain wall, thermally broken with interior tubular section insulated from exterior glass retaining member; matching stops and glass retaining member of sufficient size and strength to provide bite on glass; drainage holes, deflector plates and internal flashings, sub-sill flashing, to accommodate internal weep drainage system; internal mullion baffles to eliminate "stack effect" air movement within internal spaces.
 - 1. Reinforced Mullion: Extruded aluminum cladding with internal reinforcement of aluminum structural section.

2.02 STANDARD STICK TYPE CURTAIN WALL

- A. Mullion Profile:
 - 1. 2-1/2 inches nominal face dimension
 - 2. 6 inches depth
 - 3. Cap Type: 1-inch depth from face of cap to face of glass.
 - 4. Thermally broken with interior tubular section insulated from exterior pressure plate; matching stops and pressure plate of sufficient size and strength to provide bite on glass and infill panels; drainage holes, deflector plates and internal flashings to accommodate

internal weep drainage system; internal mullion baffles to eliminate "stack effect" air movement within internal spaces.

- B. Reinforced Mullion: Profile to match mullion profile with internal reinforcement of shaped steel structural section.
- C. Trim: Pre-finished aluminum sheet trim, closures, and sills to match curtain wall framing, bent to profiles indicated and required for complete sealed system.
- D. Receptors: Provide manufacturer's standard pre-finished jamb receptors where indicated fabricated from same material as framing, sized for curtain wall depth, anticipated movement. Include standard friction inserts and seals.

2.03 COMPONENTS

- A. Extruded Aluminum: ASTM B221 ASTM B221M; 6063 alloy, T5 temper typical, 6061 alloy, T6 temper for extruded structural members.
- B. Glass: Specified in Section 08 80 00.
- C. Glazing Materials: Curtain wall manufacturer's standard types to suit application to achieve weather, moisture, and air infiltration requirements.
- D. Sealant and Backing Materials: Provide sealants and backing materials complying with requirements specified in Section 07 90 00 of types described below.
 - 1. Perimeter Sealants: Urethane, non-sag grade.
 - 2. Sealant Used Within System (Not Used for Glazing): Manufacturer's standard types for specific applications.
- E. Flashings: Minimum 0.032-inch thick aluminum, to match curtain wall mullion sections where exposed.
 - 1. Secure flashings with concealed fastening method.
- F. Firestopping: Specified in Section 07 95 00.
- G. Fasteners: Stainless steel.
- H. Concrete or Masonry Inserts: Cast iron, malleable iron, or ASTM A123 hot-dip galvanized steel inserts.

2.04 ALUMINUM SUB-SILL

- A. **Provide extruded, one-piece sub-sill with end dams at all windows / louvers. Sub-sills shall be set in a bed of sealant.**

2.05 FABRICATION

- A. Fabricate system 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. Arrange fasteners and attachments to ensure concealment from view.
- E. Reinforce framing members for external imposed loads.

2.06 SHOP FINISHING

- A. Clear Anodized Aluminum Surfaces: AA-M12C22A41 non-specular as fabricated mechanical finish, medium matte chemical finish, and Architectural Class I 0.7 mils (0.018 mm) clear anodized coating.
 - 2. Conform to AAMA 611.
 - 3. Finish options to include manufacturer's full range of anodized finishes for selection, including at least one light bronze option.
- B. Apply bituminous paint to concealed metal surfaces in contact with cementitious or dissimilar materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.

3.02 INSTALLATION

- A. Install curtain wall system in accordance with manufacturer 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 and align with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.

- F. Install sill flashings: Turn up ends and edges; seal to adjacent Work to form water tight dam.
- G. Coordinate installation of fire stop at each floor slab edge.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier. Use foam insulation at perimeter of opening to assure gaps and voids are filled at full perimeter of curtain wall installation.
- I. Install glass in accordance with Section 08 80 00.
- J. Install perimeter sealant in accordance with Section 07 90 00.

3.03 ERECTION TOLERANCES

- A. Maximum Variation from Plumb: 0.06-inches every 3-feet non-cumulative or 0.125-inches per 25-feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.
- C. Sealant Space between Curtain Wall Mullions and Adjacent Construction: Maximum of 3/4-inch and minimum of 1/4 inch.

3.04 FIELD QUALITY CONTROL

- A. Testing: At the Owner's option, Owner shall retain a qualified independent testing agency to perform field tests. The Architect shall select curtain wall units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount. Testing Standard shall be per AAMA 503 and the following:
 - 1. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², whichever is greater.
 - 2. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.24 psf.

3.05 CLEANING

- A. Remove protective material from prefinished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

- C. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

3.06 PROTECTION OF INSTALLED CONSTRUCTION

- A. Protect finished Work from damage.

END OF SECTION 08 44 13

SECTION 08 51 13 – ALUMINUM WINDOWS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Drawings for locations of work to be performed.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Fixed / operable aluminum-framed windows.
 - 2. Integral horizontal mini blinds.
- B. Related Sections include the following:
 - 1. Division 08 Section "Glazing" for aluminum window glazing.
 - 2. Division 08 Section "Aluminum Framed Entrances and Storefronts": Work between this section and Storefront section to be coordinated for similar finished results
 - 2. Division 07 Section "Sheet Metal Flashing and Trim" for specifications covering aluminum window flashing installed under this section

1.03 DEFINITIONS

- A. Performance class designations according to AAMA / WDMA / CS 101 / I.S.2 / A440. North American Fenestration Standard (NAFS):
 - 1. HC: Heavy Commercial.
- B. Performance grade number according to AAMA / WDMA / CS 101 / I.S.2 / A440:
 - 1. Design pressure number in pounds force per square foot used to determine the structural test pressure and water test pressure.
- C. Structural Test Pressure: For uniform load structural test, is equivalent to 150 percent of the design pressure.
- D. Minimum Test Size: Smallest size permitted for performance class (gateway test size). Products must be tested at minimum test size or at a size larger than minimum test size to comply with requirements for performance class.

1.04 PERFORMANCE REQUIREMENTS

- A. General: Provide aluminum windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified, and that are of minimum test size indicated below:
1. Size required by AAMA / WDMA / CS 101 / I.S.2 / A440 for type and classification of window units.
 2. Size indicated on Drawings.
- B. Structural Performance: Provide aluminum windows capable of withstanding the effects of the following loads, based on testing units representative of those indicated for Project that pass AAMA / WDMA / CS 101 / I.S.2 / A440, Uniform Load Structural Test:
1. Design Wind Loads: Determine design wind loads applicable to Project from basic wind speed indicated in miles per hour (meters per second) at 33-feet above grade, Importance Factor, and Exposure Category indicated on Drawings; according to ASCE 7, Section 6.5, "Method 2-Analytical Procedure" and "The Kentucky Building Code"; based on mean roof heights above grade.
- C. Air Infiltration: The test specimen shall be tested in accordance with ASTM E283 at a minimum vent size of 48-inches x 32-inches. Air infiltration rate shall not exceed 0.10 cfm / sf at a static air pressure differential of 6.24 psf.
- D. Water Resistance: The test specimen shall be tested in accordance with ASTM E547 and ASTM E331 at a minimum vent size of 48-inches x 32-inches. There shall be no leakage as defined in the test method at a static air pressure differential of 12 psf.
- E. Uniform Load Deflection: With vents closed and locked, a minimum static air pressure difference of 30.09 psf shall be applied in the positive and negative direction in accordance with ASTM E330. The unit shall be evaluated after each load.
- F. Uniform Load Structural Test: A minimum static air pressure difference of 45.14 psf shall be applied in the positive and negative direction in accordance with ASTM E330. The unit shall be evaluated after each load.
- G. Component Testing: Window components shall be tested in accordance with procedures described in AAMA 101 / I.S.2-97.
- H. Thermal Transmittance Test (U-Value): When tested in accordance with AAMA 1503, the conductive thermal transmittance (U-Value) shall not be more than:
1. Project-Out: U-Value not more than .45 BTU / hr /sf / degrees F.
- I. Condensation Resistance Test: When tested in accordance with AAMA 1503, the condensation resistance factor (CRF) shall not be less than:

1. Project-Out: CRF not less than 58 (frame).
- J. Forced Entry Resistance: All windows shall conform to AAMA 1302.5, performance level 10.
- K. Thermal Barrier Tests: Thermal break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.
- L. Thermal Movements: Provide aluminum windows, including anchorage, that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 1. Temperature Change (Range): 120-degrees F, ambient; 180-degrees F material surfaces.

1.05 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, and fabrication methods, dimensions of individual components and profiles, hardware, finishes, and operating instructions for each type of aluminum window indicated.
 1. Description of blind assembly and operation.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other work, operational clearances, installation details, and the following:
 1. Joinery details.
 2. Drainage details.
 3. Weather-stripping details.
 4. Glazing details.
 5. Installation data / requirements.
 6. For installed products indicated to comply with design loads, include structural analysis data prepared by or under the supervision of a qualified professional engineer detailing fabrication and assembly of aluminum windows and used to determine the following:
 - a. Structural test pressures and design pressures from wind loads indicated.
 - b. Deflection limitations of glass framing systems.
 - c. Size, location and spacing of perimeter fasteners.
- D. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.
- E. Qualification Data: For Installer, manufacturer and testing agency.

- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type, class, grade, and size of aluminum window. Test results based on use of downsized test units will not be accepted.
- G. Maintenance Data: For operable window sash, operating hardware, weather stripping, and finishes to be included in maintenance manuals.
- H. Warranty: Special warranty specified in this Section.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: An installer acceptable to aluminum window manufacturer for installation of units required for this Project.
- B. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum windows that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.
- C. Source Limitations: Obtain aluminum windows through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum windows and are based on the specific system indicated.
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- E. Fenestration Standard: Comply with AAMA / WDMA / CS 101 / I.S.2 / A440, "North American Fenestration Standard / Specification for Windows, Skylights and Glass Doors," for definitions and minimum standards of performance, materials, components, accessories, and fabrication. Comply with more stringent requirements if indicated.
 - 1. Provide AAMA-certified aluminum windows with an attached label.
- F. Glazing Publications: Comply with published recommendations of glass manufacturers and with GANA's "Glazing Manual" unless more stringent requirements are indicated.
- G. Pre-installation Conference: Conduct conference at Project site to review methods and procedures related to aluminum windows including, but not limited to, the following:
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review, discuss, and coordinate the interrelationship of aluminum windows with other exterior wall components. Include provisions for structural anchorage, glazing, flashing, weeping, sealants, and protection of finishes.

3. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
- H. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.07 PROJECT CONDITIONS

- A. Field Measurements: Verify aluminum window openings 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 opening dimensions and proceed with fabricating aluminum windows without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to established dimensions.

1.08 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
 - a. Failure to meet performance requirements.
 - b. Structural failures including excessive deflection, water leakage, air infiltration, or condensation.
 - c. Faulty operation of movable sash and hardware.
 - d. Deterioration of metals, other materials, flashing, and metal finishes beyond normal weathering.
 - e. Failure of insulating glass.
 - f. Failure in operation of blinds.
 2. Warranty Period: Ten (10) years from Date of Substantial Completion.
- B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes fail within specified warranty period. Warranty does not include normal weathering.
1. Warranty Period: 10 years from Date of Substantial Completion.
- C. Installation Warranty by Installer: Two (2) Years from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products for Fixed and Project-Out windows that may be incorporated into the Work include the following:
1. EFCO Corporation (Series 450X, Basis of Design).
 2. Kawneer Company, Inc. / Traco
 3. Manko
 4. Peerless Products, Inc.
 5. Winco.

2.02 MATERIALS

- A. Aluminum Extrusions: Extruded aluminum shall be 6063-T5 or T6 alloy and tempered, but not less than 22,000-psi ultimate tensile strength, not less than 16,000-psi minimum yield strength, and not less than 0.125-inch thickness at any location for the main frame and sash members.
1. Finish: To be selected from manufacturer's anodized finishes, including light bronze (tentative selection).
 2. Depth of frame and vent shall not be less than 4-1/2".
- B. Fasteners:
1. Rivets: aluminum or nonmagnetic stainless steel.
 2. Screws for installation: nonmagnetic stainless steel.
 3. Frame components shall be mechanically fastened.
 4. Reinforcement: Where fasteners screw anchor into aluminum less than 0.125-inch thick, reinforce interior with aluminum or nonmagnetic stainless steel to receive screw threads, or provide standard, noncorrosive, pressed-in, splined grommet nuts.
 5. Exposed Fasteners: Unless unavoidable for applying hardware, do not use exposed fasteners.
- C. Anchors, Clips, and Accessories: Nonmagnetic stainless steel with sufficient strength to withstand design pressure indicated.
- D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.
- E. Compression-Type Weather Stripping: Provide compressible weather stripping designed for permanently resilient sealing under bumper or wiper action and for complete concealment when aluminum window is closed.

1. Weather-Stripping Material: Manufacturer's standard system and materials complying with AAMA / WDMA / CS 101 / I.S.2 / A440.
- F. Replaceable Weather Seals: Comply with AAMA 701 / 702.
- G. Glazing Gaskets: Standard glazing gasket shall be a dry glazed elastomer in accordance with ASTM C509-91 and/or expanded cellular glazing tapes conforming to AAMA 810 specification.
- H. Ventilator:
1. All vent extrusions shall be tubular.
 2. Each corner shall be mitered, reinforced with an extruded corner key, hydraulically crimped and "cold welded" with epoxy adhesive.
 3. Each vent shall utilize (2) rows of weather stripping installed in specifically designed dovetail grooves in the extrusion. The exterior gasket will be omitted at the vent bottom rail for project-out vents, allowing pressure to equalize the void between the vents and frame.
 4. The vent shall present a flush appearance with the exterior and interior of the main frame when in the closed position.
- I. Integral horizontal mini blinds:
1. All aluminum windows (fixed and operable) are to include horizontal mini blinds.
 2. Glazing shall be 1" thick insulated unit, as described in Division 08 Section "Glazing".
 3. 1" aluminum blind (color to be selected by Architect) shall be installed to the interior side of the insulated units and a removable framed clear glass panel shall be installed to the interior side of the blind. Provide neoprene (exterior) and EPDM (interior) glazing gaskets for the insulated unit. Provide aluminum glazing beads for the interior glazing panel.
 - a. All tilting of blinds shall be performed without opening the interior panel.
 - b. Blind operation shall be via operator mechanism affixed permanently to installation.
- J. Low expansion spray foam insulation for filling perimeter of window frames:
1. Great Stuff Window & Door by Dow Chemical or approved equal.
 2. Low-pressure foam designed not to bow bend window and door frames.

2.03 ALUMINUM SUB-SILL

- A. Provide extruded, one-piece sub-sill with end dams at all windows / louvers. Sub-sills shall be set in a bed of sealant.**

2.04 GLAZING

- A. Glass and Glazing Materials: Refer to Division 08 Section "Glazing" for glass units and glazing requirements applicable to glazed aluminum window units.
- B. Integral blinds as part of glazing assembly. See passage 2.02, I, above.

2.05 **HARDWARE**

- A. General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with aluminum; designed to smoothly operate, tightly close, and securely lock aluminum windows, and sized to accommodate sash or ventilator weight and dimensions. Do not use aluminum in frictional contact with other metals. Where exposed, provide solid bronze or nonmagnetic stainless steel.
 - 1. Locking mechanism and handles for manual operation shall be cam type and manufactured from a white bronze alloy with a US25D brushed finish, (2) per sash.
 - 2. Operating hardware shall be Anderberg 4-bar friction stainless steel hinges with adjustable friction slide shoe, (2) per vent.
- B. Locks and Latches: Designed to allow unobstructed movement of the sash across adjacent sash in direction indicated and operated from the inside only.
- C. Limit Devices: Provide limit devices designed to restrict sash or ventilator opening.

2.06 **FABRICATION**

- A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.
- B. Fabricate aluminum windows that are re-glazable without dismantling sash or ventilator framing.
- C. Thermally Improved Construction: Fabricate aluminum windows with an integral, concealed, low-conductance thermal barrier; located between exterior materials and window members exposed on interior side; in a manner that eliminates direct metal-to-metal contact. Thermal barrier de-bridge space shall be not less than 1/4".
 - 1. Mechanical fasteners, welded components, and hardware items shall not bridge thermal barriers. Thermal barriers shall align at all frame and vent corners.
 - 2. Provide thermal-break construction that has been in use for not less than three years and has been tested to demonstrate resistance to thermal conductance and condensation and to show adequate strength and security of glass retention.
 - 3. Provide thermal barriers tested according to AAMA 505; determine the allowable design shear flow per the appendix in AAMA 505.
 - 4. Provide hardware with low conductivity or nonmetallic material for hardware bridging thermal breaks at frame or vent sash.
- D. Weather Stripping: Provide full-perimeter weather stripping for each operable sash and ventilator. Weather stripping shall be Santoprene or equal.
- E. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.

- F. Glazing Stops: Provide snap-on glazing stops coordinated with Division 08 Section "Glazing" and glazing system indicated. Provide glazing stops to match sash and ventilator frames.

2.07 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. 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 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Colored Anodized:
 - 1. Finish all exposed areas of aluminum windows and components with electrolytically deposited color in accordance with Aluminum Association Designation AA-M10-C22.
 - 2. Preliminary selection / tentative: Light bronze.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify opening dimensions, levelness of sill plate, and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weathertight window installation.
 - 1. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing windows, hardware, accessories, and other components.

- B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.
- D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.
- E. Adequately anchor to maintain permanent position when subjected to normal movement and loading. Shop drawings to indicate location and size of fasteners to meet wind load requirements.
- F. Install **low expansion** spray foam insulation between window frame (head and jambs) and rough opening material.

3.03 FIELD QUALITY CONTROL

- A. Remove and replace noncomplying aluminum windows and retest as specified above.
- B. Testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirement, if not in compliance with these Specifications.

3.04 ADJUSTING, CLEANING, AND PROTECTION

- A. Adjust operating sashes and ventilators, screens, hardware, and accessories for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts.
- B. Clean aluminum surfaces, including glass, immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- C. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written recommendations.
 - 1. Use extra care in protecting windows during masonry brick cleaning so as to not damage the aluminum finish.
- D. Replace any glass that has been broken, or insulated glass that has lost its seal, prior to Substantial Completion.

- E. After Substantial Completion, replace glass in accordance with Division 08 Section "Glazing", paragraph 1.06, Warranty.

END OF SECTION 08 51 13

SECTION 08 80 00 – GLAZING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 - 1. Windows.
 - 2. Doors.
 - 3. Interior view window lites.
 - 4. Glass for curtain wall and storefront systems.
 - 5. Overhead doors to receive tempered glass.
 - 6. Fire rated glass.
 - 7. Spandrel panels, visible from one side only. (See spandrel visible from 2 sides in 'Related', below.)
- B. Related:
 - 1. Window Graphics on film applied to glass surfaces: See Section 10 14 00 – Building Signage
 - 2. Spandrel visible from 2 sides: See Section 08 41 13 – Aluminum Framed Entrances and Storefronts

1.03 DEFINITIONS

- A. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.
- B. Deterioration of Coated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in metallic coating.
- C. Deterioration of Insulating Glass: Failure of hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1.04 PERFORMANCE REQUIREMENTS

- A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Glass Design: Glass thickness designations indicated are minimums. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
 - 1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:
 - a. Design Wind Loads: Determine design wind loads applicable to Project from basic wind speed indicated in miles per hour at 33-feet above grade, Importance Factor, and Exposure Category indicated on the Drawings; according to ASCE 7, Section 6.5, "Method 2-Analytical Procedure" and The Kentucky Building Code; based on mean roof heights above grade.
 - b. Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not more than 15-degrees off vertical and under wind action.
 - 1) Load Duration: 3-seconds.
 - c. Minimum glass thickness; refer to Glazing Schedule at end of specification.
- C. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120-degrees F, ambient; 180-degrees F, material surfaces.

1.05 SUBMITTALS

- A. Product Data: For each glass product and glazing material indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available for the following:
- C. Samples for Verification:
 - 1. Glass: For each type of glass product indicated, other than monolithic clear float glass, in the form of 12-inch square Samples for glass and of 12-inch long Samples for sealants. Install

- sealant Samples between two strips of material representative in color of the adjoining framing system.
- 2. Color samples for spandrel panels. Selection of full range of manufacturer's available options.
- D. Glazing Schedule: Use same designations indicated on Drawings.
- E. Product Test Reports: For each of the following types of glazing products:
 - 1. Insulating glass.
 - 2. Glazing sealants.
 - 3. Glazing tapes.
 - 4. Glazing gaskets.
- F. Warranties: Special warranties specified in this Section.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
 - 1. Engage an experienced glazier who has completed glazing similar in material, design, and extent to that indicated for Project with a record of successful in-service performance.
- B. Single-Source Responsibility for Glass: Obtain glass from one source for each product indicated below:
 - 1. Primary glass of each (ASTM C 1036) type and class indicated.
 - 2. Heat-treated glass of each (ASTM C 1048) condition indicated.
 - 3. Insulating glass of each construction indicated.
- C. Single-Source Responsibility for Glazing Accessories: Obtain glazing accessories from one source for each product and installation method indicated.
- D. Safety Glass: Products complying with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for Category II materials.
 - 1. Subject to compliance with requirements, provide safety glass permanently marked with certification label of Safety Glazing Certification Council (SGCC) or other certification agency acceptable to authorities having jurisdiction.

- E. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. IGMA Publication for Insulating Glass: SIGMA TM-3000, "Glazing Guidelines for Sealed Insulating Glass Units."
- F. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the Insulating Glass Certification Council.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials to comply with manufacturer's directions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.08 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing materials manufacturer or when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 - 1. Install liquid sealants at ambient and substrate temperatures above 40 deg F.

1.09 WARRANTY

- A. General: 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 will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.
- B. Manufacturer's Warranty on Insulating Glass: Submit written warranty signed by manufacturer of insulating glass agreeing to furnish replacements for insulating glass units that deteriorate as defined in "Definitions" article, f.o.b. point of manufacture, freight allowed Project site, within specified warranty period indicated below. Warranty covers only deterioration due to normal conditions of use and not to handling, installing, protecting, and maintaining practices contrary to glass manufacturer's published instructions.
 - 1. Warranty Period: Manufacturer's standard but not less than 10 years after date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include products specified.
 - 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include:
 - a. Vitro (formerly PPG Industries)
 - b. Oldcastle Glass
 - c. Pilkington Glass
 - d. Guardian
 - e. LOF

2.02 PRIMARY FLOAT GLASS

- A. Annealed Float Glass: ASTM C 1036, Type I (transparent glass, flat), Class 1 (clear) unless otherwise indicated and Quality q3 (glazing select).
- B. Refer to Primary Clear Float Glass Product Data Sheet for Class 1 uncoated tinted glass for monolithic glazing.
- C. Refer to requirements for sealed insulating glass units for performance characteristics of assembled units composed of tinted glass, coated or uncoated, relative to visible light transmittance, U-values, shading coefficient, and visible reflectance.

2.03 HEAT-TREATED FLOAT GLASS

- A. Fabrication Process: By vertical (tong-held) or horizontal (roller-hearth) process, at manufacturer's option, except provide horizontal process where indicated as tongless or free of tong marks.
- B. Uncoated, Clear, Heat-Treated Float Glass: ASTM C 1048, Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select).

2.04 INSULATING GLASS

- A. Sealed Insulating Glass Units: Preassembled units consisting of organically sealed lites of glass separated by dehydrated air spaces complying with ASTM E 774 and with other requirements indicated, including those in Insulating Glass Product Data Sheet at the end of this Section.

1. For properties of individual glass lites making up units, refer to requirements specified elsewhere in this Section applicable to types, classes, kinds, and conditions of glass products comprising lites of insulating glass units Heat strengthened where specified to comply with system performance requirements specified and fully tempered where safety glass is designated or required.
2. Performance characteristics designated for coated insulating glass are nominal values based on manufacturer's published test data for units with lites 6 mm thick and nominal 1/2-inch dehydrated space between lites, unless otherwise indicated.
3. U-values are expressed as Btu/hr x sq. ft. x deg F.

2.05 ELASTOMERIC GLAZING SEALANTS

- A. General: Provide products of type indicated, complying with the following requirements:
1. Compatibility: Select glazing sealants and tapes of proven compatibility with other materials they will contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
 2. Suitability: Comply with sealant and glass manufacturer's recommendations for selecting glazing sealants and tapes that are suitable for applications indicated and conditions existing at time of installation.
 3. Colors: Provide color of exposed joint sealants to comply with the following:
 - a. Match colors indicated by reference to manufacturer's standard designations.
 - b. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.
- B. Elastomeric Glazing Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer indicated that comply with ASTM C 920, including those referencing ASTM classifications for Type, Grade, Class and Uses.

2.06 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tape: Preformed, butyl-based elastomeric tape with a solids content of 100 percent, nonstaining and nonmigrating in contact with nonporous surfaces, with or without spacer rod as recommended by tape and glass manufacturers for application indicated, packaged on rolls with a release paper backing, and complying with AAMA 800.
- B. Expanded Cellular Glazing Tape: Closed-cell, polyvinyl chloride foam tape, factory coated with adhesive on both surfaces, packaged on rolls with release liner protecting adhesive, and complying with AAMA 800 for product 810.5.
- C. Available Products: Subject to compliance with requirements, glazing tape that may be incorporated in the Work include the following:
1. Back-Bedding Mastic Glazing Tape without Spacer Rod:

- a. PTI 303 Glazing Tape (shimless), Protective Treatments, Inc.
 - b. S-M 5700 Poly-Glaze Tape Sealant, Schnee-Morehead, Inc.
 - c. Tremco 440 Tape, Tremco Inc.
 - d. Extru-Seal, Pecora Corp.
 - e. PTI 606 Architectural Sealant Tape, Protective Treatments, Inc.
 - f. Dyna-Seal, Pecora Corp.
 - g. PTI 626 Architectural Sealant Tape, Protective Treatments, Inc.
 - h. S-M 5710 H.P Poly-Glaze Tape Sealant, Schnee-Morehead, Inc.
 - i. SST-800 Tape, Tremco, Inc.
2. Back-Bedding Mastic Glazing Tape With Spacer Rod:
 - a. PTI 303 Glazing Tape (with shim), Protective Treatments, Inc.
 - b. Pre-shimmed Tremco 440 Tape, Tremco, Inc.
 - c. PTI 606 Architectural Sealant Tape, Protective Treatments, Inc.
 3. Expanded Cellular Glazing Tape:
 - a. Norseal V-980 Closed-Cell Glazing Tape, Norton Company.

2.07 GLAZING GASKETS

- A. Dense Compression Gaskets: Molded or extruded gaskets of material indicated below, complying with standards referenced with name of elastomer indicated below, and of profile and hardness required to maintain watertight seal:
 1. Neoprene, ASTM C 864.
 2. EPDM, ASTM C 864.
 3. Silicone, ASTM C 1115.
 4. Thermoplastic polyolefin rubber, ASTM C 1115.
 5. Any material indicated above.
- B. Soft Compression Gaskets: Extruded or molded closed-cell, integral-skinned gaskets of material indicated below, complying with ASTM C 509, Type II, black, and of profile and hardness required to maintain watertight seal:
 1. Neoprene.
 2. EPDM.
 3. Silicone.
 4. Thermoplastic polyolefin rubber.
 5. Any material indicated above.
- C. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include the following companies.
 1. Preformed Gaskets:
 - a. Advanced Elastomer Systems, L.P.

- b. Schnee-Morehead, Inc.
- c. Tremco, Inc.

2.08 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonstaining, nonextruding, nonoutgassing, strips of closed-cell plastic foam of density, size, and shape to control sealant depth and otherwise contribute to produce optimum sealant performance.
- G. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistive rating.

2.09 FABRICATION OF GLASS AND OTHER GLAZING PRODUCTS

- A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine glass framing, with glazier present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, offsets at corners.
 - 2. Presence and functioning of weep system.
 - 3. Minimum required face or edge clearances.
 - 4. Effective sealing between joints of glass-framing members.

- B. Do not proceed with glazing until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings that are not firmly bonded to substrates.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the film installation under the project conditions.

3.03 GLAZING, GENERAL

- A. Comply with combined recommendations of manufacturers of glass, sealants, gaskets, and other glazing materials, except where more stringent requirements are indicated, including those in referenced glazing publications.
- B. Glazing channel dimensions as indicated on Drawings provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.
- C. Protect glass from edge damage during handling and installation as follows:
 - 1. Use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass lites with flares or bevels on bottom horizontal edges so edges are located at top of opening, unless otherwise indicated by manufacturer's label.
 - 2. Remove damaged glass from Project site and legally dispose of off site. Damaged glass is glass with edge damage or other imperfections that, when installed, weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.
- E. Install elastomeric setting blocks in sill rabbets, sized and located to comply with referenced glazing standard, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass sizes larger than 50 united inches (length plus height) as follows:
 - 1. Locate spacers inside, outside, and directly opposite each other. Install correct size and spacing to preserve required face clearances, except where gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and comply with system performance requirements.

2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking to comply with requirements of referenced glazing publications, unless otherwise required by glass manufacturer.
- I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- K. Square cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.04 TAPE GLAZING

- A. Position tapes on fixed stops so that when compressed by glass their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously but not in one continuous length. Do not stretch tapes to make them fit opening.
- C. Where framing joints are vertical, cover these joints by applying tapes to heads and sills first and then to jambs. Where framing joints are horizontal, cover these joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until just before each lite is installed.
- F. Apply heel bead of elastomeric sealant.
- G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.
- I. Trim excess tape glazing to be flush with stop.

3.05 GASKET GLAZING (DRY)

- A. Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit openings exactly, with stretch allowance during installation.

- B. Secure compression gaskets in place with joints located at corners to compress gaskets producing a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- C. Install gaskets so they protrude past face of glazing stops.

3.06 SEALANT GLAZING (WET)

- A. Install continuous spacers between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel weep systems until sealants cure. Secure spacers in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass. Install pressurized gaskets to protrude slightly out of channel to eliminate dirt and moisture pockets.

3.07 PROTECTION AND CLEANING

- A. Protect glass from breakage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for build-up of dirt, scum, alkali deposits, or stains, and remove as recommended by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents and vandalism, during construction period.
- E. Wash glass on both faces in each area of Project not more than 4 days prior to date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.
- F. For cleaning of applied film, follow manufacturer's recommendations.

SCHEDULE OF PRODUCTS USED:

PRODUCT DATA SHEET 1 – PRIMARY CLEAR FLOAT:

- A. Primary Clear Float Glass Designation, where indicated.
- B. Nominal Performance Characteristics are as indicated below:
 - 1. Visible Light Transmittance: 90% Minimum

PRODUCT DATA SHEET 2 – INSULATING GLASS (STANDARD):

- A. Passive Solar Low-E Insulating-Glass Units:
 - 1. Overall Unit Thickness: 1" for windows and 3/4" for exterior doors
 - 2. Thickness of Each Lite: 1/4"
 - 3. Interspace Content: Argon gas
 - 4. Outdoor Lite: Clear glass with Low-E coating on second surface.
 - a. Annealed, Kind HS (heat strengthened), or Kind FT (fully tempered); as required.
 - 5. NFRC U-Factor when insulated with Solarban 60: 0.26 - 0.28
 - 6. NFRC SHGC when insulated with Solarban 60: 0.19 – 0.27
 - 7. Indoor Lite: Class 1 (clear) float glass.
 - a. Annealed, Kind HS (heat strengthened), or Kind FT (fully tempered); as required.
 - 8. Nominal Performance Characteristics of Solarban 60 are as indicated below:
 - a. Visible Light Transmittance: 70%
 - b. Visible Light Reflectance, int 12%
 - c. Visible Light Reflectance, ext 11%
 - d. Summer Daytime U-Value: .24
 - e. Winter Nighttime U-Value: .29
 - f. Solar Heat Gain Coefficient: .39
 - g. Light to Solar Gain: 1.79

PRODUCT DATA SHEET 3 – FIRE RATED GLASS:

- A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are classified and labeled by UL, for fire ratings indicated, based on testing according to NFPA 252. Assemblies must be factory-welded or come complete with factory-installed mechanical joints and must not require job site fabrication.

- B. Fire-Rated Window Assemblies: Assemblies complying with NFPA 80 that are classified and labeled by UL, for fire ratings indicated, based on testing according to NFPA 257. Assemblies must be factory-welded or come complete with factory-installed mechanical joints and must not require job site fabrication.
- C. Listings and Labels - Fire Rated Assemblies: Under current follow-up service by Underwriters Laboratories maintaining a current listing or certification. Label assemblies accordance with limits of manufacturer's listing.
- D. Provide standard five-year manufacturer warranty.
- E. Fire Rating Requirements
 - 1. Duration -- Doors: Capable of providing a fire rating for 90 minutes.
 - 2. Duration -- Window Assembly: Capable of providing a fire rating for 90 minutes.
 - 3. Duration -- Opening Applications in fire partitions or area separation walls and corridors where opening protection is specified: Capable of providing 90-minute rating.
- F. Design Requirements:
 - 1. Dimensions -- Window Assembly:
 - a. Perimeter framing face dimension: 2 3/4-inch at head, sill and jamb.
 - b. Horizontal and/or vertical mullions: 3 9/16-inch on the face.
 - c. Depth of perimeter and mullion: 1 15/16-inch.
- G. Fire Rated Glazing: ASTM C 1036 and ASTM C 1048; composed of specially tempered glazing material.
- H. Thickness of Glazing Material: 3/16" Standard Grade FireLite
- I. Approximate Visible Transmission: Varies with thickness (approximate range 88 percent).
- J. Logo: Each piece of fire-rated glazing shall be labeled with a permanent logo including name of product, manufacturer, testing laboratory (UL® only), fire rating period, safety glazing standards, and date of manufacture.
- K. Performance: Glass must be rated to stop fire from either direction and must meet all testing requirements including the required hose-stream test (where fire-rating exceeds 20 minutes).
- L. Field glaze door and frame assemblies.
- M. Fabrication Dimensions: Fabricate to fire-rated field dimensions.
- N. Obtain approved shop drawings prior to fabrication.
- O. Follow manufacturer's written instructions and approved shop drawings.

- P. Install fire safing / fire stopping at edges of system.
- Q. Install glazing in strict accordance with fire rated glazing material manufacturer's specifications.
 - 1. Field cutting or tampering is not permissible.
- R. Limited to minor repair of small scratches. Use only manufacturer's recommended products.
 - 1. Such repairs shall match original finish for quality or material and view.

PRODUCT DATA SHEET 3 - INSULATING SPANDREL GLASS (STANDARD):

- A. Spandrel-Glass Units, visible 1 side only:
 - 1. Thickness of Each Lite: 1/4"
 - 2. Class 1 (clear) float glass, ICG Opaci-Coat, back surface
 - a. Kind HS (heat strengthened), or Kind FT (fully tempered); as required.
 - b. Coating Minimum of 3.5 mils (Triple Pass)
 - d. Custom Color, not as selected from Manufacturer's Standard Colors

END OF SECTION 08 80 00

SECTION 09 29 00 – GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Drawings for locations of work to be performed.

1.02 SUMMARY

- A. Section includes:
 - 1. Metal stud wall framing.
 - 2. Metal soffit and bulkhead framing.
 - 3. Suspended hard surfaced ceilings.
 - 4. Gypsum board and joint treatment.
 - 5. Acoustic insulation.

1.03 PERFORMANCE REQUIREMENTS

- A. Stud Selection: Select stud thickness so unbraced span does not exceed heights permitted by the Steel Stud Manufacturers Associations (SSMA) with maximum deflection of 1/360 for 5 psf uniform load.
- B. Acoustic Attenuation for above restroom ceilings.

1.04 SUBMITTALS

- A. Shop Drawings:
 - 1. Indicate details associated with suspended ceilings.
- B. Product Data:
 - 1. Submit data on metal framing, gypsum board, joint tape; and acoustic accessories.
 - 2. Indicate maximum unbraced height permitted for each stud gauge and yield strength.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with the following Gypsum Association reference standards:
 - 1. GA-214 - Recommended Specification: Levels of Gypsum Board Finish.
 - 2. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.
 - 3. GA-600 - Fire Resistance Design Manual.
- B. Fire Rated Construction: Rating as indicated on Drawings.
 - 1. Tested Rating: Determined in accordance with ASTM E-119.

1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.
- C. Design partitions and ceilings under direct supervision of professional engineer experienced in design of this Work and licensed at Project location.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Metal Framing Manufacturers:
 - 1. Current member of SSMA.
- B. Available Gypsum Board and Joint Treatment Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Georgia Pacific
 - 2. Lafarge North America
 - 3. National Gypsum
 - 4. United States Gypsum Company
- C. Abuse-Resistant Gypsum Board:
 - 1. Subject to compliance with requirements, provide basis of design product or a comparable product by one of the following manufacturers:
 - a. Georgia Pacific
 - b. Lafarge North America
 - c. National Gypsum Company
 - d. United States Gypsum Company
- D. Acoustic Insulation Manufacturers:
 - 1. CertainTeed; Thermafiber Sound Attenuation Fire Blankets (SAFB) or CertaPro AcoustaTherm Batts.
 - 2. Johns Manville; MinWool-1200 Sound Attention Fire Batts or Sound Control Batts.
 - 3. Owens Corning; Sound Attenuation Batts (Mineral Wool) or Sound Attenuation Batts.
 - 4. Thermafiber; Thermafiber Sound Attenuation Fire Blankets (SAFB).

2.02 INTERIOR GYPSUM BOARD

- A. Comply with ASTM C-36 / C-36M or ASTM C-1396 / C-1396M, as applicable to type of gypsum board indicated and whichever is more stringent.

- B. General Use, High Impact applications: **from floor up to 8' a.f.f.**
1. Basis-of-Design Product: National Gypsum Hi-Impact XP Wallboard system or a comparable product by one of the manufacturers listed above. ASTM C-36, manufactured to produce greater resistance to surface indentation and through penetration than standard gypsum panels. **Use board with color facing paper.**
 2. Available Manufacturers: Subject to compliance with requirements, provide the basis of design product or a comparable product by one of the Available Manufacturers listed in the Gypsum Board Assemblies Article above.
 3. Thickness: 5/8-inch.
 4. Core: Type X
 4. Long Edges: Tapered and featured (rounded or beveled) for prefilling.
 5. Additional applicable testing for impact-resistant material:
 - a. Surface Abrasion – Modified ASTM D-4977 – Mean Depth of Abrasion: 0.015”.
 - b. Surface Indentation Resistance – Modified ASTM D-5420: Mean Depth of Abrasion: 0.114”.
 - c. Single Drop Soft Body Impact Test – Modified ASTM E-695 – ft/lbs required to penetrate: equal/greater than 540.
 - d. Progressive Soft Body Impact Test – Modified ASTM E-695 – ft/lbs required to penetrate: equal/greater than 420.
 - e. Hard Body Impact Test – Ft/lbs required to penetrate: equal/greater than 160.
- C. Low-impact application: **from 8' a.f.f. up to top of condition shown**
1. Type X
 2. Thickness: 5/8-inch.
 3. Long Edges: Tapered and featured (rounded or beveled) for pre-filling.
- D. **Note that it is acceptable to use standard Type X above ceiling as long as the abuse-resistant board is not the same color. If the abuse-resistant board provided is the same color as the Type X, then abuse-resistant is to be used everywhere (including above 8' a.f.f.)**
- E. Ceiling application: Manufactured to have more sag resistance than regular-type gypsum board.
1. Thickness: 5/8-inch.
 2. Long Edges: Tapered.
 3. Classification: Type X

2.03 FRAMING MATERIALS

- A. Studs and Tracks: ASTM C-645; galvanized sheet steel, size as indicated on Drawings, 'C' shape with the following minimum base metal thicknesses:
1. Studs: Minimum 20-gauge / 33 mils, yield stress, $F_y = 33$ ksi.
 2. Studs and tracks with thicknesses equivalent to those specified are permitted, provided structural properties meet or exceed properties of studs with specified thickness.
- B. Deep Leg Deflection Track: ASTM C-645 top runner with 2-1/2” or greater deep flanges, 30 mils, 20-gauge, 33 ksi.

- C. Furring, Framing and Accessories: ASTM C-645.
- D. Fasteners for Framing: ASTM C-1513.
- E. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

2.05 ACCESSORIES

- A. Acoustic Insulation: ASTM C-665, Type I, unfaced semi rigid mineral fiber or fiberglass batt type, thickness indicated on Drawings, friction fit, with maximum flame/smoke properties of 25/450 in accordance with ASTM E-84.
- B. Metal Trim: ASTM C-1047; hot-dipped galvanized steel; with or without paper facing.
 - 1. Corner beads.
 - 2. Edge Beads: Profile to suit application.
 - 3. Expansion joints.
- C. Joint Materials:
 - 1. Gypsum Board: ASTM C-475 / C-475M; reinforcing tape, joint compound, and water.
- D. Fasteners for Gypsum Board:
 - 1. Metal Framing 33-mils Thick and Less: ASTM C-1002, Type S.
 - 2. Metal Framing Greater than 33-mils Thick: ASTM C-954.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that site conditions are ready to receive work and opening dimensions are as indicated on Drawings.

3.02 INSTALLATION

- A. Metal Stud Framing Installation:
 - 1. Install framing studs in accordance with GA-216 and GA-600.
 - 2. Framing Spacing: 16" o.c.
 - 3. Extend studs minimum 6-inches above ceilings, unless otherwise specified or otherwise indicated on Drawings.
 - a. Laterally brace studs within 3-inches of top track.
 - b. Do not attach metal stud runner track to the metal roof deck. Provide support from structural members only.
 - 4. Extend stud framing through the ceiling to the deck (roof or floor) above for fire rated partitions, acoustically rated partitions, and other partitions indicated on Drawings.

- a. Provide deep leg deflection track as top runner.
 - b. Maintain clearance under structural building members to avoid deflection transfer to studs.
 - c. Laterally brace studs within 12-inches of top track.
 - d. Do not fasten studs to top track.
5. Door Opening Framing: Install a pair of fire treated studs from floor to deck (or top plate) at door frame jambs. Install stud tracks on each side of opening and between studs and adjacent studs. Install fire treated header at frame head.
6. Blocking: Bolt or screw steel channels to studs. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, handrails, grab bars, and other fittings and fixtures supported by gypsum board partitions.
- B. Wall Furring Installation:
1. Erect wall furring for direct attachment to concrete masonry walls.
 2. Erect furring channels vertically; space maximum 16-inches o.c. unless indicated otherwise, 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.
 3. Erect metal stud framing tight to concrete masonry walls, attached by adjustable furring brackets.
 4. Fireblock furred spaces at fire rated walls maximum 10-feet on center horizontally and vertically in accordance with applicable code.
- C. Furring For Fire Ratings: Install furring as required for fire resistance ratings indicated and to GA-600 requirements.
- D. Acoustic Accessories Installation:
1. Comply with ASTM C-919 and manufacturer's instructions to achieve STC ratings indicated on Drawings.
 2. Place acoustic insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.
 3. Close off sound flanking paths around or through gypsum board assemblies including sealing partitions above acoustic ceilings.
- E. Gypsum Board Installation:
1. Install gypsum board in accordance with GA-216 and GA-600.
 2. Erect single layer gypsum board vertically, with edges occurring over firm bearing.
 3. Double Layer Applications:
 - a. Secure second layer to first with fasteners.
 - b. Place second layer parallel to first layer. Offset joints of second layer from joints of first layer.
 4. At stairwell and other walls extending for heights greater than one floor, install gypsum board horizontally with ends staggered and occurring over framing. Install horizontal control joint at floor lines.

5. Use screws when fastening gypsum board to metal furring or framing.
 6. Place control joints consistent with lines of building spaces as indicated and at the following spacing when not indicated:
 - a. Maximum Length Between Control Joints: 30- feet.
 - b. Maximum Ceiling Area Contained Between Control Joints: 900 sf.
 - c. At corners of door heads, at each jamb.
 7. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials and locations as indicated.
- F. Joint Treatment:
1. Finish in accordance with the following GA-214 Levels:
 - a. Level 1: None.
 - b. Level 2: Wall surfaces above finished ceilings, concealed from view.
 - c. Level 3: None.
 - d. Level 4: Wall and ceiling surfaces exposed to view.
 - e. Level 5: None.
 2. Joints Exposed to View: Feather coats on to adjoining surfaces so that camber is maximum 1/32-inch.
 3. Note that, because because of the change in drywall type at the 8'-0" a.f.f. level, Contractors should expect and plan for instances where greater attention to the finishing at the transition between the two drywall types will be necessary in order for a satisfactory finished condition to be achieved.

3.03 ERECTION TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8-inch in 10-feet in any direction.

END OF SECTION 09 29 00

SECTION 09 30 00 – TILE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Drawings for locations of work to be performed.

1.02 DEFINITIONS

- A. Tile includes ceramic surfacing units made from clay or other ceramic materials. The types of work of this Section include:
 - 1. Ceramic Floor Tile
 - 2. Tile Base

1.03 QUALITY ASSURANCE

- A. Tile Manufacturing Standard: TCA 137.1. Furnish tile complying with Standard Grade requirements, unless otherwise indicated.
- B. Proprietary Materials: Handle, store, mix and apply proprietary setting and grouting materials in compliance with manufacturer's instructions.
 - 1. Provide materials obtained from one source for each type of color of tile, grout and setting material.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical information and installation instructions for materials required, except bulk materials. Include certifications and other data to show compliance with these Specifications.
- B. Samples:
 - 1. For initial selection of colors, submit manufacturer's color charts consisting of actual tiles or sections of tiles showing full range of colors available, for each type of tile specified. Include samples of grout and accessories requiring color selection.

1.05 PRODUCT HANDLING

- A. Deliver packaged materials and store in original containers with seals unbroken and labels intact until tie of use, in accordance with manufacturer's instructions.

1.06 JOB CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation in accordance with referenced standards and manufacturer's printed recommendations.

PART 2 PRODUCTS

2.01 TILE PRODUCTS

- A. Available Manufacturers:
 - a. Dal-Tile Corp
 - b. Louisville Tile
 - c. American Olean
- B. Ceramic Tile F-2: Daltile Color Body Porcelain, 2" x 2", Desert Gray Speckle D200
- C. Ceramic Tile Base B-2: Daltile Color Body Porcelain, Build-up Base MB-5A, Desert Gray Speckle D200
- D. Ceramic Tile Base B-3: Daltile Color Body Porcelain, 6" x 12", Trend Grey EX03
- E. Unglazed Quarry Tile
 - 1. Provide square-edges flat tile complying with the following requirements:
 - a. Wearing surface: non-abrasive
 - b. Nominal facial dimensions: 6-inch x 6-inch
 - c. Nominal thickness: 1/2"
 - d. Face: Plain
 - e. Color: Match existing
 - f. Square edge: No pillow edges
- F. Trim and Special Shapes: Rounded external corners and trim shapes, of same material and finish as base.

2.02 MORTAR AND GROUT

- A. Thin-Set Cement Mortar (for ceramic tile): latex modified portland cement mortar; ANSI A-118.4.
- B. Thick-Set Cement Mortar (for quarry tile): ANSI A-108.1.
- C. Latex-Portland Cement Grout: Compound composed of portland cement with latex additive for a more flexible and less permeable grout. Color as selected by Architect from manufacturer's standard colors.

1. Provide product with latex additive which is compatible with latex additive in latex-portland cement mortar.
2. Products offered by manufacturers to comply with requirements, include the following:
 - a. TEC (Basis of Design)
 - b. Latex Modified Floor Grout: L&M-Surco Mfg., Inc.
 - b. Laticrete Dry Bond: Laticrete International, Inc.
 - c. Custom Building Products

2.03 MISCELLANEOUS MATERIALS

- A. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar and grout products; or easily removable after grouting is completed without damaging grout or tile.
 1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 degrees F 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 temporary protective coating for tile.
- D. Metal Trim: Schluter Systems (Louisville Tile), Dilex-Ahka, Satin Anodized Aluminum
- E. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specially approved for materials and installations indicated by tile and grout manufacturers.
- D. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints that does not change color or appearance of grout.
 1. Products:
 - a. MAPEI Corp.; KER 004, Keraseal Penetrating Sealer for unglazed grout and tile
 - b. W.R. Bonsal Company; Grout Sealer
 - c. Bostik; CermaSeal Grout Sealer
 - d. C-Cure; Penetrating Sealer 978

PART 3 EXECUTION

3.01 INSPECTION

- A. Examine surfaces to receive tile work and conditions under which tile will be installed. Do not proceed with tile work until surfaces and conditions comply with requirements indicated in referenced tile installation standard.
- B. Examine substrates, areas, and conditions 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; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
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.
3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

3.02 INSTALLATION, GENERAL

- A. ANSI Tile Standard: Comply with applicable parts of ANSI 108 series of tile installation standards included under "American National Standard for the Installation of Ceramic Tile".
- B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation", comply with TCA installation methods indicated or, if not otherwise indicated, as applicable to installation conditions shown.
- C. Extend tile work into recess 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. Lay-out room so as not to have cuts less than half a tile.
- 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 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 joints widths, unless otherwise shown. Provide uniform joint widths, unless otherwise indicated.
- F. Expansion Joints: Locate expansion joints and other sealant filled joints, including control, contraction and isolation joints, where indicated, or if not indicated, at spacing and location recommended in TCA "Handbook for Ceramic Tile Installation", and approved by Architect. Do not saw-cut joints after installing tiles.
 1. Locate joints in tile surfaces directly above joints in concrete substrates.
 2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."
- G. Grout tile to comply with referenced installation standards, using grout materials indicated.
 1. Mix and install proprietary components to comply with grout manufacturer's directions.
- H. Lay tile in flat and consistent plane with no waves and no tiles 'proud' of adjacent tile.

- I. Cut edges or exposed sharp conditions are to be ground smooth.
- J. Broken or chipped tiles are to be removed and replaced.

3.04 FLOOR INSTALLATION METHOD

- A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCA installation methods and ANSI A108 Series of tile installation standards.
 - 1. For installations indicated below, follow procedures in ANSI A108 Series tile installation standards for providing 95 percent mortar coverage.
 - a. Tile floors in wet areas.
 - 1) Where floor drains are provided, tile bed shall be prepared and tile installed to provide minimum $\frac{1}{4}$ per 1'-0" slope to the floor drain.
 - b. Tile floors composed of rib-backed tiles.
- A. Ceramic Tile: Install tile to comply with requirements indicated below for setting bed methods, TCA installation methods related to types of subfloor construction and grout types:
 - 1. Thick Set-Portland Cement Mortar: ANSI A-108.1
 - a. Bond Coat: Portland cement paste on plastic bed; or thin-set portland cement on cured bed, ANSI A-108.5, at Contractor's option.
 - b. Concrete Subfloors, Interior: TCA F121
 - c. Grout: Latex-Portland Cement
 - d. Waterproofing and Antifracture Membrane:
 - 1) Laticrete International - No. 9235
 - 2) Mapro - PRP 315
 - 3) Mer-Kote Products - BFP Membrane
 - 2. Thin Set-Portland Cement Mortar: ANSI A-108.5 / A-118.4.
 - a. Bond Coat: Portland cement paste on plastic bed; or thin-set portland cement on cured bed, ANSI A-108.5, at Contractor's option.
 - b. Concrete Subfloors, Interior: TCA F113
 - c. Grout: Latex-Portland Cement
- B. Quarry Tile: Install tile to comply with requirements indicated below for setting bed methods, TCA installation methods related to types of subfloor construction and grout types:
 - 1. Thick Set-Portland Cement Mortar: ANSI A-108.1
 - a. Bond Coat: Portland cement paste on plastic bed; or thin-set portland cement on cured bed, ANSI A-108.5, at Contractor's option.
 - b. Concrete Subfloors, Interior: TCA F121
 - c. Grout: Latex-Portland Cement
 - d. Waterproofing and Antifracture Membrane:
 - 1) Laticrete International - No. 9235

- 2) Mapro - PRP 315
- 3) Mer-Kote Products - BFP Membrane

3.05 CLEANING AND PROTECTION

- A. Cleaning: Upon completion of placement and grouting, clean all tile surfaces so they are free of foreign matter.
 1. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but not sooner than (14) days after installation. Protect metal surfaces, cast and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
- B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, or otherwise defective work.
- C. Sealer for Grout: Apply sealer to cementitious grout joints according to grout sealer manufacturer written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer that has gotten on tile faces by wiping with soft cloth.
- D. Protection: 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 damage and wear.
 1. Prohibit foot and wheel traffic from using tiled floors for at least three days after grouting is completed.
 2. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

3.06 MAINTENANCE STOCK

- A. Provide (1) unopened and any partial boxes of each ceramic tile, ceramic base, quarry tile, and quarry tile base to Owner at completion of the Project.

END OF SECTION 09 30 00

SECTION 09 51 13 - ACOUSTICAL LAY-IN CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes acoustical and other panel ceiling materials and exposed suspension systems for ceilings.

1.2 RELATED

- A. See Section 09 29 00 – Gypsum Board for gypsum ceiling edge trim/fascia.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Coordination Drawings: Drawn to scale and coordinating acoustical panel ceiling installation with hanger attachment to building structure and ceiling mounted items:
- C. Samples: For each exposed finish.
- D. Product test reports.
- E. Research/evaluation reports.
- F. Maintenance data.

1.4 QUALITY ASSURANCE

- A. Acoustical Testing Agency Qualifications: An independent testing laboratory or an NVLAP-accredited laboratory.
- B. Fire-Test-Response Characteristics:
 - 1. Surface-Burning Characteristics: Acoustical panels complying with ASTM E 1264 for Class A materials, when tested per ASTM E 84.
 - a. Smoke-Developed Index: 450 or less.
- C. Seismic Standard: Comply with the following:
 - 1. ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."

1.5 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. Full-size panels equal to 2% of quantity installed.
 - 2. Suspension System Components: Quantity of each exposed component equal to 2% of quantity installed.

PART 2 - PRODUCTS

2.1 ACOUSTICAL PANEL CEILINGS, GENERAL

- A. Acoustical Panel Standard: Comply with ASTM E 1264.
- B. Metal Suspension System Standard: Comply with ASTM C 635.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- D. Wire Hangers, Braces, and Ties: Zinc-coated carbon-steel wire; ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 - 1. Size: Select wire diameter so its stress at 3 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-diameter wire.
- E. Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.

2.2 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING (ACT-1):

- A. Basis-of-Design Product: Subject to compliance with requirements, provide USG Radar Clima-Plus (Item No 2215) or a comparable product by one of the following:
 - 1. Armstrong
 - 2. Certainteed
- B. Classification: Provide panels complying with ASTM E 1264 for type and form as follows:
 - 1. Type and Form: Type III; Form 2, Pattern C, E.
- C. Color: White.
- D. LR: Not less than 0.84
- E. NRC: Not less than 0.55
- F. CAC: Up to 35.
- G. Edge/Joint Detail: Square
- H. Thickness: 5/8 inch.
- I. Modular Size: 24 by 24 inches, as shown.
- J. Sag-Resistant Tile.
- K. Antimicrobial materials.
- L. Washable (ASTM D4828), Soil-resistive
- M. Recycled content: 48-51%
- N. Accessories: Provide hold-down clips at tiles in all vestibules.

2.3 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING (ACT-2): Restroom Use

- A. Basis-of-Design Product: Subject to compliance with requirements, provide USG Sheetrock Lay-in Ceiling panel ClimaPlus Vinyl (Item No 3260) panel or a comparable product by one of the following:
 - 1. Armstrong
 - 2. Certainteed
- B. Vinyl coated lay-in ceiling panel, sealed edges, meets USDA/FSIS requirements for food processing.
- C. Color: White.
- D. LR: Not less than 0.77
- E. CAC: Not less than 35.
- F. Edge/Joint Detail: Square
- G. Thickness: ½”
- H. Modular Size: 24 by 24 inches, as shown.
- I. Washable (ASTM D4828), Soil-resistive, scratch (Hess rake test) and impact resistant (ASTM D1037)
- J. Recycled content: 80%
- K. Accessories: Provide hold-down clips at tiles in all restrooms

2.4 FRP PANEL CEILING (ACT-3): Kitchen Use

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Sequentia StructoGlas Embossed FRP ceiling panels, or a comparable product by one of the following:
 - 1. USG Interiors, Inc.
 - 2. Armstrong World Industries, Inc.
 - 3. Chicago Metallic Corporation
- B. Classification: Provide panels complying with ASTM E-84 for type and form as follows:
 - 1. Type and Form: FRCP embossed, Class A fiberglass reinforced plastic ceiling panels.
- C. Color: White.
- D. Edge/Joint Detail: Square.
- E. Thickness: 0.10 inch.
- F. Modular Size: 24 by 24 inches, as shown.

2.5 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING (For use with ACT-2 and ACT-3)

- A. Basis-of-Design Product: Subject to compliance with requirements, provide USG Interiors, Inc.; Donn ZXLA or a comparable product by one of the following:

1. Armstrong
 2. Chicago Metallic Corporation
- B. 15/16" galvanized steel system made of painted hot-dipped galvanized steel with an aluminum face, polyester paint finish, and stainless steel clip for corrosion protection: Grid components are connected with plug-in positive-lock insertion for quick installation and removal without tools. Standard cross tees have offset ends that rest on main tees for better appearance without sagging or twisting. The cross tees also cantilever during installation without dropping out. Special corrosion proof, stainless steel locking tee ends provide pullout tension values in excess of 200 lbs. A painted, hot-dipped galvanized M7Z wall molding is recommended for maximum system performance.
1. Structural Classification: Intermediate-duty system.
 2. End Condition of Cross Runners: Override (stepped) type.
 3. Tee ends: corrosion proof, stainless steel locking, to provide pull-out tension values in excess of 200 lbs.
 4. Aluminum-capped grid system, suitable for use in food processing areas, meets USDA/FSIS requirements
- C. Accessories: Provide outside corner bullnose trim for use at all CMU bullnose conditions.

2.6 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING (For use with ACT-1)

- A. Basis-of-Design Product: Subject to compliance with requirements, provide USG DX or a comparable product by one of the following:
1. Armstrong
 2. Chicago Metallic Corporation
 3. Roxul/Rockfon
- B. Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 coating designation, with prefinished 15/16-inch-wide metal caps on flanges.
1. Structural Classification: Intermediate-duty system.
 2. End Condition of Cross Runners: Override (stepped) type.
 3. Cap Material: Steel cold-rolled sheet.
 4. Color: White
- C. Accessories: Provide outside corner bullnose trim for use at all CMU bullnose conditions.

2.7 CEILING SYSTEM TRIM

- A. Basis of Design Product, Edge Channel at higher 'cloud' ceiling areas: Compasso, 4", by USG, suspended from structure using aircraft cable or manufacturer's recommended alternative.
1. Acceptable manufacturer: Armstrong
 2. Finish: Match ceiling grid.
 3. Provide necessary corners and other associated fittings for complete finished installation shown.

PART 3 - EXECUTION

3.1 VERIFICATION

- A. Verify that ceiling elevation shown is minimum 8" below building structure to maintain clearances for systems. If this clearance is not available, notify Architect before proceeding.

3.2 INSTALLATION

- A. Comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. 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.
 - 1. The majority of tiles along any ceiling edge shall be provided with a minimum panel width of 6". Where the shape of a space requires that incidental panel widths of less than 6" are required, they will be acceptable.
 - 2. Support wires to be installed at ends of each main tee at a maximum of 6" from wall.
 - 3. Support wires to be installed at either side of each splice, maximum 6" from splice.
 - 4. Support wires to be installed throughout grid at maximum of 4'-0" o.c.
- C. Suspend ceiling hangers from building's structural members, plumb and free from contact with insulation or other objects within ceiling plenum. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers, use trapezes or equivalent devices. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 - 1. All ceiling support wires to be attached to building structure. Do not hang from roof deck bulb tees or joist bridging. Do not support ceilings directly from permanent metal forms or floor deck; anchor into concrete slabs or from bar joists. Do not attach hangers to steel deck tabs or to steel roof deck.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
 - 1. Install outside corner bullnose trim at all CMU bullnose conditions.
- E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. 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.
- G. Install acoustical clouds according to manufacturer's guidelines.

END OF SECTION 09 51 13

SECTION 09 65 13 - RESILIENT WALL BASE AND ACCESSORIES

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. Resilient wall base.
 - 2. Molding accessories.
 - 3. Rubber stair treads.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of product indicated.
- C. Samples for Verification: For each type of product indicated, in manufacturer's standard-size Samples but not less than 2" long, of each resilient product color, texture, and pattern required.

1.4 QUALITY ASSURANCE

- A. The wall base and trim shall be constructed of first quality materials, properly vulcanized, and shall be smooth and free from imperfections which detract from its appearance. The base shall conform fully to all the requirements of Standard Specification F-1861, Type TS (Thermoset Vulcanized Rubber), Group1 (solid).

1.5 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 or more than 90 deg F.

1.6 PROJECT CONDITIONS

- A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After post installation period, maintain temperatures within range recommended by manufacturer, but not less than 60 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting and vinyl floor installation, have been completed.

1.7 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. Furnish no less than two percent (2%) of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to manufacturers specified.
- B. Basis of Design Product: The design for the cove base is based on the product specified. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 RESILIENT WALL BASE (Rubber)

- A. Type TP (Thermoplastic Rubber), **4" or 6"**, as indicated, x 1/8" rubber cove base vulcanized and extruded from a synthetic rubber compound conforming with ASTM F 1861. Design with a ribbed back and top-lip for tight fit. Provide smooth, low-gloss satin or matte finish that resists scuffing, gouging and most chemicals.
 - 1. **Basis of Design Product: Johnsonite; Traditional Wall Base.**

2. Available Manufacturers:
 - a. Armstrong World Industries, Inc.
 - b. Azrock Commercial Flooring
 - c. Burke Mercer Flooring Products
 - d. Flexco
 - e. Roppe Corporation;
- B. Lengths: Provide product in rolls, not sections.
- C. Outside Corners: Job formed.
- D. Inside Corners: Mitered, job formed.
- E. Color: To be selected from manufacturer's full range of available colors.

2.3 RESILIENT MOLDING ACCESSORIES

- A. Description: Edges and Transitions
 1. Basis of Design Product:
 - a. Underslung Reducer: Flexco #156.
 - b. Tile/Carpet Joiner: Flexco #168.
 - c. Tile Reducer: Flexco #192a.
 - e. Other transitions and reducers as necessary, of same brand and color as those provided above.
 2. Available Manufacturers:
 - a. Armstrong World Industries, Inc.
 - b. Azrock Commercial Flooring
 - c. Burke Mercer Flooring Products
 - d. Johnsonite
 - e. Roppe Corporation;
- B. Material: Rubber. (Vinyl is acceptable for accessories only where rubber is not available.)
- C. Color: To be selected from manufacturer's full range of available colors.

2.4 RUBBER STAIR TREADS

- A. PVC-free rubber treads meets ASTM F 2169, homogeneous construction. Natural resistance to bacteria and fungi in accordance with ASTM G 21.

1. Basis of Design Product: Johnsonite Rubber Integrated Stair Tread with Riser
 2. Available Manufacturers:
 - a. Armstrong World Industries, Inc.
 - b. Flexco
 - c. Burke Mercer Flooring Products
 - d. Roppe Corporation.
 3. Product Characteristics:
 - a. Manufactured from a homogeneous composition of 100% synthetic rubber.
 - b. Complies with requirements for ASTM F 2169 Standard Specification for Resilient Stair Treads, Type TS, Class 1 and 2, Group 1 and 2.
 - c. Hardness: ASTM D 2240 – Not less than 85 Shore A.
 - d. Abrasion Resistance: ASTM D 3389 – less than 1 gram weight loss.
 - e. ASTM D 2047, Standard Test Method for Static Coefficient of Friction of Polish- Coated Flooring of 0.6 or greater.
 - f. ASTM E 648, Standard Test Method for Critical Radiant Flux of 0.45 watts/cm² or greater, Class I.
 - g. Visually Impaired treads meet ADA and are California Title 24 Accessibility requirements. Visually Impaired treads will have 2" wide co-extruded contrasting color insert or 2" wide contrasting color grit tape insert.
 - h. Surface, as scheduled: solid color, 2" height hinged square nose, tapering .210 to .113.
- B. Lengths: As required for width of step – no seams acceptable.
- C. Color: To be selected from manufacturer's full range of standard colors.
1. Minimum 30 colors from which to select

2.5 INSTALLATION MATERIALS

- A. Sharp utility knife, hand roller, 1/8" notched trowel or wall base cartridge gun, trowelable Leveling and Patching Compounds:
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
 1. For treads: as recommended by tread manufacturer to meet site conditions.
 2. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Cove Base Adhesives: 50 g/L.

PART 3 - EXECUTION

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

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.
- B. 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.
- C. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.
- D. 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 the same temperature as the space where they are to be installed.
- E. 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.

3.3 RESILIENT WALL BASE INSTALLATION

- A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is scheduled.
- B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
- C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- D. Do not stretch wall base during installation.

- E. On masonry surfaces or other similar irregular substrates, fill voids along top edge of wall base with manufacturer's recommended adhesive filler material.
- F. Job-Formed Corners:
 - 1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.
 - 2. Inside Corners: Use straight pieces of maximum lengths possible. Form 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 a snug fit to substrate.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor coverings that would otherwise be exposed.

3.5 RESILIENT TREAD INSTALLATION

- A. Install per manufacturer's recommendations and using adhesives as directed. Butt to adjacent materials and tightly adhere to substrates throughout length of each piece.
- B. Cut and fit treads tight to edges so that no gaps remain at ends of treads.

3.6 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 products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

END OF SECTION 09 65 13

SECTION 09 68 50 – LUXURY VINYL FLOORING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 THIS SECTION INCLUDES

- A. Resilient tile flooring as shown on the drawings and schedules and as indicated by the requirements of this section.

1.03 RELATED SECTIONS

- A. Other Division 09 sections for floor finishes related to this section but not the work of this section and base and accessories for use in conjunction with luxury vinyl flooring.
- B. Division 03 Concrete – Appropriate preparation of slabs.
- C. Division 07 Thermal and Moisture Protection - not included work this section.

1.04 QUALITY ASSURANCE AND REGULATORY REQUIREMENTS

- A. Qualifications of Installers: All work shall be done by installation firms specializing in commercial LVT installation. Flooring contractor to be specialty contractor normally engaged in this type of work and shall have three (3) years minimum documented experience in commercial installation of these materials and participation in manufacturer's environmental program including responsible carpet removal, recycling, and installation.
- B. Flooring contractor will be responsible for the proper product installation, including floor preparation in all the areas indicated in the drawings to receive LVT.
- C. Flooring contractor to provide owner a written warranty that guarantees the completed installation to be free from defects in materials and workmanship for a period of no less than two (2) years after job completion.
- D. All warranties must be issued by the manufacturer as standard published warranties on all types of LVT within this document. Second source warranties that involve parties other than the LVT manufacturer are unacceptable. If the product fails to perform as warranted when installed according to the manufacturer's instructions and maintained according to the manufacturer's maintenance instructions, the affected area will be repaired or replaced at the expense of the manufacturer. The LVT manufacturer will provide standard published written performance warranties for the following:

A Ten (10) Year warranty on manufacturing defects and a Ten (10) year wear warranty stating that product will not wear through (damage or affect) the printed film layer due to normal traffic. Manufacturer will pay all reasonable labor costs (these costs will be determined by manufacturer).

- E. LVT manufacturer to provide field service experts to assist in project start-up as required by the job. Manufacturer will notify owner, architect, general contractor, or another designated contact if any installation instructions are not followed.
- F. Provide flooring material to meet the following test performance criteria as tested by a recognized independent testing laboratory. Certified test reports shall be submitted by the carpet manufacturer for each test method. Requirements listed below must be met by all products being submitted for approval:

Materials: Phthalates Free
Indoor Air Quality: FloorScore Certified
End of Life: 100% Recyclable
Class / ASTM F1700: Class III Printed Film Vinyl Plank - Type B (embossed)
Flooring Radiant Panel: Class 1
ADA Compliance: Compliant For Accessible Routes
ASTM F2055 (Size and Tolerance): Passes
ASTM F386 (Thickness): Passes
ASTM F1914 (Residual Indentation): Passes
ASTM F137 (Flexibility): Passes
ASTM F2199 (Dimensional Stability): Passes
ASTM F925 (Chemical Resistance): Passes
ASTM F1514 (Resistance to Heat): Passes
ASTM F1515 (Resistance to Light): Passes
ASTM E648 (Critical Radiant Flux): Passes
ASTM E662 (Optical Smoke Density): Passes
ASTM C1028 (Slip Resistance): Passes
ASTM F970 (Static Load): Passes

1.05 SUBMITTALS

- A. Submit two (2) finished samples of the exact type of LVT proposed, including quality, pattern, and color.
- B. Submit manufacturer's warranties, installation instructions, and maintenance instructions before bid date
- C. Submit the manufacturer's certification that the flooring has been tested by an independent laboratory and complies with the required fire tests as well as the test listed under 1.04 F.
- D. Submit the manufacturers plan for recycling the specified flooring and related items at the end of the useful life of the flooring.

1.06 ENVIRONMENTAL/FIELD CONDITIONS

- A. Deliver all materials to the installation site in the manufacturer's original packaging and in good condition. Packaging to contain manufacturer's name and marks, identification number, shipping and handling instructions and related information
- B. Delivered and stored materials must be available for inspection as required by the owner, architect, general contractor, and/or the manufacturer.
- C. Sub-floor preparation is to include all required work to prepare the existing floor for installation of the product as specified in this document. Sub-floor preparation shall meet all conditions as specified in the manufacturer's Luxury Vinyl Tile installation instructions.
- D. The building must be enclosed and the HVAC in continuous operation. The LVT and adhesive must be conditioned to room temperature for 3 days prior to installation, during the installation and continuous following completion of the installation. The ambient air relative humidity must be between 10%-65% with the floor and room temperature between 55- 85 degrees Fahrenheit. The indoor temperature should never fall below 55 degrees Fahrenheit or above 85 degrees Fahrenheit regardless of the age of the installation.
- E. Store cartons of tile or plank products flat and squarely on top of one another. Preferably, locate material in the "center" of the installation area (i.e. away from vents, direct sun- light, etc.) Storing cartons in direct sunlight may affect proper acclimation by inducing thermal expansion/contraction.
- F. When palletizing on a jobsite, vinyl plank or tiles need to be stacked 2 rows high side by side with no airspace between. Then quarter turned for 2 rows side by side, not to exceed 12 boxes high. A 5/8" or thicker plywood must also be placed on the pallet first. Do not stack pallets 2 high unless utilizing a 3/4" thick plywood cap between pallets.

1.07 SUBSTITUTIONS

- A. All Bid submittals must conform to the specifications in Division 01 of this document.
- B. All test results to be in accordance with a certified independent testing laboratory.

1.08 WARRANTY

- A. A ten (10) year warranty on manufacturing defects and a ten (10) year wear warranty stating that product will not wear through (damage or affect) the printed film layer due to normal traffic. If a verified material failure occurs, the manufacturer will pay 100% of all reasonable labor costs for the warranty period (these costs will be determined by manufacturer).

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. J+J Flooring Group (Basis of Design): See drawings for specific products scheduled.
 - 2. Patcraft
 - 3. Any manufacturer and/or product must meet or exceed those requirements specified under all sections of this document in pattern, color, and format. Any substitutions must be made in accordance with the Substitutions in Division 01 of this document.

2.02 FLOORING MATERIALS

- A. Luxury Vinyl Tile:
 - 1. Product: Make Your Mark 3mm V5013 (Basis of Design)
 - 2. Color: Seven (7) colors indicated on Finish Legend, A9.1.
 - 3. Added Antimicrobial: ZPT (Zinc Protective Technology)
 - 4. Thickness: 3mm
 - 5. Finish / Coating: Enhanced UV Urethane w/ Ceramic Bead
 - 6. Ceramic bead with immersion rate greater than 5 grams/sf
 - 7. Pattern Repeat: Random
 - 8. Installation Pattern: 1/3 panel offsets
 - 9. Dimensions: 9" x 48"
 - 10. Backing Class: Commercial Grade
 - 11. Commercial Traffic: Heavy Commercial

2.03 ADHESIVES

- A. Commercialon Premium Modular/LVT Pressure Sensitive Adhesive from Basis of Design or, if not Basis of Design, a premium modular flooring adhesive specifically formulated for and recommended by the flooring manufacturer for bonding their Luxury Vinyl Tile product to the floor.

2.04 ACCESSORIES

- A. Provide transition/reducing strips tapered to meet abutting materials as described in Division 09 Section "Resilient Wall Base and Accessories".
- B. Provide edge strips made of extruded aluminum with a mill finish, unless otherwise noted.

PART 3 EXECUTION

3.01 INSPECTION

- A. Examine and verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive flooring.

- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to have flooring laid tight and adjacent to them.
- C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.
- C. Verify that concrete sub-floor surfaces are dry enough and ready for flooring installation by testing for moisture emission rate and alkalinity in accordance with ASTM F 710; obtain instructions if test results are not within limits recommended by carpet manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.
- F. Luxury Vinyl Tile shall be inspected and accepted by the installer prior to installation for proper style, color and potential defects. Alert manufacturer to any issues prior to installation.

3.02 PREPARATION

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Surface Preparation: Dust, dirt, debris, adhesive, and noncompatible materials must be removed before the installation begins. Surfaces must be smooth and level with all holes and cracks filled with Portland cement-based patch reinforced with polymers or primed with manufacturer's recommended sealer.
- C. Latex, if present: Must be mechanically scraped down to a bare residue flat with the concrete substrate or covered with a skim coat of Portland cement-based patch reinforced with polymers. Any old adhesive residue must also be covered with manufacturer's recommended sealer. *Note: Failure to remove or seal in-place latex adhesive may cause installation failure, shifting, buckling or edge curling, potentially compromising warranty.*
- D. Cut Back Adhesives: Must be wet mechanically scraped to a minimum residue and encapsulated with manufacturer's recommended sealer.
Note: Failure to remove or seal cut back adhesive may cause installation failure, shifting, buckling or edge curling; these conditions will not be covered under warranty.
- E. Concrete Moisture Testing and pH Testing: Substrate surfaces must be tested for moisture emission, whether by GC or installing contractor, prior to installation. ASTM-F2170-2 relative humidity probe moisture testing or ASTM-F1869 calcium chloride testing can be performed on the concrete to determine the surface moisture emission rate. Acceptable relative humidity probe testing results are up to 90% RH. An acceptable result for calcium chloride moisture testing is up to 5 lbs per 1,000 SF per 24 hours. Alkalinity tests should also be performed per ASTM-F710. The maximum acceptable pH is 9.0. For test results that determine RH test readings of 90% - 95%, moisture emission rates of 5 lbs - 8 lbs, or pH readings of 9.0 - 11.00, manufacturer's recommended sealer is required. (Any manufacturer's requirements more stringent than these shall be met in order to maintain warranty conditions.)
- F. New Concrete Subfloors - New concrete must be fully cured and free of moisture. New concrete requires a curing period of approximately 90 days.

3.03 INSTALLATION OF FLOORING

- A. The following guidelines do not replace the requirement to follow manufacturer's recommended direction for installation.
1. Install LVT using conventional tile and plank installation techniques. Plank products should have a minimum of 6-8" seam stagger.
 2. Carefully determine where to begin tile or plank installation.
 3. It is customary to center the rooms and hallways so borders are not less than half a tile or plank.
 4. Working out of multiple boxes at a time is recommended.
 5. Make sure cut edges are always against the wall.
 6. To properly cut LVT/LVP products score the top side of the material with a utility knife. Bend the product and finish the cut through the backside. This will ensure the cleanest cut. It may be necessary to use a heat gun to cut around vertical obstructions. Allow the heated LVT/LVP to return to room temperature before installation.
 7. Cutting the product into a fine point may lead to delamination. Use an ethyl cyanoacrylate based super glue to help fuse the LVT/LVP point together. Be sure to clean all glue from the decorative surface immediately. Alcohol based super glues may cause the vinyl to swell.
 8. Roll the plank/tile with a 3 section 100 lb. roller. Re-roll the entire glued floor area with the 100 lb. roller within the working time of the adhesive. Continue to roll the floor throughout the working day to ensure proper bond.

3.04 INSTALLATION OF ACCESSORIES

- A. Install accessories as required by drawings and per manufacturer's specifications.

3.05 CLEANING AND PROTECTION

- A. Remove excess adhesive without damage, from floor, base, and wall surfaces.
- B. Recommended to use floor protection after installation. DO NOT use plastic adhesive based protection system.

END OF SECTION 09 68 50

SECTION 09 91 13 - EXTERIOR PAINTING

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 surface preparation and the application of paint systems on the following exterior substrates:
 - 1. Concrete.
 - 2. Steel.
 - 3. Galvanized metal.
 - 4. Cast iron.
 - 5. Aluminum.
- B. The work includes painting and finishing of interior and exterior exposed items and surfaces throughout project including all back-priming, except as otherwise indicated.
 - 1. Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of work.
- C. Work includes field painting of exposed piping (insulated or not insulated) installed under mechanical plumbing or fire protection or electrical work, unless otherwise shown. Where located on wall, paint to match wall.
- D. The exterior work shall include items attached to the building, including but not limited to the following:
 - 1. Ferrous pipe rails, brackets, etc.
 - 2. Ferrous cast iron downspout boots, etc.
 - 3. Hollow metal door frames and doors.
 - 4. Telephone or electrical panel boxes, conduit, weather heads, cover plates, etc.
- E. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as primer, intermediate or finish coats.
- F. Surfaces to be Painted: Except where natural finish of material is specifically noted as a surface not to be painted, paint exposed surfaces whether or not colors are designated in "schedules". Where items

or surfaces are not specifically mentioned, paint the same as similar adjacent materials or areas. If color or finish is not designated, Architect will select these from standard colors or finishes available.

- G. Following categories of work are not included as part of field-applied finish work.
1. Pre-finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer-finishing is specified for such items as (but not limited to) metal toilet enclosures, prefinished partition systems, acoustic materials, architectural woodwork and casework, and finished mechanical and electrical equipment, including light fixtures, switchgear and distribution cabinets.
 2. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces and duct shafts.
 3. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.
 4. Operating Parts: Unless otherwise indicated, moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sensing devices, motor and fan shafts will not require finish painting.
- H. Do not paint over any code-required labels, such as Underwriters' Laboratories and factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.
- I. Related Sections include the following:
1. Division 05 Sections for shop priming of metal substrates with primers specified in this Section.
 2. Division 09 Section "Interior Painting" for surface preparation and the application of paint systems on interior substrates.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of topcoat product indicated.
- C. Samples for Verification: For each type of paint system and each color and gloss of topcoat indicated.
1. Submit Samples on rigid backing, 8 inches square.
 2. Step coats on Samples to show each coat required for system.
 3. Label each coat of each Sample.
 4. Label each Sample for location and application area.
- D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.

1.4 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 block fillers and primers for each coating system from the same manufacturer as the finish coats.
- C. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
 - b. Other Items: Architect will designate items or areas required.
 2. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
 - 1. Quantity: Furnish an additional percent, but not less than 1 gal. of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Benjamin Moore & Co.
 - 2. ICI Paints.
 - 3. Porter Paints.
 - 4. PPG Architectural Finishes, Inc.
 - 5. Sherwin-Williams Company

2.2 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Colors: As selected by Architect from manufacturer's full range.

2.3 METAL PRIMERS

- A. Masonry Primer:
 - 1. Basis-of-Design Product: Loxon Concrete & Masonry Primer Sealer.
 - a. PPG
 - b. Benjamin Moore
- B. Galvanized Metal Pretreatment:
 - 1. Basis-Of-Design Product: Manufacturer's recommended galvanized prep material.
 - a. Sherwin Williams

- b. PPG
- c. Benjamin Moore

C. Galvanized Metal Primer:

- 1. Basis-Of-Design Product: Sherwin Williams Pro Industrial Pro-Cryl Universal Primer B66-310 Series
 - a. PPG
 - b. Benjamin Moore

D. Metal Primer:

- 1. Basis-Of-Design Product: Sherwin Williams Pro Industrial Pro-Cryl Universal Primer B66-310 Series
 - a. PPG
 - b. Benjamin Moore

2.4 EXTERIOR LATEX PAINTS

A. Exterior Semi-gloss Latex: Factory-formulated semi-gloss latex for exterior application.

- 1. Basis-Of-Design Product: Sherwin Williams A-100 Exterior Latex Semi-Gloss, A82 Series
 - a. PPG
 - b. Benjamin Moore

B. Exterior Flat Latex for Textured Finish:

- 1. Basis of Design Sherwin Williams Ultracrete Textured Masonry Topcoat Fine, A44-800 Series
 - a. PPG
 - b. Benjamin Moore

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Verify suitability of substrates, including surface conditions and compatibility with primers.
- C. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.
- B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
 - 2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- D. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.
- E. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- F. Aluminum Substrate: Etch with acid wash and sand with light sandpaper to rough up finish to receive primer coat.

3.3 APPLICATION

- A. Apply coatings according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, gaps, laps, roller tracking, brush marks, runs, sags, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 EXTERIOR PAINTING SCHEDULE

- A. Concrete: **(Concrete only where noted to be painted.)**
 - 1. Masonry Primer
 - 2. Exterior Flat Latex for Textured Finish
 - 3. Exterior Flat Latex for Textured Finish
- B. Steel and Cast Iron Substrates:
 - 1. Latex System: Semi-gloss finish.
 - a. Prime Coat: Alkyd metal primer.
 - b. Intermediate Coat: Exterior semi-gloss acrylic enamel.
 - c. Topcoat: Exterior semi-gloss acrylic enamel.
- C. Galvanized Metal Substrates:
 - 1. Latex System: Semi-gloss finish.
 - a. Pretreatment: Galvanized metal pretreatment
 - b. Prime Coat: Galvanized metal primer.
 - c. Intermediate Coat: Exterior semi-gloss acrylic enamel.
 - d. Topcoat: Exterior semi-gloss acrylic enamel.
- D. Aluminum:
 - 1. Latex System: Semi-gloss finish.
 - a. Pretreatment: Acid Etch and Light Sandpaper.
 - b. Prime Coat: Metal primer.
 - c. Intermediate Coat: Exterior semi-gloss acrylic enamel.
 - d. Topcoat: Exterior semi-gloss acrylic enamel.

E. PVC [Roof vents, piping, etc] (Flat):

1. Primer : n/a – Finish paint is a self-priming product.
2. Finish Coats (3) PPG: Break-Through! 250 Interior/Exterior Satin Water-Borne Acrylic Series: V50-410, DFT: 2.0-4.0 mils per coat.

END OF SECTION 09 91 13

SECTION 09 91 23 - INTERIOR PAINTING

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 surface preparation and the application of paint systems on the following interior substrates:
 - 1. Concrete.
 - 2. Concrete masonry units (CMU).
 - 3. Brick.
 - 4. Steel.
 - 5. Wood.
 - 6. Gypsum board.
- B. The work includes painting and finishing of interior and exterior exposed items and surfaces throughout project including all back-priming, except as otherwise indicated.
 - 1. Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of work.
- C. Work includes field painting of exposed wiremold, ductwork, piping (insulated or not insulated) installed under mechanical plumbing or fire protection or electrical work, unless otherwise shown. Where located on wall, paint to match wall. Where occurring at ceilings, paint white.
- E. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as primer, intermediate or finish coats.
- F. Surfaces to be Painted: Except where natural finish of material is specifically noted as a surface not to be painted, paint exposed surfaces whether or not colors are designated in "schedules". Where items or surfaces are not specifically mentioned, paint the same as similar adjacent materials or areas. If color or finish is not designated, Architect will select these from standard colors or finished available.
- G. Following categories of work are not included as part of field-applied finish work.
 - 1. Pre-finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer-finishing is specified for such items as (but not limited to) metal toilet enclosures, prefin-

ished partition systems, acoustic materials, architectural woodwork and casework, and finished mechanical and electrical equipment, including light fixtures, switchgear and distribution cabinets.

2. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces and duct shafts.
 3. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.
 4. Operating Parts: Unless otherwise indicated, moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sensing devices, motor and fan shafts will not require finish painting.
- H. Do not paint over any code-required labels, such as Underwriters' Laboratories and factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates
- I. Related Sections include the following:
1. Division 05 Sections for shop priming of metal substrates with primers specified in this Section.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of topcoat product indicated.
- C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.
1. Submit Samples on rigid backing, 8 inches square.
 2. Step coats on Samples to show each coat required for system.
 3. Label each coat of each Sample.
 4. Label each Sample for location and application area.
- D. Product List: For each product indicated, include the following:
1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

1.4 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 block fillers and primers for each coating system from the same manufacturer as the finish coats.
- C. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft..
 - b. Other Items: Architect will designate items or areas required.
 - 2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
 - 3. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 1 gal. of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Sherwin Williams
 2. Benjamin Moore & Co.
 3. PPG Architectural Finishes, Inc.
 4. Seal Krete

2.2 PAINT, GENERAL

- A. Material Compatibility:
 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Colors: As selected by Architect from manufacturer's full range.

2.3 CONCRETE UNIT MASONRY BLOCK FILLERS

- A. Masonry Block Filler:
 1. Basis-Of-Design Product: Sherwin Williams PrepRite Block Filler B25W25

2.4 PRIMERS/SEALERS

- A. Interior Latex Primer/Sealer:
 1. Basis-Of-Design Product: Sherwin Williams ProMar 200 Zero VOC Interior Latex Primer White
- B. Galvanized Metal Pretreatment:
 1. Basis-Of-Design Product: Manufacturer's recommended galvanized prep material.
 - a. Sherwin Williams
 - b. PPG
 - c. Benjamin Moore

C. Galvanized and Non-Galvanized Metal Primer:

1. Basis-Of-Design Product: Sherwin Williams Pro Industrial Pro-Cryl Universal Primer B66-310 Series
 - a. PPG
 - b. Benjamin Moore

D. Concrete Floor Primer:

1. Basis of Design Product: Seal Krete Lock-Down Concrete Bonding Primer.

E. Interior Alkyd Metal Primer:

1. Basis-Of-Design Product: Sherwin Williams Pro Industrial Pro-Cryl Universal Primer B66-310 Series
 - a. PPG
 - b. Benjamin Moore

F. Wood Primer:

1. Basis of Design Product: Sherwin Williams PrepRite ProBlock Latex Primer/Sealer B51 Series
 - a. PPG
 - b. Benjamin Moore

2.5 LATEX PAINTS

A. Interior Low Sheen Latex:

1. Basis-Of-Design Product:
 - a. Sherwin Williams ProMar 200 Zero VOC Interior Latex Eggshell
 - b. Benjamin Moore

B. Interior Semi-Gloss Latex:

1. Basis-Of-Design Product:
 - a. Sherwin Williams ProMar 200 Zero VOC Interior Latex Semi-Gloss
 - b. Benjamin Moore

C. Interior Gloss Latex:

1. Basis-Of-Design Product:
 - a. Sherwin Williams ProMar 200 Zero VOC Interior Latex Gloss
 - b. Benjamin Moore

D. Interior Steel:

1. Basis-of-Design Product: Sherwin Williams Pro Industrial Acrylic Gloss, B66-650 Series
 - a. PPG
 - b. Benjamin Moore

E. Interior Ceilings:

1. Basis-of-Design Product: Sherwin Williams ProMar 200 Zero VOC Interior Latex Flat B30-2600 Series
 - a. PPG
 - b. Benjamin Moore

F. Dry Fall:

1. Basis-of-Design Product:
 - a. Sherwin Williams Pro Industrial Waterborne Acrylic Dryfall Flat, B42-80 Series
 - b. Benjamin Moore

2.6 CONCRETE FLOOR SEALER

A. Water-based acrylic-epoxy blend for use on concrete and masonry surfaces

2. Basis of Design Product: Seal Krete Epoxy Seal

2.7 STAIN

1. Basis-of-Design Product: Sherwin Williams Wood Classics 250 Stain, A49-800 Series
 - a. PPG
 - b. Benjamin Moore

2.8 WOOD SEALER

1. Basis-of-Design Product: Sherwin Williams Wood Classics Waterborne Polyurethane Satin.
 - a. PPG
 - b. Benjamin Moore

2.9 PREPARATION

A. Galvanized Metal Prep

1. Use primer manufacturer's recommended preparation product.

B. Concrete Etching

1. Basis of Design Product: Seal Krete Klean-N-Etch.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Masonry (Clay and CMU): 12 percent.
3. Wood: 15 percent.
4. Gypsum Board: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with finishes and primers.

D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

G. Galvanized Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

H. Wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

I. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

J. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

D. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:

1. Mechanical Work:

- a. Uninsulated metal piping.
- b. Uninsulated plastic piping.
- c. Pipe hangers and supports.
- d. Tanks that do not have factory-applied final finishes.
- e. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
- f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
- g. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

2. Electrical Work:

- a. Switchgear.
- b. Panelboards.
- c. Electrical equipment that is indicated to have a factory-primed finish for field painting.

3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE

- A. CMU Substrates:
 1. Latex System: Semi-gloss finish.
 - a. Prime Coat: Masonry Block Filler.
 - b. Intermediate Coat: Interior semi-gloss latex.
 - c. Topcoat: Interior semi-gloss latex.
- B. Steel Substrates:
 1. Latex System: Gloss finish.
 - a. Prime Coat: Metal Primer
 - b. Intermediate Coat: Interior gloss latex.
 - c. Topcoat: Interior gloss latex.
- C. Gypsum Board / Wood Substrates:
 1. Latex System: Eggshell finish.
 - a. Prime Coat: Interior latex primer/sealer.
 - b. Intermediate Coat: Interior low sheen latex.
 - c. Topcoat: Interior low sheen latex.

- D. Galvanized Metal Substrates:
 - 1. Latex System: Semi-gloss finish.
 - a. Pretreatment: Galvanized metal pretreatment
 - b. Prime Coat: Metal Primer
 - c. Intermediate Coat: Interior semi-gloss latex.
 - d. Topcoat: Interior semi-gloss latex.

- E. Cotton or Canvas Insulation-Covering Substrates: Including pipe and duct coverings.
 - 1. Latex System: Semi-gloss.
 - a. Prime Coat: Interior semi-gloss latex.
 - b. Topcoat: Interior semi-gloss latex.

- F. Open ceiling areas:
 - 1. Dry Fall
 - a. Prime Coat: Metal Primer
 - b. Topcoat: Dry Fall

- G. Concrete Floors, exposed:
 - 1. Concrete Floor Sealer
 - a. Etch bare concrete
 - b. Prime Coat: Concrete Binding Primer
 - c. Intermediate Coat: Concrete Floor Sealer
 - d. Topcoat: Concrete Floor Sealer, applied in direction perpendicular to the first

- H. Galvanized Metal Duct Interior (where exposed through diffuser):
 - 1. Latex System: Low sheen
 - a. Pretreatment: Galvanized metal pretreatment
 - b. Topcoat: Interior low sheen latex.

END OF SECTION 09 91 23

SECTION 10 11 00 – VISUAL DISPLAY ELEMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Drawings for locations of work to be performed.

1.02 WORK INCLUDED

- A. Furnish all materials, labor, equipment and related items required to complete the installation of markerboards, tackboards, and tack strip as indicated on the Drawings and specified herein. Include framed boards with all accessories as specified.

1.03 SUBMITTALS

- A. The Architect's "stamped" submittal review shall be received for all submittal items if this Section prior to ordering of materials and equipment or start of fabrication work.
 - 1. Product Data: Submit manufacturer's technical information, including product specifications, performance data, application instructions, color / texture selections, certified test reports, manufacturer's certification and any other data as required to show compliance with these specifications.
 - 2. Samples: Submit (2) 8" x 8" samples of each type of board or textile material required, showing full range of selected color and texture to be expected in completed work.
 - 3. Maintenance instructions: Include precautions against cleaning materials and methods that may be detrimental to finishes and performance.

1.04 QUALITY ASSURANCE

- A. All markerboards and tackboards shall be furnished by the same manufacturer for single source responsibility for the entire project.
- B. Provide each type of dry erase/projection wallcovering required produced by one manufacturer.
 - 1. Provide non-woven backing, matte white pigmented vinyl capped with dry erase non-glare film, and heat embossed with a bi-directional lenticular pattern.

1.05 FIRE HAZARD CLASSIFICATION / SURFACE BURNING CHARACTERISTICS

- A. Provide tackboards which have been tested in accordance with ASTM E-84 and have been certified as complying with the following fire hazard classifications:

1. Flame Spread 25 (max.)
2. Fuel Contributed 5 (max.)
3. Smoke Developed 25 (max.)

- B. Provide materials that meet Class I/A rating when tested in accordance with ASTM E84 for flame spread and smoke developed

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver factory-built visual display boards, including factory-applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.
- B. Store visual display units vertically with packing materials between each unit.

1.07 PROJECT CONDITIONS

- A. Field Measurements: Verify 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 visual display surfaces without field measurements. Coordinate wall construction to ensure that actual dimensions correspond to established dimensions.
 2. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

1.08 WARRANTY

- A. Special Warranty for Porcelain-Enamel Faced Sheets: Provide written warranty, signed by the manufacturer in which manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
 - a. Surfaces loss of original writing and erasing qualities.
 - b. Surface becomes slick or shiny.
 - c. Surface exhibits crazing, cracking, or flaking.
 2. Warranty Period: Life of the building.
 3. Replacement is limited to material replacement only and does not include labor for removal and re-installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide factory built units equal to Series #1 (surface applied) units with 1-1/2" wide trim as manufactured by Claridge Products and Equipment, Inc.
- B. Subject to compliance with these specifications, other acceptable manufacturers shall be:
 - 1. Aarco Products
 - 2. Marsh Industries
 - 3. Polyvision
 - 4. ADP Lemco

2.02 TACK ASSEMBLIES

- A. All tackboard units shall be single layer natural cork type, 1/4" thick, seamless compressed cork sheet, faced with manufacturer's standard vinyl, of sizes as indicated.
 - 1. Vinyl color shall be selected by Architect for manufacturer's full range of standard choices.]
- B. Basis-of-Design Product: Claridge Products & Equipment, Inc.; Fabricork.
- C. Vinyl-Fabric-Faced Tack Assembly Insert designation: 1/4-inch- thick, vinyl-fabric-faced cork sheet factory laminated to 1/4-inch- thick hardboard backing.
 - 1. Color: As selected by architect from manufacturer's standards.
- D. Tackboards to have the following accessories: aluminum frames and trim.
- E. Tack rail:
 - 1. Extruded aluminum frame behind tack surface fabricated from natural cork, approximately 1 to 2 inches wide. Aluminum frame extending over top and bottom to hold cork in place.
 - 2. End Stops: Located at each end of tack rail.

2.03 MARKERBOARDS

- A. All markerboards shall be "wipe-off" porcelain enamel marker type with balanced, high pressure laminated, 3-ply construction; with facing sheet, core and backing of sizes indicated.
 - 1. Facing Sheet: Fired vitreous porcelain enamel writing surface over 24 gauge (min.) enameling grade steel sheet which has been primed on both surfaces.
 - a. Color shall be manufacturer's standard WHITE.

2. Core: Plywood or hardboard, no less than 7/16" thick. Plywood shall comply with PS-1, exterior grade. Hardboard shall comply with FS-LLL-B-810.
3. Backing Sheet: Manufacturer's standard 0.015" aluminum sheet.
4. Laminating Adhesive: Manufacturer's standard moisture resistant, thermoplastic type.
5. Markerboard to have following accessories: chalk tray, map rail, and aluminum frames and trim.

2.04 TRIM AND ACCESSORIES

- A. Fabricate frames and trim of not less than 0.062" thick aluminum alloy, size and shape as shown, to suit type of installation. Provide straight, single-length units wherever possible and keep joints to a minimum. Miter corners to neat, hairline closure.
 1. Trim: Furnish exposed aluminum trim, accessories and other fasteners with satin anodized finish AA-M31A31, unless otherwise indicated. Provide manufacturer's standard framed units, approximately 1-1/2" wide. Field-applied trim shall be screw-on trim with Phillips flat-head screws.
 2. Supports: When structural support accessories are required in addition to normal trim, provide such additional support or modify trim as required to provide necessary support.
 3. Marker Tray: Provide one piece, triangular box type with slanted front and grooved tray construction. Exposed ends shall have cast aluminum end closure. Extend tray full length of all markerboards and combination markerboard / tackboard units.
 4. Map Rail: Furnish 2-inch map rail at top of all units and on horizontal rail between markerboard and tackboard, unless indicated otherwise, with the following accessories:
 - a. End Stops: one at each end of map rail
 - b. Map Hooks: (2) map hooks with flexible metal clips for each board.
 - c. Roller Brackets: 2
 - d. Flag Holder: (1) per classroom
 1. If a markerboard is not scheduled to be installed in a classroom, provide only flag holder for that room.
 - e. Metal Spring Clip Hooks: (2) per board

2.05 FABRICATION

- A. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, balanced around center of board as acceptable to the Architect.
- B. Provide manufacturer's standard vertical joint system between abutting sections of tackboards, tack rails, and markerboards.
- C. Provide mullion trim at joint between all board units.

- D. Factory-Assembled Visual Display Units: Coordinate factory-assembled units with trim and accessories indicated. Join parts with a neat, precision fit.
 - 1. Provide manufacturer's standard vertical-joint spline system between abutting sections of markerboards.
 - 2. Provide manufacturer's standard mullion trim at joints between markerboards and tackboards of combination units.
- E. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum. Miter corners to neat, hairline closure.
 - 1. Trim shall be assembled and attached to visual display units at manufacturer's factory before shipment.

2.06

FINISHES

- 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. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- D. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

PART 3 EXECUTION

3.01

EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
- B. Examine walls and partitions for proper backing for visual display surfaces.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02

PREPARATION

- A. Remove dirt, scaling paint, projections, and depressions that will affect smooth, finished surfaces of visual display boards.

- B. Clean substrates of substances that could impair bond of wall covering, including dirt, oil, grease, mold, mildew, and incompatible primers.
- C. Prepare mounting surface to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, and substances that will impair bond between visual display boards and surfaces.
 - 1. Moisture Content: Maximum of 5 percent on new plaster, concrete, and concrete masonry units when tested with an electronic moisture meter.
 - 2. Plaster: Allow new plaster to cure. Neutralize areas of high alkalinity. Prime with primer recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 3. Metals: If not factory primed, clean and apply primer recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 4. Gypsum Board: Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 5. Painted Surfaces: Treat areas susceptible to pigment bleeding.
- D. Check painted surfaces for pigment bleeding. Sand gloss, semigloss, and eggshell finish with fine sandpaper.
- E. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

3.03 INSTALLATION

- A. Framed Boards: Deliver factory-built visual display boards, including factory-applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, pre-fit components at the factory, disassemble for delivery, and make final joints at the site. Use splines at joints to maintain surface alignment.
- B. Hanging systems: Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
- B. Provide grounds, clips, backing material, adhesives, brackets, anchors, trim and accessories for complete installation.
- C. When installed, units shall not "oil-can", sound "drummy" or vibrate. Movement of trim will not be accepted.
- D. Locate single and combination units where indicated on the Drawings.
 - 1. Exact wall locations shall be determined by the Architect.
 - 2. Keep all perimeter lines straight, plumb and level.
 - 3. Install units at heights indicated on the Drawings, to the top of the marker tray, for respective location.

4. Install with concealed clip angles at 24-inches o.c. and apply spot adhesive as directed by the manufacturer.

3.04 ADJUST AND CLEAN

A. Boards:

1. Remove plastic protective cover, then clean units in accordance with manufacturer's instructions, breaking in only as recommended. Attach one cleaning label to visual display surface in each room.
2. Touch up factory-applied finishes to restore damaged or soiled areas.
3. Verify accessories required for each unit are properly installed all and operating units function properly.
4. Cover and / or protect visual display surfaces after installation and cleaning.

END OF SECTION 10 11 00

SECTION 10 14 00 – BUILDING SIGNAGE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Monument-style LED signage at entry drive is described at Division 10 Section “LED Signs”.

1.02 SUMMARY

- A. Provide specialty building signage:
 - 1. Cut Metal Letters and Numbers
 - 2. Tactile Plaque Signs
 - 3. Tactile Room Signs
 - 4. Slide-In Name Signs
 - 5. Directional Signs
 - 6. Capacity Signs
 - 7. Cast Plaques
 - 8. Window Graphics

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer’s technical data and installation instruction for each type of sign required.
- B. Samples: Submit samples of each sign type and material showing finishes, colors, surfaces textures and qualities of manufacturer and design of each sign component including graphics.
 - 1. Submit full-size sample units, if requested by Architect. Acceptable units may be installed as part of the Work.
- C. Shop Drawings: Submit shop drawings for fabrication and erection of specialty signs. Include plans, elevations and large scale details of sign wording and lettering layout. Show anchorages and accessory items. Furnish location template drawings for items supported or anchored to permanent construction.

1.04 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three (3) years. Use experienced installers. Deliver, handle and store materials in accordance with manufacturer’s instructions.

1.05 COORDINATION

- A. Coordinate placement of anchorage devices with templates for installing signs.

1.06 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of metal and/or polymer finishes beyond normal weathering/wear.
 - b. Deterioration of embedded graphic image colors and sign lamination.
 - 2. Warranty period: One year from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, provide one of the following:
 - 1. Andco
 - 2. A.S.I.
 - 3. A.R.K. Ramos
 - 4. Cornerstone
 - 5. Mills
 - 6. Bayuk
 - 7. Grimco

2.02 CUT METAL LETTERS AND NUMBERS

- A. Scope:
 - 1. Form letters by cutting from solid sheet material of thickness specified. Produce characters with smooth flat faces, sharp corners, precisely formed lines and profiles, free from pits, scale, sand holes and other defects. Supply anchoring devices on reverse side of individual letters as required.
- B. Type:
 - 1. Cut aluminum, shop painted equal to A.R.K. Ramos finish system F-4, or clear anodized face, matt edges.
 - a. Bead-blasted returns
- C. Style:
 - 1. Letter Style: Century Gothic

- D. Letter size:
 - 1. Building Name (18" high x 3/4 inch deep):
 - a. Text: BERNHEIM ELEMENTARY SCHOOL
 - 2. Address Lettering (8-inches X 1/2 inch deep)
 - a. Text: Undetermined. Assume up to eight (8) letters.
 - b. Location: As determined by Architect.
- E. Mounting: Mount flush to building with collars and threaded studs set in adhesive or as shown otherwise on the Drawings. Note that studs (for building name, item D, 1 above) will need to extend through the metal wall panel and ICF insulation, into the concrete wall. Sleeves or other accommodation may be required to extend through the insulation without crushing insulation, damaging siding, or allowing for attachment to sag.

2.03 TACTILE PLAQUE AND ROOM SIGNS

- A. Coordinate Room Sign with sheet A9.4.
 - 1. Standard for all signage shall be as illustrated on A9.4: The display layers shall be colored plastic laminate, layered as shown for a dimensional effect. Laminates to be determined, but likely consisting of a solid color laminate and a wood grain laminate. Finished edge of laminate layers to be smooth/eased, so no sharp edges or laminate "splinters" are exposed.
- B. Materials:
 - 1. Mounting: Mount to the wall surface with permanent double-faced, high bond, vinyl foam tape and silicone adhesive for irregular, porous or vinyl covered surfaces and (1) screw in each corner. Provide countersunk mounting holes.
 - 2. ADA Specifications: All content and style complies with ADAAG (4.30.107), Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities.
 - 3. Braille: Grade 2 Braille is to be the same color as the sign face, with no interruption of the smooth, clean surface of the sign.
 - a. Provide Braille room names and numbers integral with sign construction in correspondence with printed names and numbers. Surface applied Braille is not acceptable.
 - 3. Contrast: The background of the sign must be matte or non-glare in appearance. The contrast between the background and characters shall be a minimum of 70 to 1, and the gloss of the materials used shall be within 11 to 19 degrees on a 60 degree meter.

C. Room Name Signage:

1. Slide-In Name Signs (Type A.2): Provide 8-inches wide (or required length for room name) x height as noted on the Drawings x 1/8-inch (min.) thick, acrylic, non-glare signs with raised numbers (min. of 1/32-inch), with 1-1/2-inch slide-in space for paper insert. Sign to be 1/8-inch backer, 0.080-inch spacer and 0.060 non-glare surface. Provide domed Grade 2 Braille and squared corners. Sign face layers and text color shall be selected by Architect from full range of colors.
2. Fixed Name Signs (Type A.1, C, E, and Storm Shelter Signage shown on S-A1.1): Dimensions shown (or required for fit of text) x 1/8-inch (min.) thick, acrylic, non-glare signs with raised letters and numbers (min. of 1/32-inch). Provide domed Grade 2 Braille and squared corners. Sign face layers and text color shall be selected by Architect from full range of colors.
3. Provide all capitalized sign text.

D. Toilet Room and Handicap Signage (Type B):

1. Toilet room handicap signs shall be 8-inches wide x 8-inches tall x 1/8-inch (min.) thick with handicap symbol (for gang and individual restrooms). Provide Grade 2 Braille and squared corners. Sign face layers and text color shall be selected by Architect from full range of colors.

E. Room Directional Signage (Type F.1 – F.4):

1. Size required for information contained on sign, graphically with 1-inch letters and numbers. Provide Grade 2 Braille and squared corners. Sign face and text color shall be selected by Architect from full range of colors.

F. Capacity Signage (Type D):

1. Capacity signs shall be dimensions shown (or required for fit of text) x 1/8-inch (min.) thick, with squared corners. Coordinate capacity with Architect during submittal process. Sign face layers and text color shall be selected by Architect from full range of colors.

2.04 CAST PLAQUES

A. Available Manufacturers: Subject to compliance with requirements, provide one of the following:

1. Andco Industries Corp.
2. A.R.K. Ramos Manufacturing Company, Inc.
3. Best Manufacturing
4. Cornerstone
5. FastSigns
6. Grandview Aluminum Products, Inc.
7. Mills Manufacturing

8. Nelson Harkins
 9. Signarama
- B. 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 standard satin polished finish. Refer to the "Finish" Article for other finish requirements.
1. Quantity: 2
 2. Size: 24-inches x 36-inches.
 2. Metal: Aluminum
 3. Border Style: No. 5 double raised line border as manufacturer by Mills Manufacturing or equal.
 4. Rosettes: No. 2 type as manufactured by Mills Manufacturing or equal.
 5. Text: Unlimited text as supplied by Architect after bidding.
 6. Background Texture: Manufacturer's standard pebble finish.
 7. Background Finish: Provide the manufacturer's standard baked enamel finish. Color to be selected by Architect.

2.05 WINDOW GRAPHICS

- A. Color graphics printed on PVC film:
1. 5.6 mil black/white composite PVC with approximately 1.7mm perforations, removable acrylic pressure-sensitive adhesive.
 2. Compatible with UV, Solvent, Eco-Solvent, and Latex ink systems.
 3. Perforation pattern: Approximately 20% perforated, 80% retained.
 4. Basis of Design: Grimco Briteline Dual Perf 80/20.
 5. Acceptable manufacturers of film: Grimco, 3M (Clear Focus).
 6. Potential installers (not limited to): Lynn Imaging, ESP Window Tint, Signarama Downtown, FastSigns

2.06 ACCESSORIES

- A. Anchors and Inserts: Provide nonferrous metal 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 masonry work.
- B. Where the only appropriate location for signage (e.g., adjacent to doors) is on glass, provide blank plastic panel for back side of glass to obscure attachment. To be exact material, size, and shape of sign it backs up, aligning at full perimeter.

2.07 FINISHES

- A. Color and Surface Textures: For exposed sign material that required 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 full range of colors.

- B. Metal Finishes: Comply with NAAMM "Metal Finishes Manual: for finish designations and application recommendations.
- C. Aluminum Finishes: Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.
 - 1. Class II Clear Anodized Fine Satin Finish: AA-M31C21A31 (Mechanical Finish: Fine satin directional textured; Chemical Finish: Fine matte etched finish; Anodic Coating: Class II Architectural, clear film thicker than 0.4 mil).
 - 2. Baked-Enamel Finish: AA-M4xC12C42R1x (Mechanical Finish: Manufacturer's standard, other non-directional textures; Chemical Finish: Chemical conversion coating, acid chromate-fluoride-phosphate pretreatment; Organic Coating: as specified below). Apply baked enamel in compliance with the paint manufacturer's specifications for cleaning, conversion coating and painting.
 - a. 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.
 - 1) Color: As selected by the Architect from the manufacturer's full range of colors.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

- A. Refer to Signage Schedule for location.
- B. Inspect substrate conditions, verifying that surfaces are smooth, clean, and ready for installation. Do not install signage until conditions are satisfactory.
- C. Install signage units and components at locations shown or scheduled, securely mounted with adhesive tape and screws. Attach signs to substrate in accordance with manufacturer's instruction based on anchorage method indicated.
- D. Install sign components level, plumb and at heights determined by the Architect. Cooperate with other trades for installation of sign units to the finish surface.
- E. Do not install signs until substrates have received all required finishes and finish coats. Damaged sign units, as determined by the Architect, shall be replaced at the expense of the Contractor.

3.02 CUT METAL LETTERS AND NUMBERS

- A. Mount letters and numbers using standard fastening methods recommended by the manufacturer for letter type, type of mounting, wall construction and condition of exposure indicated. Provide heavy weight paper template to establish letter spacing and to locate holes for fasteners.

3.03 WINDOW GRAPHICS

- A. Verify that graphics are of appropriate resolution for high-quality printing of image. Coordinate with Architect during this verification.
- B. Print in controlled conditions, package for protection and deliver to site, keeping in protective covering until ready for installation.
- C. Installation shall be by same company providing material and printing, maintaining responsibility for material until installation is complete.

3.04 CLEANING AND PROTECTION

- A. Restore any damaged finishes. Clean and protect work from damage.
- B. At the completion of the installation, clean sign surfaces in accordance with manufacturer's instructions.

END OF SECTION 10 14 00

SECTION 10 22 39 – MOVABLE PARTITIONS

PART 1 – GENERAL

1.01 DESCRIPTION

A. General

1. Furnish and install operable partitions and suspension system. Provide all labor, materials, tools, equipment, and services for operable walls in accordance with provisions of contract documents.

1.02 RELATED WORK BY OTHERS

- A. Preparation of opening: Any deviation of site conditions contrary to approved shop drawings must be called to the attention of the architect.
- B. All header, blocking, support structures, jambs, track enclosures, surrounding insulation, and sound baffles as required in 1.04 Quality Assurance.
- C. Prepunching of support structure in accordance with approved shop drawings.
- D. Paint or otherwise finishing all trim and other materials adjoining head and jamb of operable partitions.

1.03 SUBMITTALS

- A. Complete shop drawings are to be provided prior to fabrication indicating construction and installation details. Shop drawings must be submitted within 60 days after receipt of signed contract.

1.04 QUALITY ASSURANCE

- A. Preparation of the opening shall conform to the criteria set forth per ASTM E557 Standard Practice for Architectural Application and Installation of Operable Partitions
- B. The partition STC (Sound Transmission Classification) shall be achieved per the standard test methods ASTM E90.
- C. Noise isolation classifications shall be achieved per the standard test methods ASTM E336 and ASTM E413.
- D. Noise Reduction Coefficient (NRC) ratings shall be per ASTM C423.
- E. Rack testing for 10 years. (tensional strength stress test)
- F. The manufacturer shall have a quality system that is registered to the ISO 9001 standards.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Proper storage of partitions before installation and continued protection during and after installation will be the responsibility of the installing contractor.

1.06 WARRANTY

- A. Partition system shall be guaranteed for a period of two years against defects in material and workmanship, excluding abuse.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Upon verifying compliance with all of the criteria specified in this section, non-listed manufacturers wishing to bid products equal to the product described must submit to the architect, 10 days prior to bidding, complete data in support of compliance. The submitting manufacturer guarantees the proposed substituted product complies with the performance items specified and as detailed on the drawings.

2.02 MATERIALS

- A. Basis of Design: Product to be top-supported Series 632 paired panels as manufactured by Hufcor Inc.
 - 1. Acceptable manufacturers:
 - a. Modernfold
 - b. Kwik-Wall
 - c. Moderco
- B. System Description
 - 1. Panels shall be nominally 3” thick, to 48” in width, and hinged in pairs.
 - 2. Panel faces shall be laminated to appropriate substrate to meet the STC requirement in 2.04 Acoustical Performance.
 - 3. Frames shall be of 16 gauge painted steel with integral factory applied aluminum vertical edge and face protection.
 - 4. Vertical sound seals shall be of tongue and groove configuration, ensure panel-to-panel alignment and prevent sound leaks between panels.
 - 5. Horizontal top seals shall be retractable, provide 1” nominal operating clearance, and exert upward force when extended.
 - 6. Horizontal bottom seals shall be retractable, provide up to 2” nominal operating clearance, and exert downward force when extended.
 - 7. Horizontal trim shall be of aluminum.
 - 8. Low profile hinges on basic panels shall be of steel and project no more than 1/4” beyond panel faces. Each pair of panels to have a minimum of three hinges.

- C. Weight of the panels shall be 5.7 lbs. per sq. ft.
- D. Suspension system:
 - 1. Track shall be of clear anodized architectural grade extruded aluminum alloy 6063-T6. Track design shall provide precise alignment at the trolley running surfaces and provide integral support for adjoining ceiling, soffit, or plenum sound barrier. Track shall be connected to the structural support by pairs of minimum 3/8" diam threaded steel hanger rods. Guide rails and/or track sweep seals shall not be required.
 - a. Each panel shall be supported by one 4-wheeled carrier. Wheels to be of hardened steel ball bearings encased with molded polymer tires.
 - 2. Plenum closure (by others): Design of plenum closure must permit lifting out of header panels to adjust track height. Plenum closure required for optimum sound control of partition.
- E. Finishes
 - 1. Face finish shall be, as located in drawings, either:
 - a. Available inset tackboard surface, 2mm cork covered with vinyl. (Bottom 32" and Top – from dry erase surface up, varies based on ceiling height)
 - b. Dry erase writing surface approved by manufacturer. (Middle 48")
 - 2. Exposed metal trim and seal color shall be selected from manufacturer's standard colors.
 - 3. Aluminum track shall be clear anodized.
 - 4. Trim or film at wall at end of unit so that rubber gasketing does not stick to paint.

2.03 OPERATION

- A. Panels shall be manually moved from the storage area, positioned in the opening, and seals set.
- B. Retractable Horizontal Seals
 - 1. Retractable horizontal seals shall be activated by a removable quickset operating handle located approximately 42" from the floor in the panel edge.
 - 2. All retractable seals in each hinged pair shall be operated simultaneously.
 - 3. Seal activation requires approximately 15 lbs. of force per panel and approximately a 190 degree turn of the removable handle.
- C. Automatic Floor Seals
 - 1. Horizontal seals shall be activated by pressing the edge of the panel into the edge of the adjacent panel or wall.
 - 2. Seal activation requires approximately 15 lbs. of force per panel.

D. Final partition closure to be by:

1. Lever closure panel with expanding jamb which compensates for minor wall irregularities and provides a minimum of 250 lbs. seal force against the adjacent wall for optimum sound control. The jamb activator shall be located approximately 45" from the floor in the panel face and be accessed from either side of the panel. The jamb is to be equipped with a mechanical rack and pinion gear drive mechanism and shall extend 4"-6" by turning the removable operating handle.

E. Stack/Store Panels

1. Retract seals and move to storage area. Panels to be stored at one end of the track, against wall.

2.04 ACOUSTICAL PERFORMANCE

- A. Acoustical performance shall be tested at a laboratory accredited by the US Dept of Commerce, National Institute of Standards and Technology, under the National Voluntary Laboratory Accreditation Program (NVLAP) and in accordance with ASTM E90 Test Standards.

Standard panel construction shall have obtained an STC rating of 51.

1. Complete, unaltered written test report is to be made available upon request.

PART 3 - EXECUTION

- A. Installation: The complete installation of the operable wall system shall be by an authorized factory-trained installer and be in strict accordance with the approved shop drawings and manufacturer's standard printed specifications, instructions, and recommendations.

1. Install trim or film at wall to keep gasketing from sticking to paint.

B. Cleaning

1. All track and panel surfaces shall be wiped clean and free of handprints, grease, and soil.
2. Cartoning and other installation debris shall be removed to onsite waste collection area, provided by others.

C. Training

1. Installer shall demonstrate proper operation and maintenance procedures to owner's representative.
2. Operating handle and owners manuals shall be provided to owner's representative.

END OF SECTION 10 22 39

SECTION 10 26 00 – WALL PROTECTION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Drawings for locations of work to be performed.

1.02 SUMMARY

- A. This Section includes corner guards and wall protection.
 - 1. Stainless Steel Corner Guards: Install on all outside corners of gypsum board partitions.
 - 2. Wall protection panels at Kitchen (FRP).

1.03 SUBMITTALS

- A. Shop Drawings: Show locations, extent and installation details of each impact-resistant wall protection system component. Show methods of attachment to adjoining construction.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Store wall surface protection materials in original, undamaged packages and container inside a well ventilated area protected from weather, moisture, soiling, extreme temperatures and humidity.

1.05 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install wall surface protection system components until the space is enclosed, is weatherproof and ambient temperature within the building is maintained at not less than 70 degrees F for not less than 72 hours before beginning installation.

1.06 WARRANTY

- A. Provide Manufacturer's Limited Lifetime Warranty against material and manufacturing defects.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include the manufacturers specified.

1. InPro.
2. Construction Specialties, Inc.
3. IPC Door and Wall Systems, Inc.
4. Koroseal Wall Protection Systems, Inc.
5. Pawling.
5. Creative Pultrusions.
6. Extren.
7. Kemlite.

2.02 MATERIALS

- A. Stainless Steel Slate: Type 304, minimum 18-gauge.
- B. Adhesive: Type Recommended by the manufacturer for use with material on the substrate indicated.
- C. Silicone: See Division 07 Section "Joint Sealants".

2.03 CORNER GUARDS

- A. Stainless Steel Corner Guards: Paper covered, satin finish, minimum 18ga, stainless steel sheet corner guards
- B. Scope: Provide at all drywall outside corner conditions. (Not required at block corners.)
 1. Height: 6'-0"
 2. Leg Size: 2" x 2"
 3. Provide 90-degree turn, unless otherwise indicated.
 4. Formed edges, +/- 11° taper.
 5. Rounded corners at top of corner guard, with 1/2-inch radius.
 6. Mounting Method: countersunk oval headed screws with mounting holes 12" o.c. and adhesive.

2.04 FRP WALL PROTECTION PANELS (for use at all Kitchen walls and walls of Kitchen support spaces)

- A. Rigid sheet wall protection panels
 1. Structural shapes shall be pultruded from Vinylester Resin Series 1625 by Creative Pultrusions, Isophthalic Polyester Series 525 by Extren, or equal by Kemlite FRP Panels, having as class I fire rating per ASTM E 84 with the following minimum strength characteristics:

Flexural Strength	ASTM-D-790	Longitudinal 37,000 PSI Transverse 10,000 PSI
Flexural Modulus	ASTM-D-790	Longitudinal 2.0 x 10 ⁶ PSI Transverse 1.0 x 10 ⁶ PSI
Compressive Strength	ASTM-D-695	Longitudinal 37,500 PSI Transverse 20,000 PSI
Tensile Strength	ASTM-0-638	37,500 PSI

Shear Strength	ASTM-D-732	7,000 PSI
Modulus of Elasticity		2.8x106 PSI

2. Color: White
3. Texture: 0.09" embossed.
4. Fasteners and Saddle Clips: 316 stainless steel
5. Manufacturer's standard trim at cut edges

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 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.

2.06 STAINLESS STEEL FINISHES

- A. Satin, directional polish: No. 4 finish.
 1. Remove tool and die marks and stretch lines or blend into finish.
 2. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine area and conditions in which impact resistant wall protection system components will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. General: Before installation, clean substrate to remove dust, debris and loose particles.

3.03 INSTALLATION

- A. Install impact resistant wall protection system components level, plumb and true to line without distortions.
 - 1. Do not use material with chips, cracks, voids, stains or other defects that might be visible in the finished work.

3.04 CLEANING

- A. Remove excess adhesive using methods and materials recommended by the manufacturer.
- B. Clean surfaces in accordance with manufacturers clean up and maintenance instruction.
- C. Remove surplus materials, rubbish and debris resulting from installation, upon completion of work and leave installation areas in neat, clean condition.

END OF SECTION 10 26 00

SECTION 10 28 00 – RESTROOM ACCESSORIES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Drawings for locations of work to be performed.

1.02 WORK INCLUDED

- A. Furnish labor and materials to complete restroom accessories indicated, as specified herein, or both.
- B. Accessories: Include anchors, plates, screws, bolts, expansion shields and like required by types of accessories selected and by construction to which they are to be secured.
 - 1. Exposed hardware: Finish to match accessory.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated. Include the following:
 - 1. Construction details and dimensions.
 - 2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
 - 3. Material and finish descriptions.
 - 4. Features that will be included for Project.
 - 5. Manufacturer's warranty.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
 - 1. Identify locations using room designations indicated on Drawings.
 - 2. Identify products using designations indicated on Drawings.
- C. Maintenance Data: Restroom accessories to include in maintenance manuals.

1.05 QUALITY ASSURANCE

- A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.

1.06 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Individually pack and wrap accessory item, each complete with required trimmings, anchors, fastenings, bolts, screws and like; label each item indicating type of accessory, floor and room or space designation.
- C. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.07 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 15 years from date of Substantial Completion, minimum. (Where manufacturer's standard warranty exceeds 15 years, manufacturer's standard warranty shall be provided.)

PART 2 PRODUCTS

2.01 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch minimum nominal thickness, unless otherwise indicated.
- B. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- C. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- D. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- E. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 1/4-inch thick.
- F. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.02 RESTROOM ACCESSORIES

- A. Basis-of-Design Product: The design for accessories is based on products indicated. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
1. A & J Washroom Accessories, Inc.
 2. Bobrick Washroom Equipment, Inc.
 3. Bradley Corporation.
 4. American Specialties Inc.
 5. General Accessory Manufacturing Co. (GAMCO).
 6. Impact
 7. World (for hand dryer)
 8. Dayton (for hand dryer)
- B. Paper Towel (Roll) Dispenser (TA-1):
1. Basis-of-Design Product: Bobrick B-2860.
 2. Mounting: Surface mounted.
 3. Minimum Capacity: 8" wide x 8" diameter paper towel roll.
 4. Material and Finish: Stainless steel, No. 4 finish (satin).
 5. Lockset: Tumbler type.
 6. Refill Indicators: Viewing slots at sides or front.
- C. Toilet Paper Dispenser (TA-2):
1. Basis-of-Design Product: Bobrick B-274.
 2. Description: Double-roll dispenser.
 3. Mounting: Surface mounted.
 4. Operation: Limit stop/controlled delivery with theft-resistant spindle.
 5. Capacity: Designed for 6" diameter tissue rolls.
 6. Material and Finish: Satin-finish aluminum bracket with plastic spindle.
- D. Soap Dispenser (TA-3):
1. Basis of Design Product: Impact Foam-eeze 9326
 2. Finish/Shell: Black/Gray ABS
 3. Lockset: keyed
 4. Refill Indicators: Viewing window
 5. 1000 ml (34 oz) capacity; dispenses 0.7 ml of foamed liquid per stroke
- E. Toilet Grab Bar (TA-4, TA-5, TA-6):
1. Basis-of-Design Product: Bobrick B-6806
 2. Mounting: Flanges with concealed fasteners.
 3. Material: Stainless steel, 0.05-inch thick; smooth, No.4, satin finish.
 4. Outside Diameter: 1-1/2 inches.

5. Configuration and Length: As indicated on Drawings.
- F. Waste Receptacle (TA-7)
1. Basis of Design Product: Bobrick B-275
 2. Mounting: Surface mounted.
 3. Material and Finish: Stainless steel Type 304, 22ga.
 4. Liner: Heavy gauge vinyl, attached with 4 grommets, removable for servicing.
 5. Capacity: 20 gal
- G. Mop and Holder with shelf and hooks (TA-8):
1. Basis-of-Design Product: Bobrick B-239.
 2. Description: 34"l shelf with three anti-slip mop holders and four hooks.
 3. Material and Finish: Stainless steel, No. 4 finish (satin).
- H. Mirror Units (TA-9):
1. Types:
 - a. Basis-of-Design Product (TA-9): Bobrick B-290, 24" x 36"
 2. Frame: Stainless-steel welded frame, 0.05-inch thick; smooth, No.4, satin finish.
 3. Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.
 - a. Wall bracket of galvanized steel, equipped with concealed locking devices – Lock Tab style.
- I. Electric Hand-Dryer (TA-10):
1. Basis of Design: Model XA, surface mount, as manufactured by World Dryer
 2. Operation: Push button, not automated, with 25 second time limit.
 3. Shell: 1/4-inch thick cast iron cover.
 3. Finish: white porcelain enamel
 3. Motor: Universal type, 1/10 HP at 7500 RPM, 115 volt, 20 amps, 2,300 watts, 60Hz
 4. Dryer shall deliver 7,300 linear feet of air per minute (LFM)
 5. Install where shown on Drawings.
 6. Acceptable manufacturer: Dayton

2.03 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install accessories where indicated, or as directed.
- B. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- C. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to method in ASTM F 446.
- D. During installation of accessories, until finally installed, accepted, protect items by approved means to maintain accessories in perfect condition. Remove damaged or defective work; replace with perfect work without extra cost to Owner.

3.02 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 10 28 00

SECTION 10 41 60 – OUTDOOR MESSAGE / ID SIGNAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Computerized directories and message boards of the following types:
 - 1. LED message signs.

1.2 RELATED SECTIONS

- A. Section 05 50 00 - Metal Fabrications.
- B. Division 26 - Electrical.

1.3 REFERENCES

- A. Americans with Disabilities Act (ADA).
- B. National Electrical Manufacturers Association (NEMA).

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum two years documented experience in work of this Section.
- B. Installer Qualifications: Minimum two years documented experience in work of this Section.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards.
- B. Store materials within absolute limits for temperature and humidity recommended by manufacturer. Protect from damage.

1.7 PROJECT CONDITIONS

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

1.8 WARRANTY

- A. Manufacturer's standard limited warranty against defects materials and workmanship when installed and operated in accordance with the product specifications and manuals.

1. Warranty Period: Standard 1 year.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design Manufacturer: Commonwealth Sign Company, Louisville KY (Think LED)
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Sunrise Systems Inc., Pembroke, MA
 - 2. Stewart Signs, Sarasota, FL
 - 3. Trans-Lux Commercial Corp., Des Moines, IA
 - 4. Golden Rule signs, Louisville, KY
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 63 00.

2.2 OUTDOOR MESSAGE / ID SIGNS

- A. Outdoor ID Sign:
 - 1. Two (2) Lexan Faces with graphic signage the same on both sides, 2'-0" x 6'-0" in prefinished aluminum frame.
 - a. Signage graphics to be determined; art will be provided by Owner.
 - b. 12" deep internally LED lighted cabinet w/ 2" retainers, hinged for access/maintenance.
 - c. First surface digital print graphics
 - 2. Enclosure for ID Sign and LED message sign: IP65 Rated UL listed Cabinet.
 - a. Finish for Chassis, Bezel, and Sun Shade: To be selected from manufacturer's full line.
- B. Monument:
 - 1. Mounting: Custom, anchored securely to concrete/masonry base shown on Drawings; anchorage to be proposed by sign installer for review in Shop Drawings.
- C. Outdoor LED Message Signs:
 - 1. Layout and Configuration: Double-sided (two displays), layout as indicated on Drawings
 - a. 6'-0" x 3'-0" viewing area
 - b. Depth of cabinet: 6"
 - 2. Mounting: Custom, anchored securely to pedestal structure.
 - 3. Sign Type: Custom, full color and graphics
 - 4. Sign Type:
 - a. Pixel Pitch: 3/4 inch (20 mm).
 - b. LEDs Per Pixel: 3.
 - c. Maintenance: Front Serviceable.

5. Communication Options: Wireless and Hardwired (both)
 - a. Ethernet Cat 6 Cable
6. Operating Temperature Range: -4 to 122 degrees F (-20 to 50 degrees C).
7. Power: Factory configured to operate on 120 VAC, 50 or 60 Hz.
8. Warranty: 1 year comprehensive; 5 year parts.
9. Provide temperature controlled fan and integrated surge protector.
10. Signs shall be grounded by connection to the equipment grounding conductor of the supply branch circuit.

D. Software System: SignCommand or equivalent

1. Software Capabilities:
 - a. Communicate over the internet
 - b. Transition effects
 - c. Show custom text
 - d. Show custom images
 - e. Show custom video clips
 - f. Show time and temperature
 - g. Show different messages each side
 - h. USB drive updating
2. Sign Functions: Including but not limited to:
 - a. Counters
 - b. Temperature Sensor
 - c. Light Sensor
 - d. Daily, Weekly and Special Event Scheduling

2.3 FABRICATION

- A. General: Provide manufacturer's standard signs of configurations indicated.
1. Mill joints to tight, hairline fit. Form joints exposed to weather to exclude water penetration.
 2. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in location not exposed to view after final assembly.
 3. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.

2.4 FINISHES

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- 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.

PART 3 EXECUTION

3.1 PREPARATION

- A. Prepare substrates using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- B. Do not proceed with installation until substrates have been prepared using the methods recommended by the manufacturer and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.
- C. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's written instructions and recommendations and in proper relationship with adjacent work.

3.3 CLEANING, MAINTENANCE AND PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 10 41 60

SECTION 10 44 00 - FIRE-PROTECTION SPECIALTIES

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. Portable fire extinguishers.
 - 2. Cabinets for fire extinguishers.
 - 3. Mounting brackets for fire extinguishers.

1.3 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire-protection cabinets.
 - 1. Fire Extinguishers: Include rating and classification.
 - 2. Fire-Protection Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.
- B. Samples for Verification: For each type of exposed factory-applied color finish required for fire-protection cabinets, prepared on Samples of size indicated below.
 - 1. Size: 6 by 6 inches square.
- C. Maintenance Data: For fire extinguishers and fire-protection cabinets to include in maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain fire extinguishers and fire-protection cabinets through one source from a single manufacturer.
- B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

- C. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1.5 COORDINATION

- A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of portable fire extinguishers that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10.
 - b. Faulty operation of valves or release levers.
 - 2. Warranty Period: Manufacturer's standard warranty or one year from date of Substantial Completion, whichever is longer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. 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, but are not limited to, manufacturers specified.
 - 2. Basis-of-Design Product: The design for each product is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- B. Aluminum: Alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated, and as follows:
 - 1. Sheet: ASTM B 209.

2. Extruded Shapes: ASTM B 221.

C. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.3 PORTABLE FIRE EXTINGUISHERS

A. Available Manufacturers:

1. JL Industries, Inc.
2. Larsen's Manufacturing Company.
3. Potter Roemer; Div. of Smith Industries, Inc.

B. General: Provide fire extinguishers of type, size, and capacity indicated.

1. Valves: Manufacturer's standard.
2. Handles and Levers: Manufacturer's standard.
3. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.

C. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 3-A:40-B:C, 5-lb nominal capacity, with siliconized mono ammonium phosphate powder in manufacturer's standard enameled container.

1. Basis-Of-Design Product: Larsen's MP5-A.
2. Usage: General purpose, mounted in cabinet.

2.4 FIRE-PROTECTION CABINET

A. Basis-of-Design Product: Larsen's AL2409-R3 or a comparable product by one of the following:

B. Available Manufacturers:

1. JL Industries, Inc.
2. Larsen's Manufacturing Company.
3. Potter Roemer; Div. of Smith Industries, Inc.

C. Cabinet Type: Suitable for fire extinguisher.

D. Cabinet Construction: Nonrated.

E. Cabinet Material: Enameled-aluminum sheet.

1. Color: As selected by Architect from manufacturer's full range.

F. Semi-Recessed: Cabinet box recessed in walls where of sufficient depth. Semi-Recessed at CMU or frame walls.

1. Exposed Flat Trim at recessed cabinet: One-piece combination trim and perimeter doorframe overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend) of 1/4 to 5/16 inch.
 2. 2 ½" rolled edge.
- G. Cabinet Door and Trim Material: Extruded-aluminum.
1. Finish: Clear anodized.
- H. Door Style: Fully glazed panel with frame.
- I. Door Glazing: 1/8-inch clear tempered float glass.
- J. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
1. Provide Lettered Door Handle: One-piece, cast-iron door handle with the word "FIRE" embossed into face.
 2. Door Lock: Cam lock, that allows door to be opened during emergency by pulling sharply on door handle, with cylinder, keyed alike to other cabinets.
 3. Provide manufacturer's standard hinge permitting door to open 180 degrees.
- K. Accessories:
1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
 2. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
 - a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."
 - 1) Location: Applied to cabinet door.
 - 2) Application Process: Die-cut adhered vinyl.
 - 3) Lettering Color: Red.
 - 4) Orientation: Vertical.

2.5 MOUNTING BRACKETS

- A. Available Manufacturers:
1. JL Industries, Inc.
 2. Larsen's Manufacturing Company.
 3. Potter Roemer; Div. of Smith Industries, Inc.

- B. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with baked-enamel finish.
 - 1. Color: Red.
- C. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
 - 1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red-letter decals applied to mounting surface.
 - a. Orientation: Vertical.

2.6 FABRICATION

- A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
 - 1. Weld joints and grind smooth.
- B. Cabinet Doors and Trim: Fabricate according to manufacturer's standards, from materials indicated and coordinated with cabinet types selected.

2.7 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. Finish fire-protection cabinets after assembly.
- 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.

2.8 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

- B. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

2.9 STEEL FINISHES

- A. Surface Preparation: Clean surfaces of dirt, oil, grease, mill scale, rust, and other contaminants that could impair paint bond using manufacturer's standard methods.
- B. Baked-Enamel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-enamel finish consisting of prime coat and thermosetting topcoat. Comply with paint manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.
- B. Examine fire extinguishers for proper charging and tagging.
 - 1. Remove and replace damaged, defective, or undercharged units.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare recesses for recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

- A. General: Install fire-protection specialties in locations and at mounting heights indicated or, if not indicated, at heights [indicated below:] [acceptable to authorities having jurisdiction.]
 - 1. Fire-Protection Cabinets: 56 inches above finished floor to top of cabinet.
 - 2. Mounting Brackets: 48 inches above finished floor to top of fire extinguisher.
- B. Fire-Protection Cabinets: Fasten fire-protection cabinets to structure, square and plumb.
 - 1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is not adequate for recessed cabinets, provide semi-recessed fire-protection cabinets.

2. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.
- C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.
- D. Identification: Apply vinyl lettering at locations indicated.

3.4 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire-protection specialties are installed, unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet manufacturer.
- E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 10 44 00

SECTION 10 50 00 – METAL LOCKERS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

- A. Installation of corridor lockers to include, but not limited to, all labor, materials and equipment required for new double-tiered lockers with recessed cup handles, built-in combination locks and slope-tops constructed on new (or existing) concrete bases.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data and installation instruction for each type of locker required.
- B. Shop Drawings: Submit shop drawings for fabrication and erection of lockers, including plans and elevations. Show anchorages and accessory items.

1.04 SAMPLES

- A. Provide painted metal locker chips, from manufacturer's full range, for selection.

1.05 WARRANTY

- A. Contractor shall warrant all materials and workmanship of a period of one (1) year, unless otherwise noted. Any items requiring repair or replacement during the warranty period, due to manufacturing or installation defects, shall be corrected by the Contractor without additional cost to the Owner.
- B. Built-in combination locks shall be warranted to be free from manufacturing defects for a period of five (5) years from the Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Listed manufacturers must adhere to the Technical Specifications and not assume that their standard unit will meet all requirements.
- B. Available Manufacturers: Subject to compliance with requirements, provide one of the following:

1. Republic Storage Systems
2. Penco Products
3. Lyon Metal Products
4. List Industries / Superior
5. DeBourgh Manufacturing Co.
6. Newline Products

2.02 CONSTRUCTION

- A. CORRIDOR LOCKERS: shall be double-tiered (refer to the Drawings for location) lockers, sloped-top without legs, mounted on new / existing concrete curbs, overall size - 12" x 12" x 72".
- B. All parts shall be made from mild, cold-rolled sheet steel, free from imperfections and capable of taking a high-grade enamel finish.
- C. Door Frames: shall not be less than 16-gauge steel formed channels. Vertical members of frame shall form a continuous door strike. Channel member between the upper and lower tier of the lockers shall be 16-gauge. All parts of the door frame shall be securely welded together.
- D. Doors: shall be one-piece, 16-gauge steel with both vertical edges formed to be channel-shaped. Top and bottom to be flanged at 90-degree angle.
- E. Ventilation: louvers shall be provided at the top and bottom of each door.
- F. Hinges: shall not be less than 2-inches (high) x .050-inches (thick) minimum, five knuckle, full loop and tight pin hinge. Hinge shall be welded to the door frame and securely fastened to the door. Each locker door shall have two (2) hinges for each double-tiered locker door.
- G. Number Plates: all locker doors shall be equipped with a polished aluminum number plate with black numbers, not less than 3/8-inches. Number plates shall be attached with rivets on recessed cup handle.
- H. Locking Device: Combination built-in locks shall be manufactured by the Master Lock Company #1630 with five changeable combinations and a 5-pin keyed cylinder supervisory entry feature. Lock shall automatically re-lock when door is closed. All locks shall be master keyed. Provide (10) master keys.
- I. Handle: shall be of the recessed type to include a pocket made of stainless steel, or zinc die cast metal, utilizing a molded comfortable finger lift for actuating the lock bar when opening the door. Recessed area shall accommodate a built-in combination lock.
- J. Body: locker sides, back and top shall be 24-gauge steel, with edges formed to provide strength and rigidity. Bottom and shelf panel shall be 16-gauge.
- K. Finish: all surfaces to be painted shall thoroughly cleaned and given a bonding and rust inhibitive phosphate treatment, then electrostatically sprayed with a heavy coat of enamel

paint. Enamel shall then be baked-on to product a durable finish. Color shall be selected by Architect from manufacturer's full range.

- L. Coat Hooks: each locker shall contain one (1) double-prong hook on rear wall and two (2) single-prong sidewall hooks. Hooks shall be made of steel with ball tips, cadmium plated, attached with (2) bolts per hook.
- M. Sloping Top: lockers shall be equipped with continuous 16-gauge sloped metal tops with concealed fasteners. **Individual sloping tops are not acceptable.**
- N. Base: Install lockers on a new / existing concrete base. Refer to the Drawings for existing concrete base to remain.

2.03 ACCESSORIES

- A. All bolts and nuts shall be zinc plated. Lockers shall be assembled using KEPS nuts.
- B. Provide all necessary filler strips and trim required for a complete installation. Fillers to be 16-gauge.
- C. Provide 16-gauge, solid end panels with no exposed fasteners.

PART 3 EXECUTION

3.01 WORKMANSHIP

- A. Erect work in thorough, workmanlike manner using workman skilled in the trade. Lockers to be set straight, plumb, and true. Securely attach lockers to walls and base. At a minimum, fasten every third locker to the wall, top and bottom.

3.02 LOCKERS, GENERAL

- A. Install metal lockers at locations shown on the Drawings in accordance with manufacturer's instructions.
- B. Adjust doors and latches to provide easy operation, with no binding.
- C. Provide the Owner with one can of touch-up paint, for each color used.
- D. Provide control chart for locker combinations.

3.03 CLEANING AND PROTECTION

- A. Wipe-out and clean all lockers after installation.

- B. Restore damaged finishes caused by the locker installation. Clean and protect work from damage.

END OF SECTION 10 50 00

SECTION 11 52 13 - LARGE VENUE PROJECTION SCREENS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: This Section specifies electrically operated rear projection screens and accessories.

1.02 RELATED SECTIONS

- A. Section 26 05 00 - Common Work Results for Electrical: Power supply, conduit and wiring.

1.03 DEFINITIONS

- A. Gain: Indication of screen's luminance or brightness, measured perpendicular to screen center and relative to magnesium carbonate block, which serves as standard for 1.0 gain. Higher numbers indicate greater brightness.
- B. Viewing Angle: Horizontal angle from perpendicular center of screen at which gain or brightness decreases by 50%.
- C. Format: Proportion of projection screen viewing area expressed as a ratio of width/height.

1.04 REFERENCES

- A. International Code Council (ICC):
 - 1. International Building Code.
- B. Society of Motion Picture and Television Engineers (SMPTE):
 - 1. SMPTE RP 94-2000, Gain Determination of Rear Projection Screens.
- C. Underwriters Laboratories Inc. (UL).
- D. Underwriters' Laboratories of Canada (ULC).

1.05 ACTION SUBMITTALS

- A. General: Submit listed action submittals in accordance with Contract Conditions and Section 01 33 00 - Submittal Procedures.
- B. Product Data: Submit product data, including manufacturer's technical product data sheet, for specified products.
 - 1. Material Safety Data Sheets (MSDS).
- C. Shop Drawings: Indicate dimensions, fabrication and installation details.
 - 1. Include electric wiring diagrams.
- D. Samples: Submit 2 samples of screen finish material having dimensions of 6 inches × 6 inches (152 × 152 mm).

1.06 INFORMATION SUBMITTALS

- A. Quality Assurance:

1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
2. Certificates: Product certificates signed by manufacturer certifying that materials comply with specified performance characteristics, criteria and physical requirements.
3. Manufacturer's installation instructions.

1.07 QUALITY ASSURANCE

- A. Qualifications:
 1. Worker experienced in performing work of this section who has specialized in work similar to that required of this project.
- B. Regulatory Requirements:
 1. Comply with International Building Code (IBC) and KBC.

1.08 DELIVERY, STORAGE & HANDLING

- A. Storage and Protection:
 1. Store electric projection screens in a dry, ventilated area, protected from exposure to harmful weather conditions, at a temperature less than 80 degrees F (27 degrees C).
- B. Handling: Handle electrically operated projection screen materials with care in order to prevent damage.
- C. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

1.09 PROJECT AMBIENT CONDITIONS

- A. Project Location: Perform electrically operated projection screen work when temperatures are greater than 40 degrees F (4 degrees C).

1.010 SEQUENCING

- A. Sequence with Other Work: Comply with projection screen manufacturer's written recommendations for sequencing construction operations.

1.011 MAINTENANCE MATERIALS

- A. Use standard product line parts produced by manufacturer of electrically operated projection screens.

PART 2 PRODUCTS

2.01 Projection Screen - Tensioned Electrically Operated Concealed

- A. Basis of Design:
 1. DaLite Professional Electrol Motorized Screen Part #14209
 - a. 16:10 / Matte White / 177.5" x 284" or 335" diagonal / LVC - Standard 120V (60Hz) Part #40973

B. Alternate Manufacturers & Products:

1. Draper Inc. – Paragon E Electric Projection Screen Part #114230
 - a. 16:10/ Matte White XT1000E / 177.5" x 284" or 335" diagonal/LVC-IV/Standard 120V (60Hz)
2. Stewart Filmscreen Corp. - Cascade Grande S6 Part # CUSTOM
 - a. 16:10 / UltraMatte 130 / 177.5" x 284" or 335" diagonal / LVC / Standard 120V (60Hz)

PART 3 EXECUTION

3.01 INSTALLERS

- A. Provide experienced and qualified technicians to install electrically operated projection screens.

3.02 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions and technical data sheets.

3.03 EXAMINATION

- A. Site Verification of Conditions
1. Verify that conditions of substrates previously installed under other sections or contracts are acceptable with electrically operated projection screen installation.
 2. Ensure electrical power supply is installed to meet electric projection screen requirements in accordance with Section 26 05 00 - Common Work Results for Electrical.
 - a. Verify type and location of power supply.
 3. Inform Architect of unacceptable conditions immediately upon discovery.
 4. Proceed with installation only after unacceptable conditions have been corrected.

3.04 COORDINATION

- A. Coordinate electric projection screen placement with placement of other ceiling and wall mounted components.

3.05 INSTALLATION

- A. Install electric projection screens in accordance with reviewed shop drawings at locations and heights indicated.
1. Verify locations with Owner prior to installation.
- B. Install viewing surface and drive assembly in housing only after interior construction is substantially complete.
- C. Securely install screens plumb and level to supporting substrate.

3.06 FIELD QUALITY CONTROL

- A. Testing and Inspection: Operate each screen 3 times to ensure viewing surfaces extend and retract through full range of motion.
 - 1. Verify controls, limit switches and other components function as designed and meet project requirements.
 - 2. Ensure viewing surface raising operation fully engages and lifts screen closure door into closed position.
 - 3. Adjust motors, controls and components to allow for smooth, unobstructed screen operation.

3.07 FINAL CLEANING

- A. Upon completion, remove surplus materials, rubbish, tools and equipment.

3.08 PROTECTION

- A. Protect electrically operated projection screens from damage during construction.
- B. Repair damage to adjacent materials caused by electrically operated projection screen work.

END OF SECTION 11 52 13

SECTION 11 66 00 – ATHLETIC EQUIPMENT

PART 1 GENERAL

1. SECTION INCLUDES

- A. Gymnasium and Play Field Equipment
 - 1. Overhead-supported basketball backstops, goals, and backstop winches.
 - 2. Basketball backboard padding.
 - 3. Wall padding
 - a. Gym
 - b. Sensory room
 - 4. Volleyball Equipment
 - 5. Swing support at Sensory / FMD
 - 6. Archery curtain

2. RELATED SECTIONS

- A. Division 03 Section: Cast in Place Concrete for installation of floor insert sleeves to be cast in concrete slabs.
- B. Division 26 Electrical Section: Installing electrical power to operate gymnasium equipment.

3. REFERENCES

- A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. ASTM F2440 - Standard Specification for Indoor Wall/Feature Padding.
- C. NFPA 255 - Surface Burning Characteristics of Building Materials.
- D. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
- E. NFPA 701 - Methods of Fire Tests for Flame-Resistant Textiles and Films.
- F. GREENGUARD Certification for Children and Schools

4. DESIGN REQUIREMENTS

- A. Basketball Backstops: Locate overhead attachments of basketball backstops in keeping with static equivalent loading and point reactions.

5. SUBMITTALS

- A. Comply with Section 01 34 00 – Shop Drawings, Product Data, and Samples.
- B. Product Data: Submit manufacturer's product data, including materials, components, fabrication, finish, and installation instructions.
- C. Shop Drawings:
 - 1. Submit manufacturer's shop drawings, including plans, elevations, sections, and details, indicating locations, quantities, dimensions, tolerances, materials, fabrication, connections, hardware, fasteners, finish, electrical wiring diagrams, options, and accessories.
 - 2. Show location and detail of attachment to building structure.

- D. Samples: Submit manufacturer's color samples.
 - 1. Powder Coat Sample.
 - 2. Basketball backboard padding.
 - 3. Wall padding.
- E. Design Data
 - 1. Basketball Backstops: Submit manufacturer's design data, indicating static loads and point reactions.
 - 2. Submit calculations complete, showing hander and hoist pulley points.
- F. Test Reports: Submit manufacturer's certified test reports from testing performed by accredited independent testing laboratory, indicating compliance of materials with requirements as specified.
- G. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- H. Manufacturer's Project References: Submit manufacturer's list of recently completed projects, including project name and location, name of architect, and type and quantity of gymnasium and play field equipment installed.
- I. Operation and Maintenance Manual: Submit manufacturer's operation and maintenance manual; including operation, maintenance, adjustment, and cleaning instructions; trouble shooting guide; parts list; and electrical wiring diagrams.
- J. Warranty: Submit manufacturer's standard and additional warranties.

6. QUALITY ASSURANCE

- A. Single Source Responsibility: Provide gymnasium and play field equipment from single manufacturer.
- B. Manufacturer's Qualifications: Minimum of 5 consecutive years experience manufacturing gymnasium and play field equipment similar to that specified.
- C. Installer's Qualifications: Trained and approved by manufacturer.
- D. Manufacturer shall provide documentation showing welders and processes are AWS certified.
- E. Regulatory Requirements: Gymnasium and play field equipment shall conform to latest rules and regulations.
 - 1. International Basketball Federation / Federation International de Basketball (FIBA).
 - 2. National Basketball Association (NBA).
 - 3. National Collegiate Athletic Association (NCAA).
 - 4. National Federation of State High School Associations (NFHS).

7. WARRANTY

- A. Provide 1 year warranty against defects in materials and workmanship, unless otherwise specified.

PART 2 PRODUCTS

1. MANUFACTURER

- A. Basis of Design: Porter Athletic
- B. Available Manufacturers:
 - 1. Draper Inc.
 - 2. Performance Athletic Equipment Company.

3. Spalding Equipment.

C. Substitutions: Requests for substitutions will be considered in accordance with Section 01 63 00.

2. OVERHEAD-SUPPORTED BASKETBALL BACKSTOPS: Main Court Quantity 2; Side Court Quantity 4

A. Basketball Backstops: Model No. 90955000 Side Fold (in front of platform) and Model 90949000 Forward Folding (main court and side court goals over bleachers) overhead-supported basketball backstops. Back Braced.

1. Frame: Fully welded, vertical front frame assembly consisting of main center Mast of 6-5/8" O.D. heavy-wall structural steel tube with diagonal back sway braces of 2-1/2" rectangular steel tube. Bolt-together frames are not acceptable.
2. Structure: Supported from 3-1/2" O.D. pipe or tube anchored to overhead framing members with heavy formed-steel support fittings. Fittings must be capable of supporting load exceeding 10,000 pounds with sufficient attachment points and meeting safety factor of 60:1. Furnish certified test results with submittals.
3. Goals: Mount directly through backboard and into heavy structural steel weldment Center-Strut, clamped to vertical 6-5/8" O.D. center support to eliminate strain on backboard, should player hang on front-mounted goal and to be in compliance with NCAA and NFSHSA requirements.
4. Pipe Ends: Cap when exposed.
5. Finish: Metal Parts, Pipes, and Fittings shall be powder coated, color specified at later time
6. Attachments: Clamping devices used in attaching backboards and other components shall be of saddle clamp design providing uniform clamping force around mast. Clamps that provide non-uniform clamping will not be considered equal.
7. Safety Indicator Clamp Required: Mast Attachment Indicator must be capable of supporting backboard and all weight attached to the mast with a minimum safety factor of 4, with visible indication if indicator clamp is supporting weight or if any attachments have moved.
8. Frame Hangers: Tested to 20,000 pounds maximum breaking point to achieve safety factor of 50 to 1. Furnish certified test results with submittals. Minimum of 2" of adjustability for precise plumbing of backstop.
9. Frame Hangers: Offset minimum of 1-1/2" from center line of main center mast to properly weight lock unit in playing position
10. Brace: Operate with 1-7/8" O.D. brace with folding mechanism that locks backboard in playing position with internal torsion spring that must be mechanically disengaged by the hoist cable.
11. Warranty: 25 Year warranty on backstop structure

B. Winch system: 712 - 3/4 HP

1. Hoist Cable: Of sufficient length to each backstop. 1/4" diameter galvanized aircraft-type cable, minimum of 7,000 pounds ultimate.
2. Swivel Pulleys: 4" diameter cast iron pulley sheave with maintenance-free, oil-impregnated bearing for proper hoist cable routing to winch.
3. Pulley Assembly and Attachment to 3-1/2" O.D. Support Structure: Rated at minimum 9,000-pound load rating. Furnish certified test results with submittals.

4. Safety Strap: Provide speed sensitive automatic lock designed to engage in the event of an over-speed occurrence. Must be able to withstand test using 1750 lb fall weight. Must be able to provide independent lab test results. Capable of being automatically reset without the use of poles, ropes, levers, or buttons.
- C. Basketball Backboards: Model No: 208 - Rectangular Glass Backboard
1. Backboards: 2-5/16-inch thick frame, 72 inches by 42 inches, 1/2-inch tempered plate glass cushioned in unitized steel-tubing frame.
 2. Perimeter: Glare-free aluminum.
 3. Standard White Borders and Target Area: Fired into glass permanently.
 4. Warranty: Limited lifetime warranty against breakage.
- D. Basketball Goals: Model No: 236054 - Ultra-Flex II Goal
1. Goal: Positive-lock, pressure-release mechanism to automatically release and pivot downward when static force of 180 pounds is placed on top of goal ring at point most distant from backboard, to meet NBA, NCAA, NFSHSA, and FIBA requirements for movable goals. Spring-loaded to automatically and instantaneously return to playing position.
 2. Pressure Release Mechanism: Factory preset with capability for field adjustment to comply with NCAA recommendation to test goals for rebound elasticity.
 3. Breakaway goals with plastic-pivot bearings are not acceptable.
 4. Rim: Rigidly braced by 3/16" thick steel formed and die-cut steel brace welded in position on underside of rim for maximum support.
 5. Net Attachment: Tube-tie net attachment system on rim to eliminate conventional wire-formed net locks.
 6. Net: Anti-whip, white net.
 7. Finish: Official orange powder coated.
 8. Warranty: Manufacturer's 5 year warranty.
- E. Height Adjuster - 00900506 - Manual Height Adjuster
1. For each backstop, height adjustment unit for adjusting goal height to any position between 8'-0" and 10'-0" above floor, with Center-Strut direct-goal attachment to eliminate strain on backboard.
 2. Height Scale: Located on side of slide tube to visually determine height settings.
 3. Height Locking Device: Automatically engages when hand crank is removed.
 4. Unit shall operate by 3/4-inch diameter Acme-threaded rod and removable hand crank
- F. Backboard padding – Pro Pad bolt-on positive attachment backboard pad.
1. Provide for each rectangular glass backboard, along bottom of backboard and up 15" on each side, meeting NCAA and NFSHSA rules.
 2. Pads: 2" thick, molded from 9# density polyurethane foam with integral skin.
 3. Color: To be selected from manufacturer's standard selections.
 4. Warranty: 8 years.

3. WALL PADDING

- A. Wall Pad Dimensions: 2'-0" Wide by 6'-0" High
- B. Foam: 2" Thick, Polyurethane Foam
- C. Interior Foam: Bonded to 7/16" oriented strand wood board to minimize warping.
- D. Panel shall meet the min. ASTM F2440 standard specification
- E. Vinyl-Coated Polyester Cover shall meet the requirements of NFPA 101 Life Safety Code Passing NFPA-286. ASTM E-84 test is not considered equal.
- F. Entire Face of Panel: Shall be upholstered in 19oz, fire-retardant, high-tensile, vinyl-coated polyester fabric material.
- G. Cover material shall be designated as flame resistant in accordance with NFPA 701, and State of California.
- H. Cover Material Tear Strength: 100 psi.
- I. Cover Material Properties: Mildew resistant, rot resistant, with infection-combating fungicide.
- J. Cover shall be folded and securely stapled to backside of the OSB.
- K. Color: To be selected from manufacturer's standard colors, minimum 14 from which to choose.

4. VOLLEYBALL EQUIPMENT

- A. Floor Sleeves and Cover Plates: Model No. 00870-200 floor sleeve.
 - 1. Floor Sleeve: 3-3/4" O.D. heavy-wall steel tubing, extending 9 inches into grout footing.
 - 2. Cover Plate: Brass plated. 5-inch O.D. by 1/2-inch thick recessed collar, cork gasket, and cover.
 - 3. Swivel Retainer Pin in Collar: Prevent theft.
 - 4. Cover removal key.
- B. VOLLEYBALL SYSTEMS: Model No. 01971-000 Powr-Rib II volleyball system.
 - 1. Standards: 3-1/2" O.D., high-strength, lightweight, aluminum Alloy 6063-T6, with 2 internal reinforcing ribs for maximum rigidity and minimum deflection. Include height-marking labels.
 - 2. Volleyball Upright: Equipped with sliding-collar devices with spring-loaded pin to guide height setting collar up and down standard without rotating. Height settings secured with pressure-locking T-handle assembly.
 - 3. Collar: Allow volleyball standard to be infinitely height adjustable for instant net height setting for volleyball, badminton, and tennis. Lock in place with pressure-locking T-handle.
 - 4. Each System: 1 winch post and 1 end post.
 - 5. Winch Post: Equipped with heavy-duty power winch.
 - 6. End Post: Collar assembly for net tie-off.
 - 7. Power Winch: Heavy-duty, self-locking ratchet with disc-brake release mechanism for safest tensioning system. 1-3/4" wide, high-tensile, nylon strap and durable snap hook. Removable handle to prevent unauthorized use.
 - 8. Cap: Molded cap on top and bottom to protect against gymnasium floor damage.
 - 9. Finish of Post: Clear anodized
 - 10. Volleyball Net: Model No. 2295
 - 11. Boundary Markers with Antennas
 - 12. Protective padding for uprights

5. ARCHERY CURTAIN

- A. Model No. 90670000A Roll-Fold Archery Gymnasium Divider Curtain (max size 120'-0" long or 4000 SQ. FT.)
1. Material: Curtain fabric shall be a high tenacity woven nylon archery netting material.
 2. Edge and seam binding shall be a vinyl material no less than 18oz/yd. Vinyl color shall be white.
 3. Archery net fabric tensile strength shall be no less than 65 pounds.
 4. Fabric shall be UV stabilized and heat set for quality purposes.
 5. Fabric aperture size shall be a 5/16" diamond shape
 6. Top of curtain to be fabricated with a pocket to conceal continuous 1-5/16" O.D. steel tube extending the full length of the curtain to ensure proper support. Tube shall be supported from roller assembly supports on adjustable chains not exceeding 12'-0" centers.
 7. Cable: Curtain shall be hoisted by 1/8" diagonal vandal-proof galvanized cable (2,100 lb. breaking strength each cable, spaced between 10'-0" and 12'-0" apart). Cables shall be routed thru cable guides to fold the curtain in a compact accordion fold arrangement, which lies across bottom support tube as curtain is hoisted.
 8. Support Assemblies: Upper ends of hoist cables shall terminate into individual hoist drums positioned on continuous zinc-plated 2-3/8" O.D. tube line shaft arrangement. Line shaft shall turn in support assemblies equipped with four steel ball bearing wheel rollers. Each support assembly shall be positioned adjacent to a cable hoist drum. Support assemblies shall be secured to structural roof framing supports by means of threaded rods and support chains to provide structural integrity and accommodate all slopes or building camber.
 9. Coating: All metal parts not zinc-plated shall be powder coated.
 10. Warranty: 1 year limited warranty.

6. EQUIPMENT CONTROL

- A. Key Switch: For each backstop, Incorporate rotary up and down limit switches and flush wall-mounted dual-key switch to prevent improper operation of system.

7. SWING SUPPORT

- A. Support for swings in FMD suite shall provide attachment point for swivel hooks or carabiners (not in contract):
1. Single point ceiling beam suspension eye, rated for up to 300lbs, through-bolted to structure.

PART 3 EXECUTION

1. EXAMINATION

- A. Examine areas and supporting structure to receive gymnasium and play field equipment. Notify Architect in writing of conditions that would adversely affect installation or subsequent use. Do not proceed with installation until unsatisfactory conditions are corrected.

2. INSTALLATION

- A. Install gymnasium and play field equipment in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Install all equipment supported from above by attaching to building's primary structure or supplementary support added specifically for the purpose of supporting equipment. Do not support from bridging, ductwork, or other building elements that are not primary structure.
- C. Install equipment plumb, level, straight, square, accurately aligned, correctly located, to proper elevation, and secure.
- D. Install equipment using manufacturer's supplied hardware and fasteners.
- E. Electrical: Install electrical power as specified in Division 16 (Division 26) electrical section.
- F. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- G. Remove and replace damaged components that cannot be successfully repaired, as determined by Architect.

3. ADJUSTING

- A. Adjust basketball backstops, backboards, and goals for plumb and level.
- B. Set and adjust electric winch upper and lower limit controls.

4. CLEANING

- A. Clean gymnasium and play field equipment promptly after installation in accordance with manufacturer's instructions.
- B. Remove labels and temporary protective coverings.
- C. Do not use harsh cleaning materials or methods that would damage finish.

5. DEMONSTRATION

- A. Demonstrate operation and maintenance of gymnasium and play field equipment to Owner's personnel.
- B. Furnish Owner with keys or passwords to equipment after demonstration.

6. PROTECTION

- A. Protect installed gymnasium and play field equipment to ensure equipment will be without damage or deterioration at time of substantial completion.

END OF SECTION 11 66 00

SECTION 11 66 43 – INTERIOR SCOREBOARDS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes: Interior, electronic, multi-sport multi-purpose basketball/volleyball/ wrestling scoreboard including control center, and other accessories for complete functional installation.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM) Publications:
 - 1. ASTM B221 - Aluminum Alloy Extruded Bar, Rod, Wire, Shape, and Tube.
- B. National Electrical Code.
- C. Federal Communications Commission, Part 15 Rules & Regulations.
- D. UL and C-UL Standard for Electric Signs

1.3 ACTION SUBMITTALS

- A. Product Data: For scoreboards, controls, and accessories. Include descriptions of control functions.
- B. Shop Drawings: Provide installation drawings, face layout, dimensions, construction, electrical wiring diagrams, and method of anchorage.
- C. Samples: For each type of finish.
- D. Copy of Warranty

1.4 INFORMATIONAL SUBMITTALS

- A. Manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

- A. Source Limitation: Provide components including scoreboard, control center, control cable, and other accessories and installation hardware produced by a single manufacturer.
- B. Manufacturer Qualifications: Company specializing in manufacturing electronic scoreboards with 10 years minimum successful experience.
- C. Scoreboards and electrical components:
 - 1. UL certified.
 - 2. Electrically grounded in accordance with National Electrical Code (NEC), Article 600.

1.6 COORDINATION

- A. Coordinate work with applicable Sections of Division 26.

1.7 WARRANTY

- A. Furnish manufacturer's total system material and labor warranty to cover failure as follows:
 - 1. 5 years parts and factory labor guarantee for scoreboards and accessories from date of substantial completion.
 - 2. 2 years part and factory labor guarantee for wireless controls and receivers from date of substantial completion.

1.8 MAINTENANCE

- A. Continual Maintenance: Provide lifetime telephone support.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design Manufacturer: Nevco
- B. Available Manufacturers: Subject to compliance with requirements, provide basis of design products or comparable products by one of the following manufacturers:
 - 1. ScoreTronics
 - 2. Sportable Scoreboards
 - 3. Varsity Scoreboards

2.2 MATERIALS

- A. Aluminum Face and Perimeter Frame: Fabricated from 0.050 inch minimum thickness, ASTM B221 aluminum sheet.
- B. Finish: Acrylic polyurethane paint. Color as selected by Architect from manufacturer's standard range.
- C. Electronics: Low voltage, solid state, 2-wire cable, multiplex system, quartz crystal controlled.
- D. Communication Interface: Fiber optic.
- E. LED (light emitting diode) Units: Seven-bar, segmented digits in protective aluminum cover, rated typical life 100,000 hours, and designed to provide excellent visibility.
- F. Provide location specific universal power cord with plug for world-wide installation.
- G. Control Cable: UL listed, 2-wire, type RG-58/U, coaxial cable, 1/4 inch diameter.

- H. Junction boxes where required: Sheet metal box and cover, 4-1/2 x 2-1/8 x 2-1/8 inches min. complying with NEMA standards.

2.3 SCOREBOARDS

- A. Basis of Design Product: Nevco Model 2750-NL
- B. Type: Interior, multi-purpose basketball/volleyball/wrestling electronic scoreboard with two integral horns, changeable captions, LED displays for time, scores, period, number of player fouling with personal fouls, team fouls, bonus and double bonus indicators, and next possession arrows.
 - 1. Size: 8 feet long x 6 feet high x 8 inches deep.
 - 2. Approximate hanging weight: 130 pounds.
 - 3. Captions: Include the following in 6-inch tall letters:
 - a. Basic: "Home", "Guests", and "period".
 - b. Basketball: "fouls" and "player".
 - c. Volleyball: "won" and "game".
 - 4. LED displays:
 - a. Timing: Super Bright Red 13 inches high digits with lit colon.
 - b. Team scores: Super Bright Amber 13 inches high digits.
 - c. Period: Super Bright Amber 9 inches high digits.
 - d. Player number with personal fouls, game, and weight: Super Bright Red 9 inches high digits.
 - e. Team fouls, games won, and match: Super Bright Amber 9 inches high digits.
 - f. Next possession: Super Bright Amber arrow for each team.
 - g. Include bonus and double bonus in the form of a 4 inch Super Bright Red LED "B".
 - 5. Suspension mounting attachments will be included.
 - 6. Power requirement: 158 Watts, MAX, 100-240 Volts AC w/Power Factor Correction.

2.4 ACCESSORIES/OPTIONS

- A. Provide each scoreboard or accessory with control cable of length required.
 - 1. Electrical junction boxes, conduits, provided under applicable Sections of Division 26.
- B. Provide scoreboards with the following options
 - 1. Team Name in place of "HOME".

2.5 CONTROL CENTER

- A. Basis of Design Product: Nevco Model MPCW
- B. Type: Wireless, microprocessor based, operator's control center with receiver unit mounted at scoreboard and designed to operate different models of scoreboard by interchange of keyboard overlay. Console will operate scoreboards
 - 1. Comply with Part 15 of FCC Rules regarding interference.
 - 2. Console: High impact, break-resistant gray plastic 11 x 9-1/2 x 4-1/8 inches.
 - 3. Features:

- a. Control can be used to operate both wireless and wired scoreboards.
 - b. Power on-off switch.
 - c. Split and raised 40 key keyboards, internal beeper acknowledging each entry, and bookmark capabilities.
 - d. Keyboard overlays for scoreboard or accessory.
 - e. Remote hand-held main time switch with integral horn button.
 - f. Provide with LED displays, lithium cell battery backup to maintain scoreboard memory and time of day, self test mode, power on-off switch, alternate time control, and multiple scoreboard operation.
 - g. Timer features: Time of day display, multiple time out timers with warning, interval horn, upcount auto stop with horn, and 1/10th second display during last minute.
 - h. Dimmer control for scoreboard.
4. Receiver: Aluminum construction, 6-1/8 x 3 x 1-3/8 inches with 4 inches antenna and mounted at scoreboard.
 5. Maximum range: 1,000 feet from control center to receiver.
 6. Power adapters: Provide for each control center and receiver.
 - a. Input: 120 volts, amps, 50/60 Hz.
 - b. Output: 9 volts, 1.67 amps, 15 watts.
 7. Provide battery supply for control operation if utility power not available.

2.6 CARRYING CASE

- A. Basis of Design Product: Nevco Model CC-3.
- B. Provide carrying case for control center and hand-held switch.
 1. Construction: Double wall, high density black polyethylene with padded interior, mechanical latches, and hinges.

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify exact scoreboard and control center quantities and junction box locations with Architect.
- B. Coordinate requirements for electrical power, wall blocking, auxiliary framing and supports, suspension cables, and other components to be provided under other Specification Sections to ensure adequate provisions are made for complete, functional installation of scoreboards.
- C. Coordinate scoreboard electrical requirements to ensure proper power source, conduit, wiring, and boxes are provided. Prior to installation, verify type and location of power supply.
- D. Before installation, field test scoreboards and accessories for operating functions.
 1. Ensure that scoreboards accurately perform operations.
 2. Correct deficiencies.

3.2 INSTALLATION

- A. Install scoreboards and accessories in accordance with manufacturer's instructions and approved installation drawings.
- B. Rigidly mount scoreboards and accessories level and plumb with brackets and fasteners.
- C. Clean exposed surfaces.
- D. Protect scoreboards and finishes from other construction operations.

3.3 DEMONSTRATION

- A. Provide demonstration and training session for Owner's representative covering operation and maintenance of electronic scoreboard.

END OF SECTION 11 66 43

SECTION 12 24 13 – SHADES (MANUAL)

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Provide manually operated, sunscreen roller shades as applicable. Locations shown on drawings.
 - 1. Note distinctions between top-down operation and bottom-up operation, as noted on drawings.
- B. Lockdown shades for door lites.
- C. Related Sections:
 - 1. Division 08 sections describing wood doors and hollow metal doors.
 - 2. Division 09 – Gypsum Board Assemblies: Coordination with gypsum board assemblies for blocking, installation of shade pockets, closures and related accessories.
 - 3. Division 09 – Acoustical Lay-In Ceilings: Coordination with acoustical ceiling systems for blocking, installation of shade pockets, closures and related accessories.

1.2 SUBMITTALS

- A. Product Data: Manufacturer’s data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
 - 3. Storage and handling requirements and recommendations.
 - 4. Mounting details and installation methods.
- B. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, and relationship to adjacent work.
 - 1. Prepare shop drawings on AutoCAD format.
- C. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.
- D. Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements. Shade cloth samples and aluminum finish sample as selected. Mark face of material to indicate interior faces.
- E. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware.
- F. Warranty: Provide manufacturer’s warranty documents as specified in this Section.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Obtain roller shades system through one source from a single manufacturer with a minimum of ten years' experience and minimum of five projects of similar scope and size in manufacturing products comparable to those specified in this section. This includes but is not limited to all required extrusions, accessories, controls and fabricated roller shades or else all stated and published warranties may be void.
- B. Installer Qualifications: Engage an installer, which shall assume responsibility for installation of all system components, with the following qualifications.
- C. Fire-Test-Response Characteristics: Passes NFPA 701-99 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.
- D. Shadecloth Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, and ATCC9645.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in the submittal's Window Treatment Schedule.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.6 WARRANTY

- A. Warranty: Provide manufacturer's standard warranties, including the following:
 - 1. Roller Shade Hardware, and Shadecloth: Manufacturer's standard non-depreciating twenty-five year limited warranty.
 - 2. Roller Shade Installation: Four years from date of Substantial Completion, not including scaffolding, lifts or other means to access to the work above 12' Feet AFF, which are the responsibility of others.

PART 2 – PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design Manufacturer for Window Shade System: MechoSystems (contact: Lori Gibson, KMA & Associates)

- B. Acceptable Manufacturers:
 - 1. Hunter Douglas
 - 2. Lutron
 - 3. Draper Inc

2.2 SHADE BANDS

- A. Shade Bands: Construction of shade band includes the fabric, the enclosed hem weight, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.
 - 1. Concealed Hembar: Shall be continuous extruded aluminum for entire width of shade band and with the following characteristics:
 - a. Hembar shall be heat sealed on all sides.
 - b. Open ends shall not be accepted.
 - 2. Shade Band and Shade Roller Attachment:
 - a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection.
 - b. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable/replaceable with a “snap-on” snap-off” spline mounting, without having to remove shade roller from shade brackets.
 - c. Mounting Spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.
 - d. Any method of attaching shade band to roller tube that requires the use of: adhesive, adhesive tapes, staples, and/or rivets, does not meet the performance requirements of this specification and shall not be accepted.

2.3 ROLLER SHADE FABRICATION

- A. Fabricate shade cloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shade cloth to roll true and straight without shifting sideways more than 1/8 inch in either direction per 8 feet of shade height due to warp distortion or weave design.
- B. Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shade bands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer’s standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shade cloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.
 - 1. Widths to be full width of opening or, where this width exceeds manufacturer’s standards, width shall be coordinated to fall at vertical mullions in storefront / window / curtainwall assembly.
- C. For railroad shade bands, provide seams in railroad multi-width shade bands as required to meet size requirements and in accordance with seam alignment as acceptable to Architect. Seams shall be properly located. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer’s standards. In absence of such standards, assure proper use of seams or

battens as required to, and assure the proper tracking of the railroaded multi-width shade bands.

Provide battens for railroaded shades when width-to-height (W:H) ratios meet or exceed manufacturer's standards. In absence of manufacturer's standards, be responsible for proper use and placement of battens to assure proper tracking and roll of shade bands.

2.4 ROLLER SHADE COMPONENTS

A. Access and Material Requirements:

1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.
3. Styrene based plastics, and/or polyester, or reinforced polyester shall not be accepted.

B. Manual Operated Chain Drive Hardware and Brackets:

1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.
2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll and bottom-up operation, which shall be installed without exposed fastening devices of any kind.
3. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.
4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer's design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.
5. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degrees total offset.
6. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable.
7. Provide shade hardware constructed of minimum 1/8-inch thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
8. Drive Bracket/Brake Assembly:
 - a. MechoShade Drive Bracket model M5 or other manufacturer's equivalent drive bracket shall be fully integrated with all accessories, including, but not limited to: fascia, room darkening side / sill channels, center supports and connectors for multi-banded shades.
 - b. Drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch steel pin.
 - c. The brake shall be an over running clutch design which disengages to 90 percent during the raising and lowering of a shade. The brake shall withstand a pull force of 50 lbs in the stopped position.
 - d. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly, which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly

- shall be permanently lubricated. Products that require externally applied lubrication and or not permanently lubricated are not acceptable.
- e. The entire drive assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without effecting the roller shade limit adjustments.
9. Drive Chain: #10 qualified stainless steel chain rated to 90 lb minimum breaking strength. Nickel plate chain shall not be accepted.

2.5 ROLLER SHADE SCHEDULE

- A. Roller Shade Schedule: Refer to the Drawings for locations.
1. Shade Type Top-Down: Manual operating, chain drive, sunscreen roller shades in all openings where indicated on the Drawings.
 - a. Fascias.
 2. Shade Type Bottom-Up: Manual operating, chain drive, sunscreen roller shades in all openings where indicated on the Drawings.
 - a. Sill and Head Housing/Fascia.

2.6 SHADECLOTH

- A. Visually Transparent Single-Fabric shade cloth: MechoSystems, Inc., SoHo Collection (Basis of Design), Series: 2 x 2 basket weave, finely woven yarn, comprising of 76% PVC and 24% polyester.
1. Northern exposures: 1900 Series: 5 percent open. .023 inches thick (0.59mm) .79lbs per square yard.
 2. Southern, Eastern, and Western exposures: 1600 Series: 3 percent open. .024 inches thick (0.06mm) .84lbs per square yard.
 3. Color: Selected from manufacturer's standard colors.

2.7 ROLLER SHADE ACCESSORIES

- A. Fascia:
1. Continuous removable extruded aluminum fascia that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
 2. Fascia shall be able to be installed across two or more shade bands in one piece.
 3. Fascia shall fully conceal brackets, shade roller and fabric on the tube.
 4. Provide bracket/fascia end caps where mounting conditions expose outside of roller shade brackets.

2.8 LOCKDOWN SHADES

- A. Manual roll-down shade provides unobstructed line of sight when not in use, rolls down to cover door lites fully.
1. Made from fire retardant black-out fabric with weighted bar at hem.
 2. Rolls up to top of opening, secured by strap.

- B. Basis of Design: Lockdown Shade by School Specialty
- C. Available Manufacturer: Activar Inc.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION OF ROLLER SHADES

- A. Contractor Furnish and Install Responsibilities:
 1. Window Covering Contractor (WC) shall provide an on site Project Manager and shall be present for all related jobsite scheduling meetings.
 2. WC shall supervise the roller shade installation, and setting of intermediate stops of all shades to assure the alignment of the shade bands within a single operator group, which shall not exceed +/- 0.125 inches, and to assure the alignment between operator groups, which shall not exceed +/- 0.25 inches.
 3. WC shall be responsible for field inspection on an area-by-area and floor-by-floor basis during construction to confirm proper mounting conditions per approved shop drawings.
 4. Verification of Conditions: examine the areas to receive the work and the conditions under which the work would be performed and notify Construction Manager and Owner of conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected. Commencement of installation shall constitute acceptance of substrate conditions by the installer.
 5. WC shall provide accurate to 0.0625 inch field measurements for custom shade fabrication on the Roller Shades manufacturers input forms.
 6. WC Installer shall install roller shades level, plumb, square, and true according to manufacturer's written instructions, and as specified herein. Blocking for roller shades installed under the contract of another Contractor shall be installed plumb, level, and fitted to window mullion as per interior architect's design documents and in accordance with industry standard tolerances. The horizontal surface of the shade pocket shall not be out-of-level more than 0.625 inch over 20 linear feet.
 7. Shades shall be located so the shade band is not closer than 2 inches to the interior face of the glass. Allow proper clearances for window operation hardware.
 8. Adjust, align and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
 9. The WC shall participate and cooperate with the window shade manufacturer to verify and certify the installation is in full conformance with the specifications and is fully operational.
 10. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

11. WC shall train Owner's maintenance personnel to adjust, operate and maintain roller shade systems.
12. Protect installed products until completion of project.
13. Touch-up, repair or replace damaged products before Substantial Completion.

3.4 LOCKDOWN SHADES

- A. Install per manufacturer's instructions.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 12 24 13

SECTION 12 32 00 – PLASTIC LAMINATE CASEWORK

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Extent of casework is shown on the Drawings and as follows:
 - 1. Plastic laminate casework.
 - 2. Miscellaneous items.
 - 3. All filler strips.
 - 4. Plastic laminate countertops.
 - 5. Custom cabinetwork.
 - 6. **Hooks and grommets.**
- B. Work includes the fabrication and installation of standard components of plastic laminate base cabinets, sink base cabinets, wall cabinets, door bases and other units as indicated in the Drawings and as scheduled.
- C. Related Sections include the following:
 - 1. Division 06 Section “Rough Carpentry”, for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
 - 2. Division 06 Section “Architectural Woodwork” for custom millwork other than plastic laminate casework.
 - 3. Section 06 16 00 – Solid Surface Fabrication, for countertops, backsplashes, and sills where indicated (i.e., where not plastic laminate).
 - 4. Section 07 92 00 – Joint Sealants.
- D. Wood blocking within metal stud and gypsum board walls and partitions shall be provided by the General Contractor.
- E. Cabinets indicated to receive sinks shall be constructed to allow for installation of sinks for sizes indicated. Coordinate with Division 22 for sink sizes, unless specified herein. Cutouts in casework shall be by the casework installer. Sink cutouts shall have 2 coats of sealer applied to any exposed wood / particle board edges.

1.03 DEFINITIONS

- A. Plastic laminate casework includes wood furring, shims, and hanging strips, unless concealed within other construction before casework installation.

1.04 SYSTEM DESCRIPTION

- A. Casework Accessibility Requirements shall be provided to conform with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and State and local regulations. These requirements supersede Technical Specifications in the section.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's data and installation instruction for each type of manufactured casework unit.
- B. Samples: Submit 6-inch x 6-inch samples of specified finishes, including top material. Samples will be reviewed by Architect for color, texture and pattern only. Compliance with other specified requirements is exclusive responsibility of the Contractor.
 - 1. Submit samples of mechanical and electrical service fixtures when requested by Architect, complete with fittings and accessories with specified finish.
 - a. Acceptable sample units will be used for comparison, inspections at project. Unless otherwise directed, acceptable sample units may be incorporated in the Work. Notify the Architect of their exact location. If not incorporated in the Work, retain acceptable samples units in building until completion of the Work and remove sample units from premises when directed by the Architect.
- C. Shop Drawings: Submit shop drawings for casework, showings plans, elevations, ends, cross-sections, service run spaces, location and type of service fixture with lines thereto. Show details and location of anchorages and fitting to floors, walls and base. Include layout of units with relation to surrounding walls, doors, soffits, windows, and other building components.

1.06 QUALITY ASSURANCE

- A. Single Source Responsibility: Provide manufactured casework with tops, sinks and service fixtures, manufactured or furnished by same casework company for single responsibility.
 - 1. Manufacturer will show evidence of a minimum of five (5) years' experience in providing manufactured casework systems for similar types of projects, produce evidence of financial stability, and adequate facilities and personnel required to perform this project.
- B. Quality Standards. Unless otherwise indicated, comply with the following standards:

1. Work in this Section shall be performed by a firm certified by the Architectural Woodwork Institute (AWI) Quality Certification Program. Work in this section shall comply with the specified grades of work written herein and Sections 400 and 1600 of the 8th Edition of the Architectural Woodwork Institute Quality Standards.
2. Compliance shall be evidenced by the firm through the application of AWI Quality Certification labels on the work according to AWI/QCP labeling guidelines.

1.07 PRODUCT HANDLING

- A. Deliver casework only after wet operations in building are complete.
- B. Store completed casework in a ventilated place, protected from the weather, with relative humidity therein of 50-degrees or less at 70-degrees F.
- C. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering.

1.08 WARRANTY

- A. Manufactured laminate-clad casework products, to provide a 1 year Guarantee and Warranty to the Owner against defective material and workmanship. This is a warranty of replacement and repair only, whereby manufacturer will correct defects in material and/or workmanship without charge.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers. Subject to compliance with requirements, provide products by one of the following:
 1. Campbell Rhea
 2. TMI Systems Design Corporation
 3. Sheldon
 4. Stevens Industries
 5. Southern Cabinetry, Inc.
 6. Morgan Smith Industries.
 7. Smith Laminating.
 8. Euronique.
 9. P.R. Bean Co.
- B. Equal products of other manufacturers will be acceptable if they are pre-qualified by the Architect 10 days prior to the bid date. Such approvals will be incorporated by Addendum.

2.02 PLASTIC LAMINATE CASEWORK

- A. Definition of cabinet components by surface visibility. Reference to the following locations will be made in Section 2.03 when describing surface materials:
1. Exposed Surfaces
 - a. Surface visible when drawers and doors are closed.
 - b. Portion of cabinets visible when fixed appliances are installed.
 2. Semi-Exposed Surfaces
 - a. Surface visible when drawers and doors are open,
 - b. Interior surfaces of open units.
 - c. Bottoms of cabinets, 30-inches or more above floor.
 - d. Top of cabinets less than 78-inches above floor or when visible from an upper floor or staircase after installation.
 3. Concealed Surfaces
 - a. Surfaces not normally visible after installation.
 - b. Bottoms of cabinets less than 30-inches above floor.
 - c. Top of cabinets more than 78-inches above floor and not visible from above after installation.
 - d. Stretchers. Blocking and/or components concealed by drawers.
- B. Vertical Exterior Laminate: GP28 vertical surface grade, high pressure laminate for exposed cabinet and table frame surfaces. Color as selected from casework manufacturer's full range of colors from WilsonArt, Formica, Nevamar or Pionite.
- C. Particleboard: Grade 1-M-3, 45-50 lb. density, 3/4-inch (except for 1-inch shelves).
- D. Backing Sheet: White thermofused melamine cabinet liner for casework interior surfaces.
- E. Plywood: Seven-ply, 3/4-inch veneer core plywood with cross and face plies bonded with Type II water resistant glue; drawers are nine-ply, 1/2-inch.
- F. Glue: Laminating glue – Type II water resistant glue. Assembly glue – Type III glue.
- G. Banding: PVC thickness for cabinet body edge to be 3 mm from manufacturer's standard color offering; door and drawer edges to have 3 mm.
- H. Metal Finish: Chemical resistant urethane powder paint.
- I. All casework shall be fabricated with balanced construction.

2.03 CASEWORK FABRICATION

A. General fabrication requirements:

1. AWI Type of Cabinet Construction: Reveal overlay, with 1/8-inch reveal.
2. Units shall be doweled and glue construction utilizing 8-mm (min.) diameter fluted hardwood dowels spaced at 96-mm o.c., providing rigid, self-supporting unit.
3. Apply edge banding with hot melt adhesive.
4. Unfinished cabinet ends to have balanced surfaces.
5. At all vertical filler strips in casework installed next to walls, provide filler panel at top and bottom of wall cabinets to close off any voids.

B. Base units, floor mounted and suspended:

1. Sub-top Panel / Frame: Full depth, 3/4-inch particleboard, banded front edge, balanced surfaces, fastened to both end panels, or hardwood top frame. None on sink units.
2. Bottom Panel, Floor Mounted Base Unit: 3/4-inch particleboard, banded front edge, balanced surfaces.
3. Bottom Panel, Suspended Base Unit: 1-inch particleboard, banded front edge, balanced surfaces.
4. End Panels: 3/4-inch particleboard, banded exposed edges, balanced surfaces for both exposed and unexposed panels, sufficient number of drilled holes for insertion of shelf clips where required.
5. Back Construction: 1/4-inch hardboard, fused melamine interior surface, captured at sub-top and bottom, one-piece behind cupboard units and two-piece behind drawers. Sink cabinets to have full-height back with removable panel. Suspended unit has 3/4-inch particleboard panel, doweled into ends, balanced surfaces of same color. Also acceptable back construction, 1/2" particleboard, onset design.
6. Drawer: Lock shoulder construction with sub-front, sides and back of 1/2-inch (12 mm) PVC clad particleboard. 6 mm hardboard bottom with white surface, grooved into drawer box and sealed with hot melt glue process around entire drawer bottom perimeter. Also acceptable drawer bottom, 1/2", hardboard, onset drawer bottom with bottom mounted drawer slide.
7. Drawer and Door Fronts: 3/4-inch particleboard core with vertical exterior laminate, 3 mm PVC banding, all edges.
8. Vertical Dividers Between Drawers: 1-1/2-inch panel product, banded front edge.
9. Security Panels (when locks are specified): 3/4-inch particleboard, edge band in front, balanced surfaces, full depth of cabinet.
10. Intermediate Front Rails (not used when security panels are used); 3/4-inch x 5-3/8-inch panel product, edge band in front, balanced surfaces on both locked and unlocked cabinets. All drawers units are 36-inches or more wide come standard with one intermediate front rail to act as spacer between panes.
11. Toe Base: Separate, veneer core plywood, factory attached (unless otherwise noted).
12. Knee Space Table Frame: 3/4-inch particleboard; 3/4-inch hardwood if drawer cutouts are included.

C. Wall and Upper Cases:

1. End Panels: 3/4-inch particleboard, banded exposed edges, balanced surfaces for both exposed and unexposed panels, sufficient number of drilled holes for insertion of shelf clips where required.
2. Top and Bottom Panel: 3/4-inch particleboard, banded front edge, balanced surfaces.
3. Back Construction: 1/4-inch hardboard, thermofused melamine interior, captured in top, bottom and side panels; 3/4-inch x 3-inch full width mounting cleat at top.

D. Countertops, Sinks and Accessories:

1. Style: Self-edge countertops and backsplashes.
2. Core: 1-inch thick ANSI A208.1-1993 M-2 particleboard. Use Moisture Resistant (MR) type within 3 feet of sink cutout and at backsplashes where a sink is installed at unit.
3. Surface: HGS high-pressure decorative laminate with balanced backer sheeting.
4. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - a. As selected by Architect from manufacturer's full range in matte finish.
5. Grain Direction (where applicable): Parallel to cabinet fronts.
6. Edges: 3mm PVC, exposed edges and corners. Edges are machine applied with water based low Volatile Organic Compound (VOC), non-toxic, PVA adhesive.
7. Coordinate with electrical/device drawings: Wherever data device is shown below counter, provide opening and grommet for cable runs.

E. Doors:

1. Solid Doors: 3/4-inch particleboard, 3 mm PVC banding all edges; balanced surfaces.

F. Shelves, for Base and Wall Cabinets:

1. Base cabinets are to have thermofused, melamine clad, 3/4-inch thick (unless otherwise noted) particleboard shelf, less than 34-inches wide, to match interior; provide 1-mm PVC banded front edge to match interior color, full depth. Provide 1-inch thick shelf for spans over 34-inches wide.
2. Wall and upper cases to have full depth shelves sized appropriately for the depth of the unit.

2.04 CASEWORK HARDWARE AND ACCESSORIES

- A. Provide manufacturer's standard, satin finish (US26D) hardware units, unless otherwise indicated.
- B. Hinges: Concealed Hinge, Salice Excenthree 3-Cam, 106° Opening Angle, Soft Close, 1/2" Overlay (from Hafele).
 1. For Overlay Doors: Nickel-plated, screw-on, model CUP37D9R. Provide (1) pair for doors less than 4-feet high and (1-1/2) pairs for doors over 4-feet.
- C. Pulls: Standard Bow Pull, brushed nickel: Hafele Bow Handle 117.31.441 or match.

1. Solid metal, 4-1/2-inch long for drawers and swing doors, mounted with (2) screws, fastened from back. Provide (2) pulls for drawers over 24-inches wide.
- D. Door Catches: Nylon roller, spring catch. Provide (2) catches on doors over 4-feet high.
- E. Metal Drawer Slides: Slides shall be heavy duty, full extension, side mounted type, 75-pound capacity, zinc plated steel, equipped with heavy duty, ball bearing nylon wheel. Provide 100-pound capacity at file drawers.
- G. Drawer and Cabinet Door Locks:
 1. Locks to be CompX National (or equal), Lock Number M3-3713-301, pin tumbler, box lock.
 2. Provide for all cabinet doors. Provide for drawers where indicated.
 3. Furnish (2) keys per lock.
 4. Key all cabinets within any given room on the same key and each room to be keyed different.
 5. Locks to be divided by room and master keyed. Provide (6) master keys to the Owner.
- G. Resilient Base: Furnished and installed under Division 09.
- H. Adjustable Shelf Supports: BHMA B84072, wrought steel, mortise mounted.
- I. Bumper Pads: Provide resilient pads for doors and drawers.

2.05 SPECIALTY ITEMS

- A. Cable hole covers (grommets). High impact ABS cable hole cover, 2-1/2-inches inside diameter with spring closure in top. Color as selected by Architect. Refer to the Drawings for locations. Manufactured by Hafele.
- B. Backpack hooks at classroom cabinetry: over/under style coat hook for mounting at top / "ceiling" of cubby. Provide one at each cubby shown.
 1. Don-Jo 300 619 Over/Under Coat Hook, satin chrome finish, or similar from sources like (not limited to) National Hardware, Hafele (MC201), Rockwood.

PART 3 EXECUTION

3.01 CASEWORK INSTALLATION

- A. Install plumb, level, true and straight with no distortions. Shim as required, using concealed shims. Where casework abuts other finished work, scribe and apply filler strips for accurate fit with fasteners concealed where practicable.
 1. Cabinetry installer shall furnish materials to the building, setting in place, leveling and scribing to walls and floors.

- B. Base Cabinets: Set cabinets straight, plumb and level. Adjust sub-tops within 1/16-inch of single plane. Fasten each individual cabinet to wall, with fasteners spaced 24-inches o.c. Fasten continuous cabinets together. Secure individual cabinets with not less than (2) fasteners into floor, where they do not adjoin other cabinets.
 - 1. Where required, assemble units into (1) integral unit with joints flush, tight and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16-inch.
- C. Wall Cabinets: Securely fasten to solid supporting material (blocking), not plaster, lath or wallboard. Anchor, adjust and align wall cabinets as specified for base cabinets, but not less than (2) fasteners per individual cabinet.
- D. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.02 INSTALLATION OF TOPS

- A. Field jointing: Where practicable, make in same manner as factory jointing, using dowels, splines, adhesives and fasteners as recommended by manufacturer. Locate field joints as shown on accepted shop drawings, factory prepared so there is no job site processing of top and edge surfaces.
- B. Fastenings: Use concealed clamping devices for field joints located within 6-inches of front and at back edges, and at intervals not exceeding 24-inches. Tighten in accordance with manufacturer's instructions to exert a constant, heavy clamping pressure at joints. Secure tops to cabinets with "z"-type fasteners or equivalent, using (2) or more fasteners at each front, end and back.
 - 1. For plastic laminate tops, anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop. Apply sealant to space between backsplash and wall or countertop with sealant specified in Division 07 Section "Joint Sealants".
- C. Workmanship: Abut top and edge surfaces in one true plane, with internal supports placed to prevent any deflection. Provide flush hairline joints to top units using clamping devices.
- D. After installation, carefully dress joints smooth, remove any surface scratches, clean and polish entire surface.
- E. Provide holes and cutouts as required for mechanical and electrical service fixtures.
- F. Provide scribe moldings for closures at junctures of top, curb and splash with walls as recommended by manufacturer for material involved. Use chemical resistant, permanently elastic sealing compound where recommended by manufacturer.

3.03 INSTALLATION OF ACCESSORIES

- A. Install in a precise manner in accordance with manufacturer's directions. Turn screws to a flat seat; do not drive. Adjust moving parts to operate freely without excessive bind.

3.04 CLEANING AND PROTECTION

- A. Repair or remove and replace defective work as directed upon completion of installation.
- B. Clean shop-finished surfaces, touch-up as required and remove or refinish damaged or soiled areas, as acceptable to the Architect. Wipe down all cabinets and drawers inside and out to remove dust, construction debris and layout marks.
- C. Protection: Advise Contractor of procedures and precautions for protection of materials and installed casework from damage by work of other trades.

END OF SECTION 12 32 00

SECTION 12 35 50 – LIBRARY CASEWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Wood Library Shelving
- B. Glass Door Wood Library Shelving

1.2 RELATED SECTIONS

- A. Division 06 Section "Rough Carpentry" for blocking in frame walls required to anchor casework.
- B. Division 05 Section "Cold Formed Metal Framing" and Division 09 Section "Gypsum Board Assemblies" for reinforcements in metal-framed partitions required to anchor casework.
- C. Division 09 Section "Resilient Wall Base and Accessories" for finish base materials applied to casework.

1.3 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI A208.1 – Particleboard.
- B. American Society of Civil Engineers (ASCE):
 - 1. ASCE 7 – Minimum Design Loads for Buildings and Other Structures.
- C. Builders Hardware Manufacturers Association (BHMA):
 - 1. ANSI/BHMA A156.9 – Cabinet Hardware.
- D. U.S. Department of Commerce, National Institute of Standards and Technology (NIST):
 - 1. DOC PS 1 – U.S. Product Standard for Construction and Industrial Plywood.

1.4 SYSTEM DESCRIPTION

- A. Modular shelving, single faced with back panel, veneer-core plywood construction with black/ebony stained trim and five (5) adjustable shelves. Use starter and adder design.
- B. Modular shelving, double faced (no back panel), veneer-core plywood construction with black/ebony stained trim and five (2) adjustable shelves. Use starter and adder design.
- C. Modular shelving, single faced (no back panel), veneer-core plywood construction with black/ebony stained trim and five (5) adjustable shelves. Use starter and adder design.
- D. Glass door shelving with back panel, veneer-core plywood construction with black/ebony stained trim and five (5) adjustable shelves, sliding glass doors and key-lock.

1.5 SUBMITTALS

- A. Product Data: Manufacturer's data sheets, installation instructions, and maintenance recommendations.
- B. Product Test Reports: Indicating compliance of products with requirements, from a qualified independent testing agency.
- C. Shop Drawings: Prepared by manufacturer. Include elevations showing casework components, details of each condition of installation, and types and locations of hardware and fasteners. Show fabrication and installation details. Include plans, elevations, sections, details, and attachments to other Work.
- D. Samples: For each color and finish for each exposed casework component.
- E. Operation and Maintenance Data.
- F. Warranty: Submit sample meeting warranty requirements of this Section.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Approved manufacturer listed in this section, with minimum 5 years' experience in manufacture of similar products in use in similar environments. Obtain educational/library casework through one source from a single approved manufacturer.
 - 1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time period allowed for substitution review:
 - a. Product data, including certified independent test data indicating compliance with requirements.
 - b. Samples of each type of product specified, including but not limited to the following:
 - 1) Shelf and casework panels.
 - 2) Sliding glass doors.
 - 3) Adjustable shelving hardware
 - 4) Trim and edge banding.
 - c. Project references: minimum of 5 installations not less than 5 years old, with owner contact information.
 - d. List of successful installations of similar products available for evaluation by Architect.
 - e. Sample warranty.
 - 2. Submit substitution request not less than 15 days prior to bid date. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
 - 3. Approved manufacturers must meet separate requirements of Submittals Article.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle educational/library casework in accordance with manufacturer's recommendations. Ship to jobsite only after roughing-in, painting work, and other related finish work has been completed and installation areas are ready to accept casework and recommended temperature and humidity levels will be maintained during the remainder of construction.

1.9 COORDINATION

- A. Coordinate installation of blocking and supports in frame wall assemblies under work of other sections where required for anchoring of casework.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's written warranty indicating manufacturer's intent to repair or replace components of educational/library casework that fail in materials or workmanship within 10 years from date of Substantial Completion. Failures are defined to include, but are not limited to, the following:
 - 1. Fracturing or breaking of casework components including doors, panels, shelves, or hardware resulting from normal wear and tear and normal use other than vandalism.
 - 2. Delamination or other failures of glue bond of components.
 - 3. Warping of casework components not resulting from leaks, flooding, or other uncontrolled moisture or humidity.
 - 4. Failure of operating hardware.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Educational/Library casework design is based upon products of the manufacturer listed first below. Provide basis of design product or approved comparable product. Comply with requirements of Part 1 Quality Assurance Article for approval of products not named below.
 - 1. Russwood
 - 2. Tesco Industries LP
 - 3. International Library Furniture Co. Inc
 - 4. The Buckstaff Company
 - 5. Library Bureau
 - 6. Ironwood Manufacturing
 - 7. Brodart
 - 8. Smiths Furniture

2.2 MATERIALS

- A. Vertical Uprights: 1" thick veneer-core plywood "A" grade, plain sliced bookmatched black/ebony stained maple. Intermediate panels shall be 1" thick veneer-core plain sliced black/ebony stained maple.
 - 1. All vertical uprights shall be banded with ¼" thick solid black/ebony stained maple.
- B. Shelves: Kiln-dried solid black/ebony stained maple glued up in strips of no less than ¾" wide and no more than 2" wide, and free from structural defects. Notched bottom to fit shelf pins.
- C. Shelf Pins: 5/16" deep x 1" in length
- D. Top and Bottom Frames: Black/ebony stained maple veneer plywood with ¾" x 2 3/8" black/ebony stained maple cornice board. The toe board shall be ¾" thick x 4" wide, attached to bottom frame.
- E. Continuous Tops for Shelving: Laminate faced, solid black/ebony stained maple edge banded, 3-ply construction with high density .050" thick high-pressure laminate and .020" thick backer sheet glued to opposite faces. Tops shall be fabricated in longest, most practical lengths. All joints shall have solid wood biscuits and tight-joint fastened. These continuous tops shall be placed on top of and fastened to shelving top frames.
- F. Shelving Backs: Matching black/ebony stained maple veneer plywood panels ¼" thick. Back panels of single faced shelving shall be good one side, and panels of double faced shelving shall be good two sides.
- G. Glass Doors: Clear, ¼" tempered glass
- H. Heavy duty non-marking rubber casters at all casework not attached to wall.
 - 1. 4" casters with brakes, rated for up to 250 lbs each (1,000 lbs for four corners).
- I. Finishes are, in general, assumed to be wood veneer, as noted above. During the submittal phase of work, there may be coordination with the contractor regarding change of some of these finishes to laminate.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine casework installation areas for compliance with requirements for installation tolerances, location of blocking and other anchoring reinforcements, and other existing conditions affecting installation and performance of casework. Proceed with casework installation upon correction of unsatisfactory conditions.

3.2 CASEWORK INSTALLATION

- A. Install plumb, level, and true; using integral levelers. Install in accordance with manufacturer's

recommendations and approved submittals.

- B. Install hardware uniformly and precisely. Set hinges snug and flat. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.
- C. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind and close with uniform reveals.

3.3 CLEANING AND PROTECTING

- A. Repair or replace defective work as directed by Architect upon inspection.
- B. Clean casework surfaces. Touch up, refinish, or replace damaged components in a manner acceptable to Architect.
- C. Turn over operation and maintenance instructions to Owner.

END OF SECTION 12 35 50

SECTION 12 66 13 – TELESCOPING BLEACHERS

PART 1 – GENERAL

1.1 Work

- A. Telescoping gymnasium bleachers shown in architect's plans and specifications.

1.2 Related Work

- A. Electrical.
- B. Gymnasium floor refinishing.

1.3 References

- A. Applicable building code: Current Kentucky Building Code.

1.4 Description of the System

- A. The bleacher system shall be comprised of multiple tiered, closed deck seating rows operating in a telescopic manner, incorporating the most economical quantity of sections while still complying with all loading requirements.
- B. The first moving row shall be secured with friction or mechanical locks. Other rows shall be mechanically locked, operable only upon unlocking and cycling the first row, quantity to be determined by Interkal engineering.
- C. Each bleacher row shall be comprised of risers, seat and deck components, and a complete set of supportive columns and braces.
- D. The telescopic bleacher shall incorporate a locking system permitting the use of one, several, or all rows, each locked in the extended position.

1.5 Quality Assurance

- A. Qualifications
 - 1. Manufacturing: Manufacturer shall be regularly engaged in the design and manufacturing of telescopic seating for not less than ten years.
 - 2. Engineering: It shall be mandatory that each bidder submit with their bid an affidavit signed by a Professional Engineer registered in the state of Kentucky stating that the product to be supplied has been tested by an independent testing facility and meets all applicable code requirements.
- B. Deviations
 - 1. It shall be the responsibility of the bidder to furnish with their bid a list clarifying any and all deviations from these specifications, written or implied. Those bidders not submitting a list of deviations will be presumed to have bid as specified.

- C. Warranty
 - 1. 10 year warranty: The manufacturer shall warranty structural components of the understructure for a period of 10 years.
 - 2. 5 year warranty: The manufacturer shall warranty all non-structural materials such as accessories, everything at deck level and above, and all power and electrical components for a period of 5 years.
- D. Product Improvements
 - 1. Seating provided shall incorporate manufacturer's design improvements and materials current at time of shop drawings. (Shipped product shall be consistent with approved shop drawings.)

1.6 Submittals

- A. Submit manufacturer's installation instructions and descriptive literature in accordance with Section 01 34 00. Submit product data for each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for telescoping bleachers.
- B. Manufacturer's operating and maintenance manuals in accordance with Section 01 70 00.
- C. Shop Drawings: Indicate telescoping bleachers in both stacked and extended positions. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Wiring Diagrams: For power, signal, and control wiring.
- D. Test Reports: Submit test report conducted by an independent testing agency indicating that the bleachers comply with applicable provisions of the Kentucky Building Code.
- E. Closeout: Operation and Maintenance Data: Submit Manufacturer's operating and maintenance manuals.

1.7 Design Criteria

- A. Telescopic bleacher design and fabrication shall conform to IBC 2015, ADA, ADAAG, and ANSI 117.1 requirements.
- B. Telescopic gymnasium seating will be designed to support a vertical live load of 100 PSF, but not less than 120 PLF on both seat boards and footboards. Seating shall also be designed to carry a horizontal sway force of 24 PLF parallel to the seating and 10 PLF perpendicular to the seating.
- C. Steel components shall be cold-formed from appropriate width strip stock conforming to ASTM A570 - Grade C 30KSI, ASTM A653- Grade 33 and 50, ASTM A500 - Grade B 46 KSI as applicable.
- D. Lumber components are kiln dried, finger jointed, edge glued southern pine of grade "B & B Finish" manufactured to the current SPIB glued-laminated standards for southern pine.

- E. Plywood deck boards shall be fabricated from Douglas Fir Premium Underlayment with exterior glue, 5 ply minimum, solid crossband directly under face ply, species Group 1 and manufactured in accordance with PS-1-95.

PART 2 – PRODUCTS

2.1 Telescoping Bleachers

- A. Basis of Design Product: Interkal, Closed Deck Telescoping Bleachers
- B. Available Manufacturers: Subject to compliance with requirements, provide products made by the basis of design manufacturer or comparable products made by one of the following manufacturers:
 - 1. Irwin Seating Company (5000 model only).
 - 2. Hussey MXP.

2.2 Materials

- A. Model: Interkal, closed deck telescopic bleacher.
- B. Type: Wall Attached.
- C. Quantity: Provide 1 bank of Wall Attached. See drawings for layout and seating count.
- D. ADA Notchouts: Provide 3'-0 1/4" wide wheel chair spaces as shown on the plans and as required to meet local code jurisdiction compliance with ADA. Notchouts to be 1 row deep.
- E. Dimensions
 - 1. Rise per row. 10.25.
 - 2. Row to row spacing. 24.
- F. Propulsion
 - 1. Friction Power: Furnish manufacturer's friction power, integral automatic electro-mechanical propulsion system to open and close telescopic seating system.
 - 2. Roller Assemblies: Provide two friction drive roller assemblies as integral part of both first row vertical column assemblies.
 - a. Provide each section of bleacher with a power system that consists of two vertical column roller assemblies.
 - b. Column roller assemblies consist of two 6" diameter by 2-1/2" wide cast drive wheels for a minimum of four friction roller contact points per section of bleacher.
 - c. Provide rollers with 45-durometer rubber covering to grip the floor.
 - d. Install the two friction drive roller assemblies 7'-0" apart, minimum, per section.
 - e. Link the two friction roller assemblies together by a continuous drive shaft driven by electric motor.

- G. Control floor friction power systems with a dual directional, removable walk along pendant operator which plugs into the front of the first row to give the operator proper position for visual control.
- H. Electrical:
 - 1. Coordinate locations of 208/220 volt 3-phase power source, including conduit, wiring, and safety disconnect provided under the requirements of applicable Division 26 Sections.
 - 2. Connections to the seating equipment at the safety disconnect to be performed under the requirements of applicable Division 26 Sections.
- I. Motor Drive: 1/2 H.P., 208V, 3-phase.
 - 1. Motors, housing, and wiring shall be installed by certified personnel.

2.3 Accessories

- A. Foot Level Aisles
 - 1. Provide footrest level aisles at locations and sizes as shown on plans and approved shop drawings.
 - 2. Center Aisle. Provide a permanently attached self-storing K Rail which is designed to eliminate all labor associated with set up and storage of the aisle rails. Quantity and layout of rails will comply with Kentucky building code standards. Aisle rails cannot protrude from bank while in closed position.
 - 3. Intermediate Steps. Provide manufacturers' standard intermediate step as necessary per applicable code.
- B. Wheelchair Seating
 - 1. Notchouts: Provide manufacturers' standard permanent handicap notchouts (3'-0 1/4" wide) located as shown on architectural plans. Notch-outs must be located at section joints only to avoid interference with understructure. Fascia panels shall have manufacturer's standard polydeck finish to match deck board surface. Notch-outs to be 1 row deep.
 - 2. Recoverable Notchouts: Provide manufacturers' standard recoverable handicap notchouts (3'-0 1/4" wide) located as shown on architectural drawings. Notch-outs to be 1 row deep.
- C. Self-Storing End Rails: Provide steel self-storing 42" high self-storing end guard rails with tubular supports and vertical intermediate members to comply with all code requirements. Rails shall be fitted to each exposed bank end from third row and above with all steel to steel connections. Finish shall be a polyester powder coat.
- D. Last Row Seat Level Filler Board: Provide and install a properly supported, flush mounted board between the last row seat and the wall. The board shall match the deck board surface.
- E. Limit Switches: Provide open and close limit switches at each bank location.
- F. Operation Controller (pendant switch): Provide 1 of the manufacturers' standard pendant controls plugged into a single receptacle for extension and retraction. The receptacles shall be mounted at the first row.

- G. Vinyl End Curtains: Provide 1 pair of the manufacturers' standard vinyl end curtains to close off under the bleacher units each open side in the extended position. Curtain color is to be chosen by Architect from manufacturer's standard selections during shop drawing process.

2.4 Fabrication

- A. Wheels: 3-1/2" diameter with 1-1/8" non-marring soft rubber face with rounded edges designed to protect wood or synthetic floor. Provide 1/2" diameter axle for all wheels.
- B. Diagonal Braces: Bracing shall be attached to the rear riser at optimum locations to insure structural integrity. Bracing shall be designed and shaped to support a minimum load of 1000 lbs. of both compression and tension forces created when the bleacher is loaded.
- C. Decking: All deck boards shall consist of 19/32" nominal C-C plugged Group 1 plywood with exterior glue and solid cross bands. An extruded aluminum "H" connector shall be placed between plywood panels. Exposed wear surfaces shall be finished with a layer of high Density polyethylene plastic .025-.030 thick. Deck finishes, such as clear coat, requiring more than simple touch up to restore it to a new appearance after wear occurs are unacceptable.
- D. Rear Riser: Shall be one piece formed 14-gauge, grade 40 steel, with a continuous access joint to fully encapsulate footrest panel for ease of cleaning.
- E. Fasteners: All structural connections shall be made with S.A.E. grade 5 or better stress rated bolts. The use of self-tapping bolts is not acceptable.
- F. Finish: Steel Understructure abraded, cleaned and finished with paint. Steel risers and nose beams finished with corrosion resistant finish with galvanized alloy plating.

2.5 Seat Options

- A. Excel Seat Modules
 1. 18" wide one-piece individual seating modules shall be constructed of solid injection molded high-density polyethylene. Provide in 10" depth.
 2. Each module shall have internal ribs to provide additional structural integrity and resistance to impact.
 3. Each module shall be interlocked to the adjacent module around the perimeter to eliminate pinching hazards and assure proper alignment.
 4. Each module shall have a steel connection point, allowing for a steel-to-steel attachment of each module to the galvanized steel nose beam for maximum rigidity. All such mounting hardware shall be concealed.
 5. Each module shall have a minimum 2" x 1" recessed area for optional seat numbering.
 6. End caps shall be provided at the ends of each bank of seating as well as at each aisle.
 7. Each end cap shall have a recessed area, minimum 2" x 1", for row letters or numbers.
 8. Architect to be provided a selection of manufacturer's standard solid colors, minimum 15 choices.

- a. Up to 3 colors may be selected for use as Architect assigns. Layout to be determined during shop drawing process.

PART 3 – EXECUTION

3.1 Inspection

- A. Verify floor and wall construction is complete.
- B. Verify adequacy and location of blocking and anchors for attachment of bleachers.
- C. Verify location and characteristics of electrical power match motor requirements.
- D. Verify areas to receive telescoping bleachers are free from impediments interfering with installation.
- E. Confirm location of wall mounted control station.
- F. Do not begin work until corrective work has been completed and building conditions are satisfactory.

3.2 Preparation

- A. Furnish anchors to appropriate sections for installation with wall construction.

3.3 Installation

- A. Install telescoping bleachers in accordance with manufacturer's instructions and approved submittal drawings.
- B. Adjust bleachers for smooth and proper operation.
- C. Clean bleachers and remove all debris from gymnasium resulting from installation.

3.4 Cleaning

- A. Clean bleachers when bleachers are fully extended. Clean seating, footboards, and aisles.
- B. Retract bleachers to closed position after cleaning bleachers and clean floor area that was under bleachers when fully extended.

3.5 Demonstration

- A. Demonstrate operation of motorized telescoping bleachers to Owner. Provide a minimum of two hours' time for demonstration and instructions.

END OF SECTION 12 66 13